

Understanding Technology Choices and Values through Social Class

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ABSTRACT

This ethnographic study of 22 diverse families in the San Francisco Bay Area explores parents’ attitudes about their children’s use of technology. We found that parents from different socioeconomic classes have different values and practices around technology use, and that those values and practices reflect structural differences in their everyday lives. Calling attention to class differences in technology use challenges the prevailing practice in human-computer interaction of designing for those similar to oneself, which often privileges middle-class values and practices. By discussing the differences between these two groups and the advantages of researching both, this research highlights the benefits of explicitly engaging with socioeconomic status as a category of analysis in design.

Author Keywords

Class, computers, ethnography, family, mobile phones, socioeconomic status, telephones, television, values, video games.

ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

General Terms

Design, Experimentation, Human Factors, Theory.

INTRODUCTION

Parents not only negotiate their own relationship with technology, but their children’s as well. As the technological gatekeepers for young children, parents make decisions about the technology in their children’s lives in keeping with their family’s values. How do parents make sense of new technologies? Are there any noteworthy differences in values when one studies a culturally and financially diverse group? What implications does this have for the design of new technologies? This paper presents the results of a qualitative study of the attitudes toward technology of diverse families with children under 10 years old – attitudes that differ in surprising, and underexplored, ways.

While these families shared some goals and practices, they

differed in attitudes toward technology along lines of socioeconomic status, or *class*. This paper is an analysis of family values around technologies, including computers, Internet, television, movies, video games, telephones, and mobile phones, for twelve middle-class families and ten working-class families. We highlight the values that these families articulated through their rules, practices, and statements of identity, and describe how these values influenced the ways they structured their use of technologies day-to-day. Though these groups shared many values – and in fact owned similar technologies – we draw attention to the places where their values and practices differed as an opportunity for deeper understanding of class, technology, and family life, and the ways that material or structural differences influence them.

This work contributes to a nascent awareness of class in CSCW by providing a methodical analysis of the similarities and differences in values and practices between middle-class and working-class families, and the ways that the material manifestations of *social class* in particular have created or reinforced those values.

Class in HCI: Placing this work in context

What do we mean when we talk about class? Social class, or ‘socioeconomic status’ (SES), is a category defined by a nexus of income level, educational attainment, type of employment (“white-collar,” “blue-collar,” etc.), and several other correlated factors [11]. While studies along socioeconomic lines are common in the social sciences, such approaches to characterizing society are rare in human-computer interaction (HCI) and technology design where “middle-class” has long been the invisible default.

However, among some sub-communities of HCI there has been increasing awareness of opportunities to design for groups beyond the middle-class. For instance, the growing sub-field of HCI4D, or HCI for the Developing world, has demonstrated that the HCI community can be sensitive to the needs of poorer people in developing countries [3]. In the last few years, a few researchers have begun to design for working-class or poor users in their own communities: Dillahunt et al. have studied the energy consumption patterns of people in low-income communities in the United States [7]; Le Dantec has studied the role of technology in the lives of urban homeless people in Atlanta, Georgia [17]; and Grimes et al. have published several studies of eating patterns in low-income communities [12]. These researchers have challenged the tendency to design for users “like us” by explicitly focusing on other groups, and have

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made inroads into bringing issues of power, culture, and resource access to the attention of the HCI community. This study differs from these research projects in that it does not just look at low-income groups, but uses socioeconomic status as an emergent category to understand technosocial differences across both middle-class and working-class families.

Our work has also been informed by previous studies of class and technology outside of CSCW and HCI. In sociology, one classic analysis of class and technology use is David Morley's study of the television habits of 18 British families of various classes [19]. Though the work is over three decades old and the class system in Britain differs in some respects from the United States, the concerns that parents have around television in Morley's study are remarkably similar to the concerns parents in our study have around media content. They are corroborated further by *TV Living*, which reports on longitudinal surveys of 577 British television-watching households [10]. In the United States, Lynn Spigel traces aspects of the cultural history of television, family, and children [24], and her edited collection *Television and the American Family* explores sundry aspects of television's role in family life [4], though neither focus on class explicitly.

In CSCW and HCI, however, class may be considered more problematic. Some may be critical of introducing what may be seen as artificial categories, proposing instead a focus on the unique structure of practical action: the ungeneralizable and inherently indexical nature of everyday interaction [9]. We argue that while we recognize the value of such an approach, there is room too in CSCW for work such as ours, which draws attention to the rarity of this particular category of analysis across the field of CSCW and the subsequent underrepresentation of non-middle-class voices.

Values in Design

This study uses a value-centered approach, which provides several benefits. First, it allows us to immerse ourselves in the sundry points of view of the users, even when these points of view may differ from our own. It also allows us to examine the categories in which we do belong, making the familiar unfamiliar, by highlighting and discussing the values that we might take for granted. However, one critique of a value-centered approach is that it can neglect structural inequalities, including class [16]. Our study contributes a discussion of these structural differences and how they impact values.

Value-focused analyses are common HCI and CSCW [6]. The Value-Sensitive Design (VSD) laboratory provides a framework for methodical and proactive input into the design of technologies by accounting for human values throughout the design process, where a value "refers to what a person or group of people consider important in life" [8]. In particular, many using the VSD approach, including its founders, focus on human values of "moral import" as defined or identified by deontological and consequentialist moral philosophy, such as privacy, informed consent, human welfare, sustainability, and justice (see [8], p.13), though others focus on emergent values articulated by the participants [2,6,18]. Both approaches have their merits: the latter foregrounds users' experiences without

being normative, while the former enables more critical analyses that may not be voiced by participants directly. Our approach leverages both of these benefits: we allowed values and categories such as class to emerge from the data, but then incorporated the body of literature around class to give our findings theoretical context. However, a critical analysis of the *implications* of these values is beyond the scope of this paper.

Voida and Mynatt have used an approach similar to VSD in analyzing values in the home. They borrow a value taxonomy developed by social psychologist Milton Rockeach to identify and categorize family values which were exposed via an adaptation of a "cultural probe," a toolkit to explore aspects of one's life or environment that are often taken for granted [26]. Similarly, Hutchinson et al. deployed "technology probes" designed specifically to explore certain values and value conflicts in the home [15]. We build on these explorations of values in the home by examining current practices around technologies already in the home.

Finally, we use a novel method for identifying emergent values by noting that though some parents explicitly stated values as such – "we value education, we value creative play" – some never articulated them as "values" *per se*. Rather, they talked about their values as rules they enforce, decisions they made, struggles they have with their children, or just "things their family did" ('rituals' or 'practices'). At times parents expressed values to their children (and us) as an identity, such as "We're not a TV family" or "We don't watch commercials." At other times, values only came out indirectly, such as when parents described hiding or getting rid of toys and technology they did not approve of or making ones they did approve of more accessible. To recognize values when they may not be articulated as such, this study borrows from Lave and Wenger's work on *communities of practice* [27] and Suchman's practice-based accounts of communities around technology [25]. While these accounts do not articulate values specifically, they provide a framework for an analysis of practice that, when paired with the value-centered design research of Friedman et al. [8], can be translated to values.

RESEARCH METHODS

The first two authors visited the homes of 22 families (a total of 75 people: 36 parents and 39 children) in the San Francisco Bay Area between summer 2008 and spring 2009, at times accompanied by a third researcher. These families were recruited with the aid of a recruiting agency to ensure diversity across several axes: income, race, career type, and geographic area. While we were initially worried that some homes would not have much technology due to a lingering digital divide, we still cast our net wide to allow for unexpected outcomes (and we later learned that our fears were unfounded).

We observed a typical evening or weekend afternoon, often from the time when children would arrive home from school or after-school activities through their bedtime. We also observed a typical phone call to a remote family member with whom the family is in frequent contact (in almost all cases a grandparent; in total, 36 extended family members participated). These observations spanned up to three hours each and included

several family rituals such as homework time, family dinner, and bedtime stories.

We followed this observation with an open-ended interview with the parents for one to two hours about their practices and thoughts around toys, technology, establishing rules, creating a sense of “family,” and the challenges of parenting. We left our questions intentionally open-ended to allow parents to express their own values and belief systems around parenting, technology, toys, and family. We also asked questions about what we had observed during the typical family time earlier.

The first two authors transcribed the interviews in their entirety and used Atlas.TI to conduct an iterative grounded theory analysis. We developed themes in parallel, then merged and re-coded for consistency. The transcripts of these interviews in particular comprise the bulk of the data presented below.

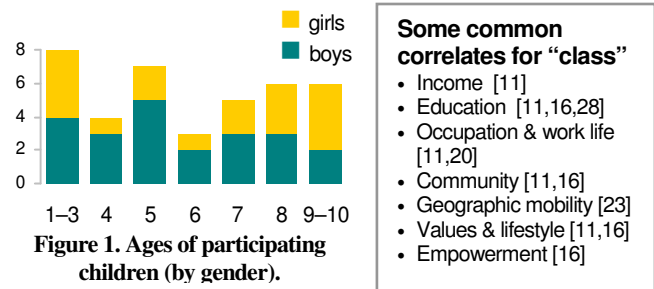
Class and the Demographics of Families Recruited

This sample was fairly ethnically diverse, including families of Asian, African, Hispanic, and European descent. We were open to analysis along various axes, including gender, ethnicity, parental familiarity with the technology industry, and more. In fact, we were initially interested in researching the co-construction of children’s gender identities and technology access. However, among families in this study, gender differences were inconclusive at best. Many parents, particularly those in the middle-class group, were well aware of gendered toys and technologies and actively countered them. One father, aware of the dearth of women in computer science, looked forward to teaching his daughter to program. Another set of parents encouraged their son’s interest in My Little Ponies and their daughter’s tomboyish ways.

By contrast, the axis that showed the most significant differences was socioeconomic status. These families could be divided into two fairly distinct groups based on socioeconomic status, defined by not only their income but also their occupation and working life [20], education [16,28], community [11,16], mobility [23], parenting styles [16], and (as we will see) attitudes toward technology.

Before we enter into details, we want to acknowledge that these class categories, while common tools for analysis in the social sciences, are complicated and potentially fraught. The people in these groups are far from uniform and we want to avoid essentializing them: as in any group, we observed a range of practices and values. However, these categories are what sociologists would describe as macroscopically stable, and there were substantive differences between the two.

We also want to acknowledge our own perspectives in this research. While possessing backgrounds that are economically diverse as well as transnational, we all, like many in our field, currently fit the definition of middle class. However, in this study we have expanded our middle-class perspective by drawing on Stuart Hall [14] to “problematize” the familiar and avoid “othering” the unfamiliar.



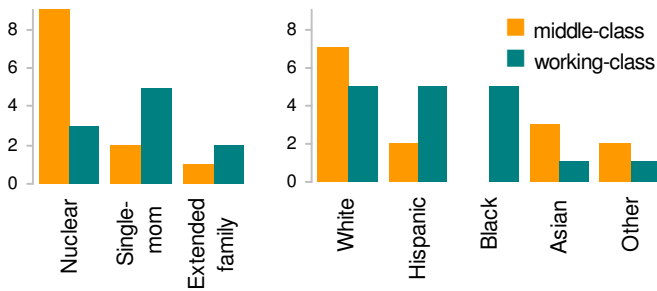
Middle-Class Family Characteristics

The group that we will term “middle-class” in this analysis included twelve families who would be in the “middle-middle-class” or “upper-middle-class” categories defined by Gilbert and others [11]. Overall, these two categories make up approximately 44% of the population in the United States. The twelve families in this study earned incomes from slightly to moderately above the median income of the San Francisco Bay Area, which is around \$65,000. Parents were employed in career-oriented professional jobs that required college and sometimes graduate degrees and typically involved substantial freedom and a blurring of work and home lives [20]. Their friends and neighborhood communities consisted of other middle-class parents, which reinforced their culture and values.

While much of the middle-class in the San Francisco Bay Area is employed in the technology industry, we reduced the conflation of class and occupation by actively recruiting additional families that matched middle-class demographics but had occupations outside of the computing industry. Thus, eight of the twelve families had at least one parent who worked in software development or computer hardware design, and the parents in the other four families had other professional jobs including law, speech therapy, civil engineering, secondary education, and architecture.

Strikingly, *all* of these middle-class parents grew up outside of the San Francisco Bay Area (mostly from elsewhere in the United States) and moved here for work, and most or all of their extended families lived outside the Bay Area. While Annalee Saxenian has discussed the migration patterns (which she describes as a “brain circulation”) of Silicon Valley technology workers in particular [23], geographic mobility was the norm for the four middle-class families who were not employed in the technology industry as well. This distance shaped these families’ identities and their use of communication technologies in important ways.

Most of these middle-class families had relatively traditional nuclear family structures, where the mother took primary responsibility for child-rearing and the father was the primary breadwinner. In nine of the twelve families, mothers had part-time jobs or had quit their jobs when they had children; one of the remaining three families employed a nanny. Only one father worked from home and took primary responsibility for child-rearing. Two parents had divorced; one had remarried and the other was a single mother.



The diverse family structure (Figure 2) and (sometimes multi-)ethnic identities (Figure 3) of participating families.

Working-Class Family Characteristics

The group that we will term “working-class” included ten families from the working poor, working-class, and lower-middle-class [11]. Overall, these three classes make up approximately 43% percent of the US population. These families made less than the median family income of \$65,000 in the Bay Area, and parents held a variety of lower-paying jobs including teaching preschool or elementary school, lower-status white-collar jobs (e.g. human resources and reception), homemakers, and blue-collar jobs (e.g. deliveries, construction). Few of them had a college education, and some had not finished high school.

In contrast to the middle-class group, in *all* families in the working-class group, at least one (and often both) parents had themselves grown up in the Bay Area, and in all cases, they had at least some extended family living nearby. This group also had more variety in family structure than the mostly two-parent nuclear families we saw in the middle-class group: most notably, single moms headed five of the ten families. These single mothers often had the help of their nearby family in child-rearing (e.g. grandparents would provide babysitting services, and remote fathers or godparents acted as providers). In two of the families, grandparents lived with the mother and children. In two other families, extended family members took care of a teenage child while the mother took care of younger children. Of the other five families with two parents in the household, both parents worked full-time jobs and divided child-rearing duties more evenly (though mothers were still generally saddled with primary responsibility).

We want to acknowledge that family attitudes toward technology in the San Francisco Bay Area, even among those not employed in the technology industry, may not be typical. However, we posit that living so close to Silicon Valley, where new technologies are often actively discussed, may act as a focusing lens for technosocial practices, making residents aware of issues that may otherwise lie dormant in more lightweight usage scenarios. In short, this area presents a self-conscious snapshot into how families make sense of the technologies in their everyday lives. The emergent values are perhaps accentuated by this environment, but are not unique to it.

FAMILY VALUES IN PRACTICE

In the following sections, we will discuss the values that families expressed around technology and how these values connect to other aspects of their lives (e.g., keeping in touch

with extended family and friends, promoting education and healthy development, and supporting strong family bonds between parents and children). We will start by discussing family values around technology in the twelve middle-class families observed and interviewed. Though of course the middle-class families were hardly a monolithic group and we observed a range of behavior and beliefs, we did note some striking tendencies that were not nearly as strong or were absent entirely in the working-class group.

First, these middle-class families rarely had relatives nearby, and relied on telephones and occasionally videochat (see [2] for a full analysis) to keep in contact with them. Rather than relying on local family, they developed social networks of other parents with whom they could exchange parenting advice. In these groups, attitudes toward technology were cautious (or guilty) at best and alarmist at worst: with few exceptions, these parents restricted television, video games, mobile phones, and computers, often referring to all as “screen time.” Moreover, they tended to control the content of the technology (television shows, websites, video games, etc.) by restricting access to the technology itself. These attitudes reflected their general parenting anxieties.

In contrast, the ten working-class families we observed and interviewed, though again far from uniform, often relied on nearby family networks instead of parent groups or colleagues. They often did not have the same parenting or educational resources that middle-class families did, a finding echoed by many sociological studies including those by Gilbert [11] and Lareau [16]. They also tended to have less technological familiarity and their attitudes toward technology were more mixed: they were generally more permissive, and their children more often had personal access to technologies shunned by middle-class parents, such as personal mobile phones or televisions in their bedrooms. Several parents said that learning about technology would give their children a leg up in this competitive world, while others just discussed it with less anxiety than their middle-class counterparts. These parents tended to treat the content (particular television shows, websites, and video games) as separate from the technology or platform, expressing control by placing restrictions more on the former than the latter.

In the following sections, we describe these findings in more detail. Note that the presentation of these groups will not be perfectly parallel because we focus on the themes most important to each group in turn rather than imposing an artificial structure common to both.

Technology & Family Values in Middle-Class Families

The twelve middle-class parents in our sample actively structured their children’s time with media and communication technologies, including telephones, televisions, video games, and computers. In this structuring, they often erred on the side of caution and restraint, citing the results of reports in parenting magazines, mentioned by pediatricians, or passed along by other parents, all of which played a substantial role in shaping their values. We will first discuss the challenges these families face without the benefit of extended family members living

nearby, and how they fill the void (both with and without technology). We will then discuss the restrictions middle-class parents placed on televisions and other devices with screens, often dubbed “screen time.” Finally, we will contextualize these limits in the lives of these families, and will mention some notable exceptions to screen time rules.

Diaspora, Distant Families, and Telephones

In a study of a Spanish immigrant community in Redwood City, California, anthropologist Richard Rouse theorized that the connections that immigrants kept with family and loved ones in Aguililla, Mexico, created a “community” not bounded locally, but characterized by borders and the extension of “local” to distant areas [22]. Similarly, the parents in all twelve of these families had moved to the Bay Area as adults, for school or work, and had left behind most or all of their extended families to do so. As a result, they often felt torn between multiple communities, wanting their children to develop a strong connection with extended family but running into the challenges of distance and also wanting more local resources. Several parents were left feeling lonely or isolated, more attached to distant communities than local ones. One father described their distance from other family as “not ideal”:

If we were totally aware of the kind of diaspora of our families ... the bad thing is that we're 8-10 hours away from anybody. It's not ideal. If we had a chance to do it all over again, maybe we would've made other decisions about where we're going to live. (Dad, Family 1)

Because of this local isolation, these families redoubled their efforts to keep in contact with grandparents in particular and also siblings and other close family members, often establishing regular phone-calling schedules. One family called grandparents at 9am sharp every Sunday morning (and called from upstairs as a joke even when visiting the grandparents in Los Angeles). Parents emphasized the importance of these phone calls to their children – almost none of whom were otherwise interested in phone calls at their age – and coached them on what to say and how to use the phone [2]. (Three parents proudly reported that their children *like* to dial the phone.) While these parents were leery of television, video games, and mobile phones, they wholeheartedly supported telephones in their children’s lives. In this way, the telephone served as a physical manifestation of an extended, distributed community in the way that Rouse describes, allowing families to exist and to strengthen their identities at a distance.

Some families relied primarily on these faraway relatives for emotional support and guidance, a situation they did not always like. Said one lonely mother, “I moved out here and I [didn’t have] friends at all. ... I think a part of living in cities today, it’s hard for adults to plug into new communities in general” (Family 10). This couple blamed the transience of the Silicon Valley workforce:

[Dad] Actually, we don't have that many friends. ... [Mom] Partly it's the curse of Silicon Valley. A lot of the people we met here and became close to moved away. It's such a mobile population. [Dad] ... When there was a prenatal exercise class before [our firstborn] was born –

[Mom] we met eight women there and we all became friends with the husbands and did stuff together. [Dad] And there's only one family – I mean two families left. All the others have gone. Back to Canada, Holland, Seattle, Arizona. [Mom] It's pretty sad. (Family 8)

These parents’ comments are personal reflections of broader trends in Silicon Valley, explored in economic terms by Saxenian [23]. The parents quoted above put a personal face on this largely economic story, pointing out some of its more alienating aspects as families uproot themselves, sometimes repeatedly, to allow technology workers to pursue new opportunities around the country and the world. Such practices could leave families, and particularly parents-at-home, relatively more isolated, as fewer of their peers are available for long-term friendships or social support.

Some middle-class families filled the void left by too-distant relatives and their own rootless mobility by befriending other parents in the area through schools and parenting groups. (In fact, some parents reported that cities such as Sunnyvale, California, aware that social isolation of its parent-citizens was a problem, organized some of these parenting groups.) As we will see, these groups reinforced the middle-class parenting style outlined above, and were important sources of parenting advice – and values.

Screen Times and Family Times

What are middle-class parents’ opinions on the influence of other technologies in their children’s lives? While we intentionally left the meaning of “technologies” open-ended when talking with parents, letting them identify which technologies were most present in their decision-making about their children, discussion tended to focus on the technologies that have the most controversy in the popular press for children: television, video games, computers, and mobile phones.

Many middle-class parents, in fact, lumped all four of these into a single category of “screen time,” which they restricted with a single set of rules. Screen time has become an increasingly popular term over the last decade to describe time spent in front of any screen, particularly televisions and computers [13]. For example, the American Academy of Pediatrics recommends no more than two hours a day of screen time for children over age 2 [1]. These parents echoed this term:

*We have a **screen time** limit, 20 minutes on school nights, and he has to earn it. (Mom, Family 17)*

*[Mom] We do restrict the time [kids are on the computer]. Just we treat it like TV, because it's vegetable time. ... [Dad] There's enough **screen time**. [Mom] They don't need more. (Family 4)*

***Screen time**, like website time, it's not that common. We use it as a reward. She gets computer time at school. (Mom, Family 8)*

Anything with a screen, parents explained, counted toward screen time, and their children only got so much per day. Though many parents couldn’t remember where they first heard about screen time, they said it was often a topic of conversation with other parents, where they would compare notes on the

effects of their media rules. While official recommendations on screen time differ (see [13] for discussion), sources generally agree that a maximum screen time for children aged five and older should be two hours. Many parents in our sample set limits far below that, including twenty minutes and even none at all, perhaps a result of the competitive escalation of parenting advice more generally, which we will discuss more below.

Some parents let their rules on screen time slide when their children challenged them, but then felt guilt for using technology as a “babysitter,” or for being a “bad parent” because of it. What is the source of this guilt? Some parents felt that screen time directly ate into “family time,” even though their children were often watching television or playing games while the parents were occupied with other things around the house, such as working from home, cleaning, or preparing dinner. Many of these parents also discussed wanting their children to be active and well-socialized, and said that “screens” counteracted that, although many also recognized that some exposure to popular culture was also important to get along with their peers. These desires were reinforced by discussion with other parents, where they would often compare their children’s behavior and the effectiveness of various rules around technology (as also noted in [16]).

[While we parents are busy] they may end up watching TV or some video or something. ... I kind of consider that like a ding in family time. (Mom, Family 10)

Parents restricted “screen time” partly as a proxy for restricting content. Their specific concerns about technology often involved concerns about violence, sexuality, online predators, consumer culture, or other content-related concerns, as well as concerns about the consequences of unrestrained technology use, such as obesity, attention-deficit disorder, eye strain, and anti-sociality. However, the middle-class parents in our sample did not generally distinguish the two: they restricted the technology in order to limit the effects of both.

However, parents still felt like they should supervise screen time to ensure that not only were time limits followed, but content was appropriate. Though many were unable to watch with their children all the time, they would pre-filter shows using TiVo-like prerecording devices, Netflix, or even YouTube (where one family watched Warner Brothers cartoons together and two others watched music videos). These parents also controlled screen time and content through access: most parents said they would never allow TVs or computers in children’s rooms, preferring central places that were easily watched. It is not that these parents did not want their children to learn these technologies, but they felt that they were getting enough exposure in school and that there were a lot of concerns associated with them. With unlimited access, one has to learn to discipline *oneself* when it comes to technology, as this mother suggested.

I was talking to [a neighbor parent] about her son’s DS and I was saying how obsessed [my son] is with it, he’ll play all day if he could. And she’s like “yeah my son, he knows when he can turn it on. He’ll play for a little while and then turn it off on his own.” I’m like I don’t know if I

believe that. ... Hopefully [my son] will self-regulate after a while too. (Mom, Family 2)

Thus, “screen time” epitomizes the approach these middle-class families took toward technology: though it was something they were comfortable with for themselves, they felt they needed to restrict it in their children’s lives by limiting time, access, and content. Next we explore why.

A Search for Limits in an Age of High Technology

Part of what makes technologies feel so worrying to some parents is some of their children’s almost preternatural fascination with them. Among these families, telephones did not need restriction because most children did not want to use them anyway (at least not at the elementary-school ages included in this study). But screens, like candy and makeup, were addictive and unhealthy, an irresistible draw.

He would be totally satisfied with the computer. Any time we could just give in. ... All we do all day long is just saying no, no, no, no. You know, it’s just a constant battle; it’s not productive for anything. (Dad, Family 1)

The parents in these twelve middle-class families tended to turn to institutionalized resources, including books, pediatricians, and websites, for information about parenting. They also discussed what they found with other parents in the area, comparing results. However, several parents complained that these comparisons would sometimes end in competitive one-upmanship discussions. Moreover, many websites that we discussed with parents provided sensationalized information about common parenting issues. We posit that these can work to amplify fears of parenting, particularly around kids and technology. Ironically, this even appeared among those who work in high-tech industries themselves, sometimes making some of the very products they do not want their children using. These two parents echo two common concerns from this discourse about parenting: addiction and loss of control. One noted that her children were “bonkers” when they returned from visiting their grandmother, who always had TVs on, and blamed it on the TV (Mom, Family 10). Another said,

My concern is that they get too dependent on having to have these gadgets and things, you know, to the exclusion of everything else. We went camping a couple weeks ago ... we went hiking for a little bit, and it was just “Eh, this is boring.” ... When we got home, [my son] got back on the couch with his DS and he’s like [sigh of relief] “Ahhhhh.” [laughter] It was like a drug, you know. ... You know, technology is a tool for things, rather than something he’s completely dependent on. (Dad, Family 2)

These anxieties around “screen” technologies echo the anxiety many of these parents felt about parenting more generally. While parents in both socioeconomic groups were concerned about their children’s safety, diets, bedtimes, educational achievements, creativity, social development, and more, the middle-class parents we observed more actively monitored and structured their children’s lives to reflect their values.

However, there was one notable and unexpected exception to screen-time requirements for about half of the middle-class families we interviewed. These parents talked about the

Nintendo Wii game console, and in particular the Wii Fit extension, as a *good* technology: it was social, active, and something families could do together. “We play as a family,” one mother said. “When cousins come over they enjoy it too so everyone’s playing” (Family 7). A couple of parents liked the games Rock Band and Dance Dance Revolution for similar reasons: they were active, social, and family-friendly – that is, something wholesome that they could all do together. (It also did not hurt that parents themselves liked playing these games.) Thus, though many of them were cautious of the possible negative effects of the toys and technologies marketed for (or to) their children, companies such as Nintendo have clearly recognized these concerns and have adjusted their product design and marketing accordingly, to great success.

Technology & Family Values in Working-Class Families

The ten working-class families we talked to, like their middle-class counterparts, valued family togetherness as well as their children’s education, health, and well-being. However, as various class theorists have discussed at length, the structural constraints on their lives were different [11,16]. For instance, these parents generally worked longer hours and their children were on their own more often, which impacted not only the lives but the values around technologies for these families. Moreover, half of the households in this group were headed by single mothers. Because many of these parents could not ferry their children to school and other activities like the middle-class parents (largely moms) did, mobile phones for children were more important to this group.

However, many of the parents in this group grew up locally and had local family they could draw on for childcare and emotional support. As a result, while these families used telephones extensively (many of them contacting relatives *more* often than the middle-class families did), the phone calls were not the significant structured family rituals they were in the middle-class group because their relatives were local and they saw them frequently. In place of this ritual, many of the working-class families we interviewed had many more *co-present* family rituals, including Sunday dinners, birthday parties, and holiday celebrations. These families also described (and included us in) family rituals involving media technologies such as family movie night and shows before bedtime. These families tended to turn to other family members for advice in childcare rather than the institutionalized resources or community parent groups common in middle-class families (also discussed in [16]).

We will first highlight some of the differences in values around mobile phones and television access, and then discuss reasons for these values. These differences present new and sometimes surprising opportunities for design that would not have been discovered had we limited our sample to middle-class families.

“I’ve got to hear her voice”: Mobile Phones & Children

Children as young as six years old owned, or had owned, their own mobile phones in three of the ten working-class families, while only one eight-year-old girl had her own mobile phone of the twelve middle-class families we interviewed. Other working-class parents were more open to the idea of their

children having mobile phones than most the middle-class parents in our sample – for several, price was the main barrier, along with the close-related concern about whether their children were responsible enough to take care of it. The children who had mobile phones were all on cheap family plans, and in two of the three cases it was not the mother but the absent father or a close family friend who paid for it.

All three of these families that had embraced children’s mobile phones were headed by single mothers, who often had to be at work while their children took the bus to or from school. These moms said that mobile phones were the best way to keep tabs on their kids and to make sure they were okay. One mom told a harrowing story of how her son once got on the wrong bus and ended up in a rough part of the city, where he was stranded for two hours before police found him, bewildered and sobbing, and called her. “I didn’t know,” she exclaimed; “I’m thinking my son’s at school! ... Whew, that was scary.” With a mobile phone, she explains, “he can text me and say, ‘I’m on the bus now.’” (Family 13)

These three mothers also said that mobile phones were a great way for them to hear from their children when they were with their fathers or with friends. One said it was not enough to hear an adult say “your daughter is okay;” she had to check in with her daughter directly to make sure.

[Interviewer] What’s your preferred way when she’s off somewhere else - do you prefer phone, text or email?

[Mom] Oh, I’ve got to talk to her. I’ve got to hear her voice. ... I’m real cautious with my daughter ... parents will tell [me] when I call, “She’s ok.” “Well, can I talk to her?” ... Sometimes you know kids can be shy and they don’t want to tell the adult “I don’t want to be here or –,” so I want to be sure that she’s okay. (Family 9)

Middle-class families also recognized the safety benefit of mobile phones, but their lives differed structurally from these working-class families and this accounted for the difference in use: because middle-class parents had the time to shepherd their children to school and other activities, the need for their kids to have mobile phones was just not there. However, many anticipated getting their children mobile phones when they became teens and had more autonomy.

While news articles often focus on the safety of mobile phones for children (e.g. [5]), the main concern parents had was their children losing them. Every one of the children in our sample who have, or had, mobile phones had also misplaced them at least once. Though in all cases the kids’ phones were entry-level ones, parents lamented the expense of replacing them without the discounts that a mobile phone contract can provide.

In this first theme, we have already encountered values and practices that would have been invisible had we focused only on middle-class parents. In the middle-class group, children did not have or need mobile phones – in fact, they counted toward screen time. But mobile phones, despite their expense and the ease with which children can misplace them, served a vital function for several working-class single mothers.

Technologies in Children's Rooms

Like the middle-class families we interviewed, the ten working-class families often had entertainment systems (TVs, DVD players, and game systems) and computers in their family rooms and in parents' bedrooms. However, one notable difference was that six of the ten working-class families also had televisions and sometimes DVD players and game systems in *children's* bedrooms. For three of these six families, the technologies were gifts from a father outside the household. This is something we did not see in *any* of the twelve middle-class households, and, in fact, several middle-class parents specifically said they would never consider having a television in their child's bedroom.

When we asked working-class parents about why they allowed TVs in their children's rooms, several said that they would not do it for younger children, but now their children were old enough to handle the responsibility. Interestingly, while these parents uniformly said that they wanted the best for their children, none expressed concerns about the amount of time their children might be watching television or playing games in their room. While several of the screen time websites advise keeping televisions out of kids' rooms as a way of reducing screen time, neither screen time nor this concern came up with most of the working-class families.

While only a couple of parents had thought of restricting the time their children watched in the way we found in many middle-class houses (and only one – Family 18, a working-class family with a mother who had extensive contact with middle-class values via her job as a university library aide – mentioned “screen time” specifically), all restricted the *content* their children had access to, though they drew different lines regarding what was appropriate. These parents kept the idea of the technology and the content conceptually separate, and restricted the content rather than the technology.

Television and Bedtime Rituals

All 22 families in our sample, middle-class and working-class alike, ritualized their children's bedtime in some way. Many parents read stories and talked with their children about their days. In addition, five of the ten working-class families watched television shows or movies with their children to wind down before they went to sleep. In one case, this involved educational DVDs designed to help reading. However, the others were simply shows the children and parents both liked. Two of the working-class families also had weekly “movie nights” on Friday nights where extended family members joined them for a more elaborate ritual. One mother described these events fondly and vividly:

Friday nights throw everything out. We lay out a big comforter on the floor, we have magic carpet rides, we watch a movie, we eat popcorn, we stay up late. Fridays normally everyone falls asleep on the floor, including us, watching the movie we've seen like a thousand times. And then we carry the kids to bed. [laughter] (Mom, Family 12)

Because this contrasts with what we heard from middle-class parents about restricting or even eliminating television, it warrants further investigation. Most of the parents who did this

also read to their children, helped them with homework, and talked with them over family dinner, which were all recognized as things parents “should” do with their children. In their view, watching shows before bed was just another chance to bond with their children in a relaxing way – rather than *detracting* from “family time,” technology provided just another avenue for enjoying it.

Moreover, this practice highlights the much less anxious approach many of these parents appeared to take toward parenting generally. They wanted to be good parents, of course, and if their child was struggling they did worry, but they also did not want to agonize over every action, ultimately passing that anxiety on to their children [16]. Lareau calls this anxiety the “dark side” of middle-class parenting, noting cases where children reacted to it in unhealthy ways. Perhaps this was one way these working-class parents pushed back.

“I would never limit her”: Technology and Success

We have seen that the ten working-class families we interviewed had more diverse attitudes toward technology than the twelve middle-class families. How did these parents make sense of these technologies in their children's lives? A couple of families did restrict their children's access to some technologies, citing the same reasons the middle-class parents discussed: it took the place of exercise, socializing, schoolwork, or play. Other families did not specifically restrict technology, though they did restrict content. However, two single mothers said that they *promoted* their children's use of technology because they felt that experience with games and computers, two technologies that middle-class families restricted under “screen time,” was a path to success for their children. Others talked about technology as a status symbol or otherwise positive. This was the most surprising value we encountered, especially given the fear around the same technologies we saw in the middle-class group. The mothers cited some of the same reasons often extolled in debates around technology in the classroom for children as young as five [21]: these technologies were (or at least could be) educational, and in today's world, experience with technology was one of the best ways to get ahead. This mother described specific things her son could learn from computers and mobile phones – through both educational games and everyday use.

[Interviewer] What are your plans for the computer?

[Mom] For him to play games and stuff ... I know it'll help him, he'll get to do more games on it, as far as the math games and spelling games and puzzles. And everything's on the computer now, so you have to learn. (Family 13)

I'd have him text me or his dad [on his mobile phone], you know, just the family. ... [It teaches him] to write. Mmm hmm, and to use the computer. (Mom, Family 13)

This mother was more general in her statements. “I try not to let her be limited,” she said about her daughter: for this mother, technology was clearly implicated in success and freedom.

[All these technologies] are helpful. ... I'm all for high-tech stuff. Anything that's helpful. ... I just try to give her everything that I wish I had when I was younger. ... I think they [computers and games] will make her

knowledgeable, you know, aware of everything that is up-to-date. Because some people don't even know about this, don't know about that. So I think it'll keep her ahead of the game. ... I try not to let her be limited. Like I said I want her to do it all. (Mom, Family 9)

While some working-class parents did not restrict time or access to technologies, all restricted *content*. In particular, all parents worried about violent video games and R-rated (or “mature”-rated) movies and television, preferring their children to stick with the Disney Channel and Nickelodeon. Similarly, parents restricted content on the computer, citing fears of online predators and pornography. One mother who was otherwise fairly permissive with her older daughter was very angry when she found out the 10-year-old had a fictitious MySpace profile, voicing the same concerns about online predators we heard from middle-class parents:

There are dangerous people out there that will want to meet you and kidnap you or whatever. ... She was too young to make those decisions. (Mom, Family 11)

On the other hand, one father reasoned that their son could not play outside in the same way he could as a child because it wasn't safe in their neighborhood to play anymore, and that video games on the Nintendo Wii were his son's replacement:

I haven't seen him play the Wii for the last three weeks but his friend came over and they played and if that's what's going to keep them occupied ... it's not like the old days when you can send them out to play on the street. When I was a kid I'd go to the high school and ride bikes. Can't get out like that anymore. (Dad, Family 16)

In general, while parents in this group did have concerns about content and sometimes about time spent on various technologies, they tended to be much more lax and positive about them. This reflected their broader parenting styles. While they wanted to be good parents and to give their children as many opportunities as they could, they also said that parenting should not be stressful; one said, “Being a parent... just comes natural” (Mom, Family 9).

STRUCTURAL DIFFERENCES, VALUES, AND FAMILY

Our findings from the families in our study complicate common assumptions about working-class families and technology access. We mentioned that going into this project, we were worried that with the “digital divide” we would not see much technology in lower-income houses and children would have little personal exposure to it, while the opposite was true. If we had heeded our initial (and ultimately unfounded) fears, we would not have uncovered the diverse practices this group had around technology and family life.

While both groups owned similar technologies, the ways in which they used them differed. Middle-class parents ritualized family phone calls, but working-class parents held family movie nights and other co-located events. While middle-class families restricted television and computer use, working-class families promoted technology (at times enthusiastically) to their children, in part because they wanted to be sure their children had more opportunities than they did growing up, and in part because technologies like mobile phones provided

conveniences or family time. Middle-class parents bristled at the idea of giving their children mobile phones before middle school, while working-class parents welcomed it.

It may be tempting to dismiss these findings as artifacts of circumstance: for example, *if* middle-class children had to take the bus to school, *then* they would have mobile phones as well. But rather than an artifact of circumstance, this points to an important structural difference: middle-class families could afford to arrange their lives such that parents (usually mothers) could pick up their children, while working-class families often did not have the flexibility in their work schedules to accommodate a pick-up. Similarly, if middle-class parents had extended family living locally they may rely more heavily on them rather than turning to institutional support, but the opportunity (and sometimes even expectation) for geographic mobility allowed middle-class families to move to the best colleges and job opportunities, leaving extended family behind. We thus bring into this discussion the importance of explicitly attending to these structural differences in design.

Our reason for explicitly attending to these structural differences is to advocate for studying the sources of values, including implicit ones, which families engage with and embody on a daily basis. These values are not without tensions, and we did see clashes of values with practice: parents may want to know their families are safe but also want to respect their kids' privacy, or they must trade off their need to work and earn a living for their family with their desire to spend time with their children. However, as ideals, these values show us what parents consider the most important elements of “good parenting.”

Designing for Class and Values

The very real differences between families in this study raises issues of how one inclusively designs across class more generally, which we argue must take into account differing values and structural realities. These questions were particularly highlighted in places where we were attending to both class and parenting styles. While these two groups shared many ideas of what it meant to be a good parent, they differed along some axes, including attitudes toward technology. For example, if supporting middle-class family values implies promoting limitations on technologies, but working-class parenting values more often focus on access to technology and the role it plays in family togetherness, then how would these values resolve in design?

Investigating differing class values and structural realities is a necessary step toward more inclusive design in HCI, but we acknowledge that the task of resolving differences in the form of design is often less than straightforward. This is certainly the case with implications from our own work which touches on both class and the morally-laden discourse of child-rearing. Indeed, earnest investigations of class, rather than reducing to directives for design, may more often complicate the designer's task by bringing to light a plurality of perspectives and values and the reasons behind them. For instance, based on our findings we may ask how parenting decisions are complicated

by research on technology use by children, much of which is consumed by the middle-class and not the working-class.

We want to emphasize that these differences are not “problems” to be “solved” but resources – albeit ones that have been largely neglected by HCI – for imagining future technologies, their uses, and their potential for social change.

Class as an analytical category

While we did not go into this research looking for class differences, it nonetheless emerged as a significant category. This analytic category can not only encapsulate the various values and practices of these groups, it can also point to systemic differences that exist between them. Class is a common analytical category in sociology, and in turning to that literature (e.g. [11,16,20,23,28]) we were able to deepen our analysis with a nuanced understanding of its key aspects (as well as its limits) and how our findings corroborated them. The literature on representation, problematization, and othering from cultural studies (e.g. [14]) helped us understand the implications of our own middle-class perspectives in the process.

Unlike sociology, anthropology and related fields, CSCW and HCI have generally neglected class as a valid category of analysis. We share many of our colleagues’ concerns about the use of class as a category, and in particular, we are not suggesting that social mobility is impossible or should be discouraged – far from it. However, we do want to draw attention to the ways that values are shaped by structural, class-based differences in the lives of our 75 participants as a new area of exploration for others in CSCW and HCI.

CONCLUSION

The striking differences we discovered between these groups suggest that analysis along socioeconomic lines – sympathetic but meticulous and with eyes wide open – is a fruitful avenue for future exploration in human-computer interaction and design. In particular, without the kind of deep understanding of different communities that one can obtain through ethnographic work, and despite an active awareness of the field of user-centered design over the last thirty-plus years, many of us find ourselves designing for those most like ourselves – largely middle-class professionals with middle-class values – or we may make incorrect assumptions based on stereotypes about those who are different. Explicitly attending to what differences there are, acknowledging the similarities, and actively and sympathetically trying to make sense of the whole picture is the best way to overcome these obstacles.

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REFERENCES

1. American Academy of Pediatrics. Children, adolescents, and television. *Pediatrics* 107, 2 (2001), 423-426.
2. Ames, M.G., Go, J., Kaye, J.J., and Spasojevic, M. Making Love in the Network Closet: The Benefits and Work of Family Videochat. *Proc. CSCW 2010*, 145-154.
3. Brewer, E., Demmer, M., & Du, B. The Case for Technology in Developing Regions. *Computer* 38, 6 (2005), 25-38.
4. Bryant, J. and Bryant, A. *Television and the American Family*. Lawrence Erlbaum Associates, 2000.
5. Carvajal, D. "Growing concern over safety of cellphones for children." *New York Times*, March 7, 2008.
6. Cockton, G. A development framework for value-centred design. *Ext. Abs. CHI 2005*, 1292.
7. Dillahunt, T., Mankoff, J., Paulos, E., and Fussell, S.R. It's Not All About "Green": Energy Use in Low-Income Communities. *Proc. UbiComp'09, ACM Press*, (2009).
8. Friedman, B., Kahn, P.H., & Borning, A. Value-Sensitive Design and Information Systems. In P. Zhang & D. Galletta, *Human-Computer Interaction in Management Information Systems: Foundations*. M.E. Sharpe, Inc., 2006.
9. Garfinkel, H. *Studies in Ethnomethodology*. Prentice-Hall, 1967.
10. Gauntlett, D. and Hill, A. *TV Living: Television, Culture, and Everyday Life*. Routledge, London, 1999.
11. Gilbert, D. *The American Class Structure in an Age of Growing Inequality*. Wadsworth, 2002.
12. Grimes, A. and Harper, R. Celebratory technology. *Proc. CHI 2008*, 467-476.
13. Guernsey, L. *Into the Minds of Babes: How Screen Time Affects Children from Birth to Age Five*. Basic Books, 2007.
14. Hall, S. The Spectacle of the 'Other.' In *Discourse Theory and Practice: A Reader*. Sage Publications (2001).
15. Hutchinson, H. and et al. Technology Probes: Inspiring Design For and With Families. *Proc. CHI 2003*.
16. Lareau, A. *Unequal Childhoods: Class, Race, and Family Life*. University of California Press, 2003.
17. Le Dantec, C. Exploring mobile technologies for the urban homeless. *Ext. Abstracts CHI 2010*, 2883-2886.
18. Le Dantec, C.A., Poole, E.S., and Wyche, S.P. Values as lived experience. *Proc. CHI 2009*, 1141-1150.
19. Morley, D. *Family Television: Cultural Power and Domestic Leisure*. Routledge, 1986.
20. Nippert-Eng, C. *Home and work: Negotiating boundaries through everyday life*. University of Chicago Press, 2006.
21. Papert, S. *The Connected Family: Bridging the digital generation gap*. Longstreet Press, 1996.
22. Rouse, R. Mexican Migration and the Social Space of Postmodernism. In J.X. Indu and R. Rosaldo, *The Anthropology of Globalization*. Blackwell, 2002.
23. Saxenian, A. *The New Argonauts*. (2001).
24. Spigel, L. *Make room for TV: Television and the family ideal in postwar America*. University of Chicago Press, 1992.
25. Suchman, L. *Human-Machine Reconfigurations: Plans and Situated Actions*. Cambridge University Press, 2006.
26. Volda, A. and Mynatt, E. Conveying User Values between Families and Designers. *Design*, (2005), 2013-2016.
27. Wenger, E. *Communities of Practice: learning, meaning and identity*. Cambridge, 1999.
28. Willis, P. and Aronowitz, S. *Learning to Labour*. Columbia University Press, 1983.