

# Re-Placing Faith: Reconsidering the Secular-Religious Use Divide in the United States and Kenya

**Susan P. Wyche**

Georgia Institute of Technology  
85 Fifth St. NW  
Atlanta, GA 30308 USA  
spwyche@cc.gatech.edu

**Paul M. Aoki**

Intel Research  
2150 Shattuck Ave., Ste. 1300  
Berkeley, CA 94704 USA  
aoki@acm.org

**Rebecca E. Grinter**

Georgia Institute of Technology  
85 Fifth St. NW  
Atlanta, GA 30308 USA  
beki@cc.gatech.edu

## ABSTRACT

In this paper, we report on design-oriented fieldwork and design research conducted over a six-month period in urban centers in the United States and Kenya. The contributions of this work for the CHI/CSCW community are empirical and methodological. First, we describe how recent design discourse around “designing technology for religion” creates an artificial distinction between instrumental and religious ICT use, particularly in developing regions. As illustrative examples, we relate three themes developed in the course of our fieldwork, which we term mindfulness, watchfulness, and embeddedness, to both “secular” and “religious” aspects of life in the communities studied. Second, we make a methodological contribution by describing how we used design sketches of speculative design concepts to extend and complement our fieldwork. By producing these sketches and soliciting feedback, we elicited additional data about how participants viewed the relationship between religion and ICT and prompted self-reflection on our own ideas.

## Author Keywords

Domestic technology, religious technology, sketching

## ACM Classification Keywords

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

## INTRODUCTION

A recent flurry of SIGCHI activity – keynotes, workshops and sessions at CHI; a new column in *interactions* – signals a new research focus on design for developing regions. But what does it mean for the HCI community to engage with this agenda? It is not simply design for “international users,” nor is it simply design for “development,” with its

emphasis on producing “appropriate” and “sustainable” technologies addressing goals such as poverty reduction. In both cases, pressure for immediate relevance tends to run counter to the usual strengths of academic research: a long time-scale, a tolerance for exploration and speculation, and a strong ethos of theoretical and empirical grounding. However, there are opportunities for HCI research that do exploit its natural depth and time-scale. An example is research on interface principles for computer users with limited literacy (e.g., [25,28]), a widely-acknowledged challenge for the adoption of information and communication technology (ICT) in developing regions.

We have chosen to examine the relationship between the design and use of ICT and a very different, but equally oft-remarked, societal trend in developing regions: the expansion of popular religion. In many countries, including key “emerging markets” such as Brazil, Nigeria and Kenya, the recent growth of revivalist forms of world religions (such as charismatic Christianity [29]) is challenging the Western idea that societies inevitably secularize over time [7]. The significance of this trend can be seen in estimates that by 2050 only about one-fifth of the world’s three billion Christians will be non-Hispanic Caucasians [4].

We are conducting a multi-year, multi-sited project involving design fieldwork in North America, Sub-Saharan Africa, and Latin America. The project focuses on the consumption and appropriation of ICT by evangelical and revivalist Christians, particularly those attending the kind of large, inclusive churches that are commonly called *megachurches*<sup>1</sup> in the United States (U.S.) [36]. Furthermore, we wanted to understand how users’ faith could inform and inspire concepts for speculative ICT devices. To be clear, the project is not aimed at producing “ICT for Christians.” Rather, taking for granted the importance of religious growth trends, our goal is to understand how faith-based worldviews affect adoption and use of ICT and how this is relevant in design. Users’ worldviews are of profound importance for designers, as the interface metaphors used, the worldview implicit in a system’s “usage model,” and the language used to describe

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<sup>1</sup> Megachurches are typically defined as those with 2000 or more regular attendees [36,37] and often emphasize rapid congregation growth.

features can either work for or against a system's appeal and usability. Furthermore, designers' understanding of users' worldviews affects the degree to which users can meaningfully participate in the design process.

In this paper, we report on design-oriented research conducted over a six-month period in urban centers in the U.S. and Kenya. We begin by discussing previous research on religion and ICT, followed by a description of our field sites, methods, and participants. We then turn to our empirical contribution, a discussion of three themes developed in our fieldwork – mindfulness, watchfulness, and embeddedness – that highlights how secular and religious aspects of life are intertwined, particularly in Kenya. We then turn to a design contribution, illustrating how sketches of speculative ICT designs can be used to extend fieldwork by surfacing more data about the relationship between technology and religion.

### BACKGROUND: TECHNOLOGY AND RELIGION

Scholars in anthropology and sociology frequently discuss religion, yet it is a topic with which ICT designers rarely engage directly. This is surprising given its importance to billions of people worldwide. Like Bell [5], we speculate that this lack of engagement may be due to an assumption that technology and religion must live in constant tension, each precluding a complete fulfillment of the other. Recently, however, religion has arisen more frequently in discussions of “international” design (e.g., [23]) and more broadly in HCI and CSCW discourse (e.g., [26]). Within these communities' scope of concern, we can identify three main threads of work:

*Online spirituality.* Perhaps the most widely known of the three threads, this focuses on the impact of virtuality and mediated communication on spiritual life. Studies in this genre typically focus on religious practice in online community settings [9,30]. A common finding in such studies is that of leveling, a flattening of organizational hierarchies that in turn raises questions about control [20]. These studies also point to the widespread use of technologies by laity, e.g., participating in computer-mediated prayer, searching for places to attend services, and learning about one's faith [9,30].

*Design exercises.* Other designers and researchers have explored how religious practices can motivate novel design ideas. Broadly, these explorations fall into three categories. First, there are applications of user-centered design techniques to religious tasks. Examples from the HCI literature include AltarNation, a system that allows physically-isolated individuals to pray and meditate with others [17], and Gospel Spectrum, an interactive Bible visualization tool [11]. Examples of products include the Ilkone i800 Islamic mobile phone [1] and the eQuran e-book reader [2]. Second, there are techno-aesthetic explorations, such as Soner Ozenc's illuminated prayer rug that glows more brightly as it is turned towards Mecca [1]. Third, design has been used to critique and comment on the

intersection of religion and material culture. An example of this is the iBelieve [1], a plastic cap that turns an iPod music player into a crucifix.

*Studies of technological appropriation.* Most recently, HCI researchers have begun to examine appropriation of technology in different religious communities. Wyche *et al.* [39] studied ministers in Protestant Christian churches in the Southeastern U.S. Motivated by reports of increasing technology use within Protestant Christian ministry (particularly in megachurches), their study highlighted how pastors use technologies to support administrative and spiritual practices. Woodruff *et al.* [38] studied Orthodox Jewish families who employed home automation technology to facilitate observation of the Sabbath. Thus far, design praxis has been addressed only in the form of general design implications.

We build on these threads of prior research and share a focus on personal and social religious practice. However, we have the additional goals of understanding how practice spans the secular-religious divide (particularly in developing regions) and illustrating how to bring design research into the fieldwork process.

### STUDY: SITES, METHODS AND PARTICIPANTS

#### Site Selection

Our field sites, Nairobi and Atlanta, are urban centers with a number of relevant similarities and connections. Both are regional commercial centers (Atlanta within the Southeastern U.S., Nairobi within eastern Sub-Saharan Africa) and have comparable metropolitan populations. They are also centers of intense Christian organizational activity, with churches always forming, growing, and failing. Finally, Atlanta is home to a large Kenyan migrant community that facilitated participant recruiting in Nairobi.

Our work in Atlanta is an extension of our prior research on ICT use in megachurches [39,40]. Megachurches are noted as aggressive adopters of ICT. While only a few percent of the U.S. population worships at a true megachurch with 2000+ attendees, the trends they shape extend throughout a highly-concentrated religious landscape (45% of U.S. Protestants worship at the largest 10% of churches [37]). The prior Atlanta research provides a foundation for thinking about ICT use among Christian laity (i.e., those members of the congregation who are not part of the religious organization) and, combined with the new fieldwork, serves as context for comparative research.

Our main interest in Nairobi as a site was not, however, its linkage to Atlanta, but the way in which Kenya represents a kind of “developing world” Christianity. First, as Table 1 suggests, Christianity (and particularly renewalist Christianity) has a remarkable strength and pervasive presence in Kenyan public life. The term renewalist refers to Charismatic and Pentecostal Christians, who can be broadly distinguished from the evangelical Christians we studied in Atlanta in terms of affiliation and practices. For

% of all respondents who...	U.S.	Kenya
Identify as Christian	78	90
Identify as renewalist	23	56
Attend church at least once a week	44	80
Attend church more than once a week	16	33

**Table 1. Selected religious indicators (from [29]).**

example, unlike evangelicals, Pentecostals tend to affiliate with specific established denominations such as the Assemblies of God. Charismatics, while tending toward looser denominational affiliations than Pentecostals, share worship practices such as speaking in tongues and receiving of divine healings [18,29]. Despite these differences, renewalist and evangelical Christians share a strong commonality in their intense belief that the Bible is the word of God and should be interpreted literally. Moreover, it is this vibrant form of Christianity that is growing rapidly in developing regions and in Kenya (though Islam is often more prevalent elsewhere) [18].

Second, to the degree that one accepts an essentialist notion of “African traditional religions” (a set of cultural and spiritual beliefs indigenous to the African continent), contested by Western historians [31] but often alluded-to by our Kenyan informants and African scholars (e.g., [8,27]), it can be claimed that received traditional culture ties together religion and society:

Religion permeates into all the departments of life so fully that it is not easy or possible always to isolate it. A study of these religious systems is, therefore, ultimately a study of the peoples themselves...[T]o be without religion amounts to a self-excommunication from the entire life of society, and African peoples do not know how to exist without religion. ([24], pp.1-2)

Thus, given our interest in understanding how religion in developing regions shapes how believers view and adopt ICT, Kenya provided a compelling site.

### Methods and Participants

Data collection took place in two phases over a six-month period. First, we focused on understanding U.S. megachurches and their laity to get a sense for how parishioners were using technology; to become familiar with the religious terminology used by this population; and to explore how religion influences ICT adoption and use in a society with which we were familiar. Second, we undertook a six-week program of design-oriented fieldwork in Nairobi, Kenya.

In Atlanta we conducted semi-structured, at-home interviews with 16 individuals who attended area megachurches. We recruited megachurch laity, because like renewalist Christians, they tend to have a strong and vibrant faith, attend church and/or church related activities weekly, and are likely to subscribe to a literal interpretation of the Bible [18,36]. Participants were recruited using community email lists, personal contacts, and flyers

distributed at churches in the metro-Atlanta area. Almost all of the primary interviewees (11 women and 5 men) were adults in a variety of life-stages (from recent college graduate to retirees) and occupations. All attended megachurches and self-identified as Christians, half identifying with a specific denomination (e.g., Presbyterian, Baptist, etc.). Interviews were complemented by observational visits to Sunday morning services at ten metro-Atlanta megachurches.

In Nairobi, we conducted semi-structured, at-home interviews in 10 middle- and upper-middle-class households. We recruited these participants by using personal contacts that we had developed within the large Kenyan migrant community in Atlanta who introduced us to people in Nairobi. We later employed a snowball sampling technique to achieve a more diverse sample. Households were distributed widely throughout the greater Nairobi area, with some living an hour outside of the city. The interviewees (9 men and 7 women – we interviewed both husband and wife in 6 homes) were married working adults holding a variety of office occupations and raising school-age children. All participants self-identified as Christians and seven identified with a specific denomination. To complement the interviews we spent the night at a participant’s home, attended various social gatherings, and visited Sunday morning services at five of Nairobi’s largest churches. Furthermore to learn about the organizational context of religious life in Kenya, eight office interviews were conducted with pastors at some of Nairobi’s largest Protestant churches.

In both groups, interviews typically lasted one to one-and-a-half hours and included a tour of relevant parts of the home or office. All participants were asked about how their faith and religious activities interact with their daily life and technology use. To gain additional insights from a design perspective, we used pre-prepared photo-cards to elicit stories about faith and technology use from our Kenyan participants [15].

The corpus on which our findings are based includes 35 transcribed interviews, 70 pages of fieldnotes and over 1000 photographs. Standard techniques for extracting analytic points, thematic clustering, and intermediate memo-writing were used in the course of the analysis. Data triangulation occurred across researchers, across media (e.g., fieldnotes, transcripts, artifacts) and across sites (U.S. and Kenya). We also made use of design sketching in our analysis (we will return to this later in the paper).

### FINDINGS

In this section we discuss the findings from our data analysis. Broadly, we describe the consistencies within our two groups that are relevant to design. However, within the set of similarities were differences that were largely due to infrastructural disparities, by which we mean the lack of access to and availability of ICT and the infrastructure required to operate them (i.e., telephony and power) that

became apparent when we compared the results of our research between the two groups.

It was the differences that emerged during analysis that were the impetus for sketching design ideas (which we describe later in the paper). The sketched technology concepts are examples of developing technology grounded in daily life, with an emphasis on understanding faith's role in it. Thus, they demonstrate how ICT can be designed for *both* instrumental and religious purposes.

In the remainder of this section, we introduce three themes that represent some ways in which people made decisions about adoption and use of ICT based on religious criteria: mindfulness, watchfulness, and embeddedness. These themes are by no means intended to be an exhaustive taxonomy of Atlanta or Nairobi life or even of our data. However, they do represent a clustering of some specific design-relevant aspects of Christian life that emerged from our fieldwork.

### Mindfulness of faith

During our interviews, we asked how faith influences participants' lives. All of our participants in Atlanta and Nairobi talked about continuing to grow and learn about the teachings in the Bible and coupled that to wanting to be mindful of their faith throughout the day. Mindfulness, or a person becoming aware of their thoughts and actions in the present moment, is an important element in many religious faiths [21]. When asked if they used technology to stay focused on their faith, participants answered with stories about using computers, software, and mobile phones to do so. They also discussed a broader range of technologies – such as pen and paper notes – and the role played by these technologies in focusing them on their Christian faith.

Individuals in Atlanta and Nairobi both articulated how ICT was interwoven with mindfulness. For example, some used email or mobile text messaging (SMS) services to receive daily Bible-based devotionals. Others described how scheduling software helped them structure their days around faith-related activities (e.g., morning prayers, Bible study, and attending church on Sundays).

Another widespread practice was using technology to send and receive prayer requests – solicitations to and from others to pray. Kenyans were more likely to use SMS for this, whereas Americans would rely on email or check their church's website (many posted weekly lists of parishioners in need of prayer online). Both Atlanta and Nairobi participants spoke of the centrality of prayer to their faith; it directly reminded them of God's impact in peoples' lives, including their own, particularly during times of crisis. The following represents many participants' thoughts about mindfulness and prayer:

One thing that I found very – very helpful to our lives as a family and to me as a person is the issue of prayer. I've prayed for things and I've seen them come true. You have a

problem and you don't know how to solve it. But I find that when I pray I find a solution.

– Nairobi churchgoer

One of the most striking consistencies found among our participants was the desire to recall their Sunday worship experience during the following week. Parishioners in Atlanta and Nairobi were particularly interested in remembering key phrases of sermons that resonated with them so that they could apply it to life situations away from the church. This is how one Atlanta Christian described it:

...I mean, I'm learning so much, I mean, it's something that you can go through at home, you know, try to remind yourself because it's easy to get it when you're there but it's not easy to actively keep it in your memory and to keep applying it.

– Atlanta churchgoer

Note-taking was a strategy employed by more than half our participants to help them “actively keep” what was heard on Sunday in their memories (Figure 1). Participants talked about note-taking in interviews and during church services we consistently observed parishioners balancing spiral-bound notebooks and Bibles on their laps, attentively listening to what was being said and jotting it down. When we toured participants' homes, most showed us stacks of notebooks and binders filled with notes from services. They took notes because it focused them on what was being taught in church and insured what was said on Sunday “stuck with them” throughout the week.

They always remind me. You know, like I said, “Out of sight, out of mind?” I write things in notebooks and I look through them from time to time. So at least I'll remember what was being said. And a lot of things I just integrate into my daily life.

– Atlanta churchgoer

You can see these [notebooks] are for personal study. This is where I have taken from the church; you can see a continuation from this service. I normally write the day, like this. I write the days, also the person preaching.

– Nairobi churchgoer

Though the practice of taking notes during services was consistent, there were differences between Nairobi and Atlanta participants that can be attributed to differences in availability of Internet access. In many cases, Atlanta participants used the Internet to supplement their note-taking activities. Their churches had websites that offered

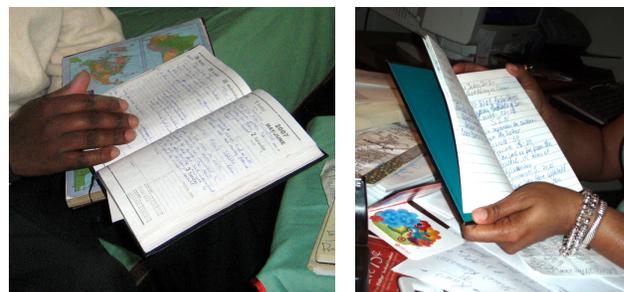


Figure 1. Participant notebooks in Nairobi and Atlanta.

outlines, slide presentations, and videos of the sermons that parishioners can watch at their convenience.

I use a lot of... recently I've been going online to different gateway Bible-study places and pulling down Bible studies off of there. And then just sometimes instead of writing in a journal, I'll type them up on a computer, save them in a file.

– Atlanta churchgoer

Indeed, all Atlanta participants had Internet access at home and reported relying on it to help them “grow in their faith.” Examples included watching sermons online, praying with family using voice over IP (VoIP) services, and looking up Bible verses. In contrast, none of our Nairobi participants reported having Internet access at home. Reasons for this included high service cost, poor connectivity, and lack of personal computers. With fewer supplemental resources available, it was important to be more thorough about capturing elements of the services in notes while at church.

Whether it was using a sticky note to remind them of a friend in need of prayer, reading daily devotionals online, or studying a ledger filled with notes, it was clear that participants used technologies that have typically been associated with secular practice for more than strictly instrumental purposes. Interactions with these artifacts reminded them that their daily activities were guided by something larger than themselves – their Christian faith.

### Watchfulness

Many aspects of Kenyan society appear to be strongly oriented towards community norms. Consider security. In the middle-class homes we visited, security measures in the form of private watchmen, gates, walls and reinforced doors were universal; this is not surprising given the extreme economic inequality in Nairobi. However, what did surprise us was how the security measures seemed to operate. Private watchmen were unarmed; alarms were rarely evident; walls seemed surmountable with effort. This in spite of the fact that most, if not all, middle-class developments are adjacent to a shantytown. For example, in Figure 2, the vast slum of Kibera is just over a low wall from one of our participant's house. Clearly, it is not the physical security measures themselves that are deterring crime as much as the social controls they represent [14], particularly in the form of the unarmed watchmen.

We saw a similar kind of watchfulness seemingly being applied to the consumption of media. During tours of participants' homes we asked them to talk about their computers, radios, media players (e.g., DVD or VCR) and televisions. Family members in seven of the Nairobi homes showed us collections of African gospel CDs and Christian videos and spoke of keeping their TVs tuned to the news and “Family TV” – the country's lone Christian-oriented channel. Our Atlanta participants also showed us media collections, but these were more likely to be predominately secular rather than religious in content. Given the increased access to media content facilitated by Internet access at home, our Atlanta participants were more concerned with

avoiding online sites that reported erroneous information about their faith or displayed content that opposed their values. Whether through the TV or computer, it was common for participants in both Atlanta and Nairobi to note that secular media contradicted key tenets of their faith and that they worked to avoid it.

I just stopped listening to anything else. I just got so tired of the, you know, the references to sexuality and stuff like that, that I just did not believe in, that I just started listening to Christian all the time. And they have a lot of the Christian music that I hear on the radio in the contemporary worship.

– Atlanta churchgoer

It means at some point or another you're going to have to, like, evaluate yourself and come to some major decisions. Are you following God or are you not following God? Are you obeying God or are you disobeying God? You'll have to make those decisions sooner or later when you listen to the station, you know. With secular stations you don't have to make that choice. You can just hide in your own cocoon.

– Nairobi churchgoer

Despite this broadly shared characteristic, we found differences in how U.S. and Kenyan participants wanted to monitor access to media. Like security, Kenyans were interested in relying on social controls for enforcement, whereas Americans often used physical or technological controls. For example, a U.S. college-aged Christian male described downloading a program that monitored his Internet usage:

There's one thing. It's called the XXX Church. And they have this accountability kind of stuff. They have this piece of software that you download that pretty much keeps track of what websites you look at. And if there are any questionable kind of ones, because that is something I've struggled with.

– Atlanta churchgoer

In contrast, rather than using technology, Kenyans monitored media consumption themselves, and were



Figure 2. Security in estate adjacent to Kibera.

especially vocal about instilling the appropriate values in their children so they could make their own decisions regarding the programs they watched. This quote from a mother of two reflected what other Kenyans said:

When things like wrestling come on [the children] know to switch-off and monitor themselves, they switch off by themselves because we have taught them this thing is not right. They will not watch – when people start showing their ways of pornography, they will switch off the TV. They know that.

– Nairobi churchgoer

In conclusion, what we want to stress here is that irrespective of whether the content was secular or religious, faith impacted all of our participants' interactions with media. In other words, faith-based decisions play a role in determining whether, and if so how, some people will decide to appropriate media and content.

### Embeddedness

Rural-urban migration is a general phenomenon in developing regions [35], and though all of our participants lived in and around Nairobi, many alluded to “the village” (i.e., the rural or peri-urban location where they grew up). There was a desire to remain embedded in a larger social structure, i.e., to retain extensive ties with family and community members living in rural Kenya. ICT facilitated these ties. Notably, because the landline telephone infrastructure is sparse, recent improvements in mobile phone cost and coverage have greatly simplified communication with family living in the village. A recently-deployed money transfer system based on text messaging, M-Pesa, has also simplified the process of remitting money to distant relatives.

This is not to say that mobile phones have been a panacea. One participant noted that one must still sometimes schedule a time to call those living in rural areas because his extended family members must find a location with adequate coverage. More importantly, participants noted the difference in their pace of life in the city as opposed to the village. Indeed, many professionals talked about how the faster pace of life in the city left them with less time to engage in faith building activities and to stay connected with family members.

So if someone doesn't understand that – so my mother says, “You never call nowadays.” But it's not that you don't want to call, it's only that everyday you are rushing. You have to make money, big traffic jam, leaving the office to be together. You have to run from office to class, from class to the house, from the house, you know, you are tired, you sleep.

– Nairobi churchgoer

It may not be clear why rural-urban connections should matter any more in Kenya than they do in any other migrant population, especially since rural-urban migration is so frequently described in terms of urban opportunity (e.g., “The choice, for many, is going hungry in the countryside or finding a job while living in squalor in [Nairobi]” [3]).

However, in Kenya as elsewhere in Africa [35], migrant households are often *multi-spatial* [13]; for those whose urban positions are less secure, the family will maintain both rural and urban dwellings to maximize its collective economic diversity. Even middle-class Kenyans often described Nairobi as a temporary place to live and reported plans to return (eventually) to their places of origin.

Of relevance here is that this multi-spatiality has a strong cultural element, sometimes called *home*<sup>2</sup> [27], that is based in part on elements of traditional religion that have been retained in social practice [24]. Tribal and other kinship-based connections are still important:

[Maintaining] relationships in African countries is really powerful. It's an integral part of who we are. It's an integral part of our identity. You have relationships with your mother and your father and all your siblings and your extended family, your uncles, your aunts as if they are part of you...

– Nairobi churchgoer

The ICT use just discussed, then, is not simply a way to “stay in touch with friends and family” or a means of facilitating economic exchange, but rather takes on significance as a means of managing multi-spatial activities and relationships that are difficult to “isolate” from religious identity and practice.

We are not suggesting that maintaining this embedded relationship is inherently less important in the U.S. However, there are many more means for families to connect in the U.S. (including reliable postal and telephone systems) that are far less widely available in Kenya's rural regions. Instead, we want to suggest that, given the role of family and community in Kenyan culture, the disconnect created by rural-urban migration should be considered in ICT development, and that religion is a central component of understanding the motivation for wanting these ties.

### DISCUSSION: SKETCHING, DESIGN, AND ANALYSIS

In this section, we turn to our study's design thread and to the paper's methodological contribution. In conjunction with the Kenya fieldwork<sup>2</sup> just described, we undertook a series of design exercises<sup>3</sup> to help frame our findings in material terms; we focus here on the production of, and interaction around, sketches of speculative design concepts [12]. The goal was not “need-finding” but rather to gain further insight into the interaction of popular religion and the appropriation of ICT. Three main types of outcome from these exercises informed the themes emerging from the fieldwork. First, the sketching of speculative design

<sup>2</sup> Given our broader interest in design for developing regions we focused our efforts on concepts grounded in findings from our Kenya fieldwork. In the future we will do the same with our U.S. data.

<sup>3</sup> During our study, we organized several design engagements with groups of Nairobi university students – design students at the University of Nairobi and computer science students at Jomo Kenyatta University of Agriculture and Technology. Aside from interaction around sketches as described here, exercises included a design *charrette* (collaborative studio exercise) and a collection of multi-week iterative design projects.

concepts, which reified ideas described to us by our study participants, helped to elicit discussion of social considerations that would shape the *appropriation of ICT in religious settings*. Second, imagining a material object (not necessarily a realistic product) that a study participant might use to address a particular situation implicitly drew out *latent practical factors* underlying the situation that would affect ICT adoption and use. Third, responses to sketches of speculative design concepts sometimes led us to recognize the need for *defamiliarization* [6] – to question our assumptions about the local context of use. In the subsections that follow, we consider the three types of outcome in turn, respectively illustrating the interplay of design process and fieldwork in developing the themes of mindfulness, embeddedness and watchfulness.

Sketching is, of course, a common design practice with a large research literature and has long been used to elicit feedback from users (see [10] for a general overview). Because sketching is low-cost and an efficient way to generate multiple ideas, it was a straightforward way to “translate” the themes emerging in our data into technology concepts. However, sketching is not only a useful tool for exploring ideas and eliciting feedback. It can also assist designers in their thinking, prompting self-reflection and bringing unconscious aspects of experience to conscious awareness [33]. Our sketches provided a way for us to

reflect on our data, one that explicitly used the lens of speculative design concepts that reified our understanding of the relationship between religion and ICT in Kenyan life.

Over the course of the Kenya fieldwork, we generated and used 20 hand-drawn design sketches. In a way analogous to keeping fieldnotes or analytic memo-writing, freehand sketching during fieldwork helped us to account for and describe our observations. It also allowed us to capture preliminary ideas that occurred to us or expand upon those that were suggested to us during fieldwork. As the research progressed, we shared our design sketches with groups of students with whom we had established working design relationships (see footnote 3) and who were knowledgeable about both design (including sketching practice) and life in Kenya. All of the sketches were shown and the students were asked to provide critiques – comment on them, pick a favorite and explain their choice, and so on. The discussions below reflect not only our thoughts about and responses to the design concepts but theirs as well.

### Concepts for mindfulness:

#### Religion and the appropriation of mundane technology

Participants expressed an overwhelming desire to stay mindful of their faith by integrating it into their daily lives during our interviews. This suggested a range of design possibilities. For instance, in the same way that material artifacts (plaques, sticky notes on refrigerators, and notebooks filled with prayer lists) could facilitate individuals’ mindfulness of their faith, so might computational artifacts. The design questions for us were, “Are there issues so specific to the religious use case that entirely new systems would be required?” and “Can current technology be extended in relatively straightforward ways that would make them suitable for religious appropriation?”

As previously mentioned, note-taking was described repeatedly in the U.S. and Kenya as a way to stay focused in church services, thus helping participants stay mindful of the message throughout the week. In response to this we produced a number of sketches for electronic note-taking systems to be used in church and other places. Given the prevalence of mobile phones in Kenya and other emerging markets, most of our concepts centered on incorporating capture and access features into mobile phones.

Naturally, one series of concepts drew on the substantial HCI literature on systems to support note-taking in the office and classroom. For example, some concepts (Figure 3) extend a long line of paper-based physical/virtual note-taking interfaces found in the CHI literature (e.g., [34]). Some concepts imagined “smart paper” solutions similar to Paper++ [22], whereas others (Figure 4) were based on new ultrasonic pen-trackers that do not require instrumented notebooks or special paper. Figure 4, in particular, was imagined as a straightforward extension of existing practices and context. Unlike the U.S., where PCs, the Internet, and photocopiers are widely available and commonly used to disseminate information, Kenyans

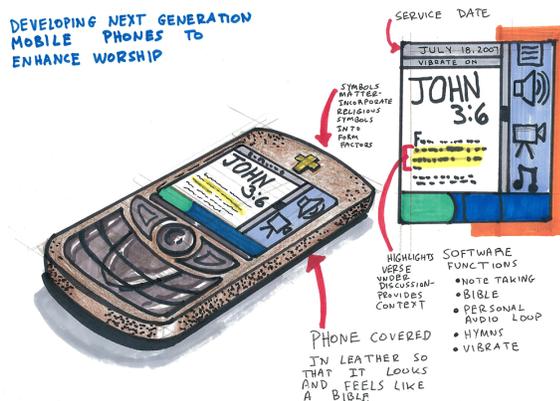


Figure 3. Multimedia capture note-taking system.



Figure 4. Pen-tracking note-taking system.

frequently rely on copying information by hand. It thus seemed practical to imagine alternative ways for them to disseminate written information (i.e., via the mobile phone).

However, we received ambivalent feedback from the students about design concepts in which technology was clearly visible. On one hand, they were interested in a system that would help them archive and share their notes; on the other hand they questioned our designs. In part, this was due to questions regarding the appropriateness of visibly operating “computer”-like technology in a church sanctuary. Despite aggressive adoption of technology in megachurches in the U.S., there remain understood norms about behavior in churches that differ from office and classroom environments. The most prominent norm is that church is a place of worship, not work. Indeed, reverence to a higher power is the priority, unlike office settings where efficiency and productivity tend to be more valued. These differences must be considered when developing a note-taking system for church where the presence of laptops is questionable as well as potentially distracting. Potential note-taking applications must strive to preserve “inner stillness” that accompanies mindfulness towards God.

It does seem like one could, for the most part, provide generic technology for these purposes and that it would even be useful for more general (at least currently) practices like “hand copying.” The design challenge is to make it acceptable to use ICT in sensitive situations, in which case something like the pen-tracker (which looks like a regular pad of paper) may be more acceptable than something that is obviously a mobile phone. Finally, considerations would have to be made so it preserves, rather than distracts reverence during church worship.

#### Concepts for embeddedness: Drawing out latent factors

While considering designs to help household members maintain their embeddedness in multiple social and spatial contexts, we drew on a rich variety of projects on “connecting homes” that range from early work on Casablanca [16] to recent work on HomeNote [32]. From a technical perspective, the design space is well-explored and it is easy to come up with concepts. However, in the course of doing so, many latent issues come to the fore. For example, issues pertaining to families’ communication habits surfaced during conversations around Figure 6.

One concept that resulted in positive feedback from the students arose from casual observations about home décor. During our home visits we were struck by the consistency of the “calendar aesthetic” – homes typically had several calendars hanging on the living room walls and out-of-date calendars often remained hanging (Figure 5). When we asked study participants about this, we were typically told that many people enjoyed the photographic imagery and that access to promotional corporate calendars was widely coveted. This quickly inspired the concept of an inexpensive, SMS-enabled calendar device with just



Figure 5. The Kenyan calendar aesthetic .



Figure 6. SMS-enabled family calendar.

enough intelligence to enter and display a small bit of text (i.e., a reference to a daily Bible verse) as well (Figure 6). As a calendar, the device would be highly visible, and (as with minimally intimate objects [19]) verses could be appropriated to communicate either purely phatic signals or rich and allusive messages depending on shared context.

In discussions with the students around rural-urban communication, design factors we had not fully considered became apparent. As mentioned earlier, the pace of life in cities differs between the rural settings, thus making finding times to talk challenging. Also, individuals living in rural setting generally have less disposable income than those in the city, making them far less likely to make voice calls or return missed calls. Finally, power and mobile connectivity can be relatively spotty in rural areas, privileging SMS over voice and simple devices over powerful ones. Hence, the appeal of the idea lay not only in its aesthetic but in its pragmatics.

#### Concepts for watchfulness: An encounter with defamiliarization

Our findings suggest that Americans (unlike Kenyans) often turned to technology to control their access to media content. In addition to the software application described by our participant there are a variety of other technologies designed to monitor media consumption in the U.S., including the “V-chip” for television and Net Nanny™ for the Internet. We naively assumed that a similar approach would address the desire of Kenyan parents to ensure that their children do not consume inappropriate media. For example, we imagined a system that allowed a parent to preview media before it was made accessible to children and decide whether it could be played for the household



Figure 7. Remote parental media control.



Figure 8. SMS media recommender system.

members (Figure 7). Similarly, we imagined a system in which communities of users sent text messages to rate a program in terms of its moral appropriateness (Figure 8) in much the same way that online rating and reputation systems work on the Internet.

While we did not show these design sketches to study participants, we discussed the associated concepts with some of them during interviews. The response from these participants clearly indicated that case-by-case *control* was not desired. Instead, they stated that they wanted ways to instill the right values of parental respect and sexual morality into their children and friends so that they could trust them not to watch “bad” shows. Rather than relying on technology, parents wanted children to apply their personal judgment and monitor their own behavior.

Bell and others argues that the challenge for researchers and designers is to see beyond the naturalizing of devices and experiences to their cultural roots [6]. By “naturalize,” she refers to individual’s ideas about cultural phenomena that are rooted in their personal experiences. Our engagement with Kenyan Christians suggests that defamiliarization can also be useful in forcing designers to see their Western-centric assumptions about technology use and adoption in a new light and prompt designers to consider a wider range of options.

Given recent increased interest in producing technology for developing regions, we believe that incorporating “defamiliarizing exercises” (such as presenting concept

drawings to potential users) can be useful in prompting designers to question unwittingly projection of Western assumptions about technology adoption and use onto users in developing regions.

## CONCLUSION

In this paper we presented findings from a six-month design-oriented project examining the adoption and use of technology for religious purposes. In addition to adding to the growing number of design and empirical studies examining issues surrounding design of technology for developing regions and religious uses of technology, we make the additional contributions.

First, we present empirical findings grounded in our fieldwork. These illustrate the weak distinction between using technology for religious and secular purposes and that indeed, understanding how ICT are appropriated for religious purposes leads to broader design implications.

Second, we make a methodological contribution by describing how we used design sketches to reify our cultural and technical assumptions. By integrating design sketching early in our research process we were able to engage more deeply with the themes emerging from our fieldwork and unpack the Western assumptions embedded in our work. We suggest that design sketching and the dialogic engagement it promotes with users can be a device for defamiliarization. We believe integrating techniques that allow designers to better engage with users’ needs will become more critical as HCI developers focus on technology for developing regions.

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## REFERENCES

1. Design and Religion: New Forms of Faith (special issue), *I.D. Magazine*, March/April, 2006.
2. “Intel partners with Saudi firms to develop electronic Quran,” *AP Financial Wire*, Dec. 19, 2006.
3. “Kenya: Going Up or Down?” *The Economist*, June 9, 2007, 59.
4. Barrett, D.B., Kurian, G.T. and Johnson, T.M., *World Christian Encyclopedia: A Comparative Survey of Churches and Religions in the Modern World*. OUP, Oxford, 2001.
5. Bell, G., “No More SMS from Jesus: Ubicomp, Religion and Techno-spiritual Practices,” *Proc. UbiComp 2006*, Springer (2006), 141-158.
6. Bell, G., Blythe, M. and Sengers, P., “Making by Making Strange: Defamiliarization and the Design of Domestic Technologies,” *ACM TOCHI* 12, 2 (2005), 149-173.
7. Berger, P.L., “The Desecularization of the World: A Global Overview,” in *The Desecularization of the*

- World: Resurgent Religion and World Politics*, Eerdmans, Grand Rapids, MI, 1999, 1-18.
8. Bodewes, C., *Parish Transformation in Urban Slums: Voices of Kibera, Kenya*. Paulines, Nairobi, 2005.
  9. Brasher, B.E., *Give Me That Online Religion*. Wiley, New York, 2001.
  10. Buxton, B., *Sketching User Experiences: Getting the Design Right and the Right Design*. Morgan Kaufmann, San Francisco, 2007.
  11. Dang, A., "Gospel Spectrum," *Proc. DUX 2005*, AIGA (2005), 16(12-19).
  12. Dunne, A., *Hertzian Tales: Electronic Products, Aesthetic Experience and Critical Design*. RCA, London, 1999.
  13. Foeken, D. and Owuor, S.O., "Multi-Spatial Livelihoods in Sub-Saharan Africa: Rural Farming by Urban Households – The Case of Nakuru Town, Kenya," in *Mobile Africa: Changing Patterns of Movement in Africa and Beyond*, Brill, Leiden, the Netherlands, 2001, 125-140.
  14. Foucault, M., *Discipline and Punish*. Vintage, New York, 1977 [1975].
  15. Heisley, D.H. and Levy, S.J., "Autodriving: A Photoelicitation Technique," *J. Consumer Research* 18, 3 (1991), 257-272.
  16. Hindus, D., Mainwaring, S.D., Leduc, N., Hagström, A.E. and Bayley, O., "Casablanca: Designing Social Communication Devices for the Home," *Proc. CHI 2001*, ACM (2001), 325-332.
  17. Hlubinka, M., Beaudin, J., Tapia, E.M. and An, J.S., "AltarNation: Interface Design for Meditative Communities," *Extended Abstracts, CHI 2002*, ACM (2002), 612-613.
  18. Jenkins, P., *The Next Christendom: The Coming of Global Christianity*. OUP, Oxford, 2007.
  19. Kaye, J., Levitt, M.K., Nevins, J., Golden, J. and Schmidt, V., "Communicating Intimacy One Bit at a Time," *Extended Abstracts, CHI 2005*, ACM (2005), 1529-1532
  20. Kong, L., "Religion and Technology: Refiguring Place, Space, Identity and Community," *Area* 33, 4 (2001), 404-413.
  21. Langer, E.J., *Mindfulness*. Perseus, New York, 1989.
  22. Luff, P., Heath, C., Norrie, M., Signer, B. and Herdman, P., "Only Touching the Surface: Creating Affinities Between Digital Content and Paper," *Proc. CSCW 2004*, ACM (2004), 523-532.
  23. Marcus, A. and Gould, E.W., "Crosscurrents: Cultural Dimensions and Global Web User-Interface Design," *interactions* 7, 4 (2000), 32-46.
  24. Mbiti, J.S., *African Religions and Philosophies*. Heinemann, London, 1969.
  25. Medhi, I., "User-Centered Design for Development," *interactions* 14, 4 (2007), 12-14.
  26. Muller, M.J., Christiansen, E., Nardi, B. and Dray, S., "Spiritual Life and Information Technology," *CACM* 45, 2 (2001), 82-83.
  27. Mwendwa, S.K.K., *Home<sup>2</sup>: The Poetics and Politics of Housing in Kenya*. Ph.D. dissertation, Univ. of California, Berkeley, CA, 2000.
  28. Parikh, T., Ghosh, K. and Chavari, A., "Design Studies for a Financial Management System for Micro-Credit Groups in Rural India," *Proc. CUU 2003*, ACM (2003), 15-22.
  29. Pew Forum on Religion & Public Life, *Spirit and Power: A 10-Country Survey of Pentecostals*. Pew Research Center, Washington, DC, 2006.
  30. Pew Internet & American Life Project, *CyberFaith: How Americans Pursue Religion Online*. Pew Research Center, Washington, DC, 2001.
  31. Ranger, T., "The Invention of Tradition in Colonial Africa," in *The Invention of Tradition*, CUP, Cambridge, 1983, 211-262.
  32. Sellen, A., Harper, R., Eardley, R., Izadi, S., Regan, T., Taylor, A.S. and Wood, K.R., "Situated Messaging in the Home," *Proc. CSCW 2006*, ACM (2006).
  33. Sengers, P., Boehner, K., David, S. and Kaye, J., "Reflective Design," *Proc. Conf. on Critical Computing*, ACM (2005), 49-58.
  34. Stifelman, L.J., "Augmenting Real-World Objects: A Paper-Based Audio Notebook," *CHI '96 Conference Companion*, ACM (1996), 199-200.
  35. Tacoli, C., "Rural-Urban Interactions: A Guide to the Literature," *Environment & Urbanization* 10, 1 (1998), 147-166.
  36. Thumma, S., *The Kingdom, the Power, and the Glory: The Megachurch in Modern American Society*. Ph.D. dissertation, Emory Univ., Atlanta, GA, 1996.
  37. Thumma, S. and Travis, D., *Beyond Megachurch Myths: What We Can Learn from America's Largest Churches*. Jossey-Bass, San Francisco, 2007.
  38. Woodruff, A., Augustin, S. and Foucault, B.E., "Sabbath Day Home Automation: 'It's like mixing technology and religion'," *Proc. CHI 2007*, ACM (2007), 527-536.
  39. Wyche, S.P., Hayes, G.R., Harvel, L.D. and Grinter, R.E., "Technology in Spiritual Formation: An Exploratory Study of Computer Mediated Religious Communications," *Proc. CSCW 2006*, ACM (2006), 199-208.
  40. Wyche, S.P., Medynskiy, Y. and Grinter, R.E., "Exploring the Use of Large Displays in American Megachurches," *Extended Abstracts, CHI 2007*, ACM (2007), 2771-2776.