Computer Supported Cooperative Work
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Technology in Protestant Ministry

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Abstract. As Information and Communications Technologies (ICTs) have entered homes and more, so Computer Supported Cooperative Work (CSCW) research has expanded to examine new motivations for coordination and communications. Recently this has grown to include a focus on religion. But, yet, while the uses of ICTs by practitioners of a variety of faiths have been examined, far less is known about how officials within religious institutions adopt, use and reject ICTs. In this paper, we report findings from a study of American Protestant Christian ministers' use of ICTs. We present findings and discuss the use of systems in church management, worship, pastoral care, and outreach, and the challenges in integrating ICTs into religious practice. Despite these difficulties, we found that ministers, chose to experiment with ICTs because of their ability to sustain, reinforce and grow their church (laity and ministry collectively) community.

Key words: religion, collaboration

1. Introduction

In the last decade, Computer Supported Cooperative Work (CSCW) research has grown to include foci on collaborative practices outside the workplace including the home, museums and even outdoors. This shift reflects the transformation of Information and Communications Technologies (ICTs) from workplace machines to systems that support an increased diversity of activities that take place in a multitude of domains. In the last few years, this turn has included religious practice, and the use of technologies within it (see for example, (Bell 2006; Woodruff et al. 2007; Wyche et al. 2008a)). However, most of this research focuses on how technology infuses the practices of members of the public as opposed to how ICTs are being appropriated by religious institutions.

In this paper, we report results from a study of technology adoption, use to rejection focused on ministers. Specifically, we report results from an empirical study of religious uses of technology by Protestant Christian ministers (i.e., church leaders) in the Southeastern United States (U.S.). We chose Protestant

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Christianity because it is widespread in this region, and more generally in the United States (estimates suggest that over 80% of all Americans identify as Christian (The Association of Religion Data Archives 2007) with the majority being Protestant rather than Catholic (Adherents.com 2008; Chaves 2004)). We chose to focus on ministers because they occupy a unique and important place in the appropriation and rejection of ICTs. As leaders of their faith communities, they are responsible for recruiting new members as well as maintain cohesion among the laity already present. Our study shows how technology simultaneously supported and complicated the collaborations required to retain and grow their church community. We begin by reviewing previous research, and describing the methods used and participants in this work. We then present findings and discuss the use of systems in church management, worship, pastoral care, and outreach, and the challenges in integrating ICTs into religious practice. Despite these difficulties, we discuss the benefits of those systems and show that ministers chose to experiment with ICTs because of their ability to sustain, reinforce and grow their church (laity and ministry collectively) community.

2. Related work: religion and technology

In the last few years, the use of ICTs in religious practice has emerged as a focus for CSCW and related fields (Bell 2006; Woodruff et al. 2007; Wyche and Grinter 2009; Wyche et al. 2006, 2008a, b). But, the scholarly study of religious practice has a much longer history, including being the focus of key theorists in the fields of Anthropology and Sociology (Beckford and Demerath 2007; Lambek 2008). In this section, we focus on two areas of related work (while acknowledging both the depth and diversity of scholarly research about religion). First, we examine the debates that surrounded the uptake of technologies within Christian ministry, particularly in the United States. Second, we review research on the use of ICTs in the religious life of laity.

The United States is an interesting place to study religion and technology because it reports both widespread adherence to faith (unlike some other countries) (The Association of Religion Data Archives 2007) and some of the highest rates of ICT ownership and use (International Telecommunication Union 2003). Surveys of Americans' use of ICTs find faith-related usage, and even suggest that these types of uses (e.g., searching for religious material online) may be more numerous than secular activities like online banking (Hoover et al. 2004). Today's religiously oriented use of ICTs is grounded in a history of technology adoption. Historians have shown that American evangelical Protestants were early enthusiastic adopters of communications technologies such as the printing press and telegraph because they saw those systems as opportunities to grow their faith by spreading the word broadly (Morgan 1999; Noll 2002). This evidence has led some scholars to argue that religion was central in the development of the modern mass communications culture within the U.S.

(Morgan 1999; Nord 1984). One adoption context that scholars point to when discussing the growth of religious faiths in the United States is the Constitutional separation of Church and State, which placed an emphasis on recruiting individuals and competing against other faiths. Some suggest that this fueled the development of technologically enabled practices focused on growth and sustainability (Noll 2002). This history suggests some of the reasons why religious institutions might seek to adopt ICTs.

However, this same history also suggests that the adoption of technologies for religious purposes has not been smooth. For example, the use of television and radio led to concerns that religion would become entertainment (Bruce 1990; Hadden and Shupe 1987; Schultze 2002). More recently megachurches have generated debate. Megachurches are typically defined as Protestant Christian churches with 2000 or more laity (members of the church who do not belong to the clergy) (Thumma and Travis 2007). Their sheer size raises concerns from traditional religious institutions with smaller churches, which question whether 2000 people can constitute the type of faith community desirable in Christian practice. One means by which megachurches cope with their size has been to use ICTs, to create and coordinate the entire community, smaller groups, and deal with the challenge of broadcasting sermons not just to the people in the vast sanctuary of the main campus building, but also to those who attend in physically remote satellite campuses. And the data shows that megachurches have been very aggressive adopters of ICTs (Thumma and Travis 2007).

These uses of ICTs have drawn criticism, with arguments that technology mediates the experience and consequently diminishes it (Seel 1995). But despite these concerns, churches (both megachurches and traditional) have continued to adopt ICTs. The Barna Group (2005) reported in 2005 that six out of ten Protestant churches have websites. Further, they estimate that large screen projectors (and the multimedia sermon presentations those systems make possible) are present in 62% of Protestant churches. One reason why ICTs have been adopted (and why megachurches have led this appropriation) is to help Protestant denominations reach out to and recruit members who are put off by traditional church worship (Thumma and Travis 2007).

Other religious institutions have also adopted ICTs and been the focus of study. Seminaries have experimented with distance learning ICTs to educate the next generation of ministers (Adam 2002; Graham 2002; Jinkins 2002). Seminaries report using WWW, email, and chat room technologies to teach future ministers how to be theological and spiritual leaders. However, these same studies also report concerns about the appropriateness of using ICTs for learning and spiritual formation, particularly given Christianity's emphasis on physical community.

Some research has focused on online religious communities (Brasher 2001; Campbell 2005, 2007; Dawson and Cowan 2004). One theme that emerges from this research is that religious online communities (like their secular counterparts) have a "flattening" effect on organizational hierarchies. This feature creates

complications for religious communities in which hierarchies are important part of practice (Kong 2001). Other work demonstrates that online communities facilitate the growth of alternative faiths (i.e., Wiccans and New Age) and have even supported the creation of entirely new faiths (Brasher 2001; Campbell 2005; Dawson and Cowan 2004). Another use of online communities is to support faith practices that are difficult or impossible to practice in the person's current physical setting (e.g., being banned by the State) (Helland 2007).

The interaction between online and physical faith communities has also been the subject of some research. For example, Campbell (2007) identifies how practitioners of three different faiths (Christianity, Islam, and Judaism) interpret religious authority, and uses that to understand how the faithful in each religious appropriate Internet resources. Her findings focused on Christian laity are particularly noteworthy for our research. First, she observes that new authority figures may be emerging within the faith, those people who take leadership positions associated with their technological proficiency (e.g., becoming their church's webmaster) a finding echoed by Thumma (2002). Second, she found that Christians spoke about some online experiences, particularly relationship building, as being more valuable than those provided by their local churches—a potential concern to ministers who value the physical coming together of the congregation. Third, and finally, she found that Christians tended to see the Internet as a means to connect their local church experience to Christianity around the globe.

Finally, there is a small but flourishing focus on physical faith practices. Bell's (2006) early call to study religion focused on illustrating how the religious uses of ICTs reflected a repurposing of technologies and a new opportunity to understand what might be created as a consequence. Woodruff et al.'s (2007) study of Orthodox Jews using automation technologies during the Sabbath similarly offered a reconceptualization of the role of control (in this case the desire to relinquish it) in technology design. Their paper also discusses the debates around whether home automation systems are a legitimate part of the Sabbath, thus illustrating once again how the appropriation of technologies for religious purposes creates controversy. Wyche and Grinter's (2009) study of Protestant Christian laity focused on how technology use at home presented a opportunity to reflect on the dominant positioning of ICTs as blending in, by suggesting that for religious uses need to stand out to be appropriate in use. A small body of work has compared religious ICT practice across nations (Wyche et al. 2009, 2008a). Finally, Prayer Companion, a device for cloistered Nuns (Gaver et al. 2010), Sun Dial (Wyche et al. 2008b), an imaged based mobile prayer-time reminder system, and AltarNation (Hlubinka et al. 2002) all represent design engagements to understand whether and how ICTs could be designed to support religious practice, and in turn use those findings to reflect on the design space of technologies more broadly.

With the exception of the Prayer Companion, these studies and systems have all focused on the practitioners of religion. We were motivated to study ministers

to complement the work that has already focused on laity. Ministers seemed understudied and yet play a crucial leadership role in deciding what ICTs will get used, and how, in their churches and by their laity. Their decisions help define the appropriateness (or not) of ICT use. Ministers are experimenting with ICTs in religious life because, despite their difficulties, the rewards that they offer are to increase the ties among their church community members and grow that group.

3. Methods and participants

In this section we describe the methods and participants in our study. Given the paucity of data about the role that ministers play with respect to technology, and how they make decisions about it, we decided to use a qualitative interview methodology (Spradley 1997). But, before we embarked on the interviews, we decided to conduct observations of technology use by ministers (Spradley 1980). Additionally, one member of the research team played the role of a key informant, through the virtue of being married to a minister. A second key informant from a different denomination (to that of the minister) to responsible for digital media for a variety of different denominations also provided advice and served as a useful source of triangulation.

We began by identifying what we could observe. In consultation with our key informants it became most clear that Sunday church services would provide access to some ICT use, particularly that associated with the sermons. A few of these services also incorporated Christenings, which gave us some opportunity to see technology with relation to that. We chose not to attend some special services partially due to advice that we were given that they were less technologically enhanced and for the difficulty of gaining access (e.g., weddings and funerals). Review of the church's website prior to the service also provided more insights, as advertisements for mailing lists, audio files of services and so forth hinted at other ICT uses within the church. When attending church, we collected materials such as the church newsletters, information about how to log onto the Wi-Fi network, and anything that suggested the use of ICTs. To blend in and not disturb worship, we followed the example of many of the laity (who took handwritten notes during service) by bringing notebooks.

In addition to these observations (which lasted several months and spanned large and small churches as well as sampling across denominations), we watched and listened to religious programming on television, radio, and Internet; visited Christian stores to see what types of technological products they sold; and experimented with religiously designed applications (such as browser modifications that changed icons to religious ones and offered daily Bible verses for reflection). All of these activities helped to increase our awareness of the technological possibilities, as well as grounding us in the practices that these systems were designed to support.

We came together as a team to discuss the observations and other background work as part of developing an interview protocol. We also sought advice and feedback from our key informants. We conducted the interviews in two phases. We chose an unstructured (phase 1) and semi-structured (phase 2) interviewing approach, which supported us in encouraging the ministers to talk about ICTs as they saw appropriate. In the first phase, we had a few questions based on our observation, but our primary goal was to encourage the minister to share with us. In the first cycle, we selected ministers in two ways. First, we used our network of contacts to make connections with the local ecclesiastical community. Second, we recruited pastors on the campus of the institution where this research was homed, the Georgia Institute of Technology. One consequence of sampling from campus was that in an institution dominated by engineering to technical subjects, the pastors—in order to minister to their laity—all self-described themselves as comfortable with ICTs. While recognizing that this would not be the same outside of the campus—we saw this as an opportunity to gather a rich diversity of data about ICTs and religion.

In both this and the second phase, the interviews were transcribed and shared with the team. The primary coding of the interviews was conducted by two of the authors, with the others reading and then participating in discussions about the analysis as it developed. In the first phase, the analysis was as much focused on developing out the interview guide further as it was in generating data answers to the questions.

In the second cycle, we identified potential participants using the World Wide Web (WWW). We focused on Protestant denominations and our sample included Southern Baptists, Episcopalian, Presbyterian, Methodists and Lutherans. According to the Barna Group (2005) 57% of all churches have websites, and this number rises to 96% when focused on megachurches (Thumma and Travis 2007). However, because we sought those that were likely to have experimented with technology (and have the resources to do so), we deliberately looked for churches with routinely updated web sites that included multiple pages of information. This choice limited our sample to those who had had some success appropriating technology (and those with the resources to do so), but even within this group we learnt about the difficulties of adopting ICTs. And it ensured that we spoke with people who were actively trying to use technology, if not always succeeding. Additionally our sampling did not predict whether ministers personally would be using ICTs.

Of the approximately 10,000 churches in the metro-Atlanta area, we contacted 84, 13 ministers agreed, while 11 declined, and others failed to respond. This low response rate, we partially attribute to being busy and the usual reasons that organizations do not respond to recruiting requests. However, our key informants also advised us that the low response could also be due to a concern about a government institution focusing on religious business. Of those who did respond, two of the churches reported having less than 1,000 parishioners. Five churches

had between 1,000 and 2,999 members. Six churches reported having congregations of more 3,000 members, with one having 5,000 members. The pastors' churches also varied in other dimensions. Of our 13, 11 included predominately Caucasian laity, while the other two were largely African American congregations. The churches were located in urban, suburban, and exurban parts of the area. Finding it difficult to determine precisely the boundaries between the suburbs and the exurbs, we interviewed ministers at six urban churches (which we defined as places inside the City of Atlanta, and seven in suburbia (including exurbia) which is all of the conurbations surrounding the city that make up the metro-region of Atlanta.

Across both phases of the study, the interviews shared similarities. They lasted approximately an hour in the pastor's office. We opened our interview with questions about the minister's work. In addition to using the question to set the expectation that we were here to learn from them, the ministers' answers provided context for discussing the role of ICTs in their work. During all of the interviews, we chose to use the word "technology" rather than computer to broaden the scope of potential answers, and consequently we learned about mobile phones and PDA's as well as computer-based systems. Since the ministers interact with their laity, we also learnt about what the pastors hear from their congregation about the role to appropriateness of ICTs.

4. Results

In this section, we present the results of our research in four sections focused on different aspects of ministry served by ICTs: corporate work, Sunday worship service, coordinating the church community, and outreach to people outside the congregation. In each we illustrate how technology serves a role, and highlight potential difficulties where they arise.

4.1. Church as corporation

Although our primary focus was on the issues associated with appropriating ICTs for religious purposes, it was not surprising that we also learnt from ministers that technologies play an important role in their management of the church. Systems are used to support the reporting of financial data to various authorities, payroll for any employees and so forth. However, in discussing this "corporate" work the ministers also illuminated some of the dependencies that they face with IT use.

In particular, issues of control that arose around ICT acquisition and use came up during the interviews. While it is well understood that costs associated with ICT use are hard to predict, the ministers we spoke with had a unique difficulty in that it meant that they had to raise more money to compensate.

> "The cost, when we started we thought the cost was going to be at one place and it almost tripled from where we thought …"—Pastor, large church

To cope with this, they turned to their laity, either asking for increased support for the systems or permission to redirect what resources they had already received from them. Asking the laity in particular struck us as both important but also unusual (in comparison) to other types of organization and reminded us of the dependency that exists between the church, the minister, and the laity.

A second dependency was on technical help. Unlike corporations who have dedicated staff, and more like home users (e.g. (Poole et al. 2009)), the ministers spoke of relying on members of their congregations who had appropriate knowledge, something that unsurprisingly they saw as a gift from the Lord.

> "There are people who are amazingly gifted in terms of science and technology and this is their gift. For instance my son [son's name] has set us all up on e-mail…"—Pastor, small church

As others have observed from the laity perspective, the ability to operate, maintain and evolve ICTs is creating a new class of leadership (Campbell 2007; Thumma and Travis 2007). In our interviews we learnt how dependent ministers without the resources to hire dedicated IT staff were on having members of the laity that could volunteer in this way. But, that in turn was also marginalizing other members of the laity, those without the skills but who wanted to help. Replacing the handing out of hymnals or the typing up of the church newsletter with online access to the words of the hymn or an email message to the congregation was shifting the skills required to be a laity-leader in the church.

For the ministers we interviewed this was a dilemma, because laity leaders are one mechanism they had to engage their congregation beyond the service, to give attendees an increased role within the church, and thus hopefully retaining these technological volunteers within the community. The choice to use technology was changing who could volunteer, ministers responsible for making the decision about ICT use, had to weigh the consequences of marginalizing committed volunteers and potentially risking their departure from the community, against engaging other laity to new members through its use. Each encounter with technology had to be weighed by the ministers in this light.

4.2. Sunday service: technology and engagement

Sunday worship—a service held at church—is central to Protestant Christianity as an opportunity for the church community to come together to express and reinforce their collective belief. The Sunday service consists of a variety of elements (order and content vary by doctrine), but it includes singing hymns, praying, passing of the peace (a visible demonstration, such as a handshake, that shows that all who are present are together in faith), and a sermon (lecture) given by the minister. Sermons

address religious topics and are sometimes prepared according to a liturgical calendar (e.g., discussing the death of Jesus Christ on the Christian holiday of Easter).

All the ministers talked about the importance of the sermon in developing their laity's religious beliefs and commitment. Minister's rationale for using ICTs (multimedia presentation systems) in the sermon was partially focused on the ability of ICTs to engage their laity, to help them learn the lesson being presented. As one minister explained,

> "I talked about the road from Jerusalem to Jericho, and I talked about the difference in depth as that road drops, it is a 17 mile road but it drops 3,000 ft in the process, but while I am talking about that we could actually have footage, video footage, or we could have pictures where people could actually see what that are looked like"—Pastor, large church.

And others described the use of ICTs, as being just another in a series of techniques used to create a worship experience that would help the laity learn. For example, one minister situated his use of images and video footage as being akin to using other "technologies":

> "For example a year ago at Christmas, I did a 4 week series… and the first week, everybody got a piece of bark when they came in, and the emphasis was that Jesus was born in the same rough world that we live in … The next week, everybody had a little soft piece of blanket, that even as God sent Jesus into a rough cut world God also provided nurture through family … and the third week we had straw… Jesus was part of the natural world, and you know he was born with animals around him… and the last week was incense brought as gifts, and so we burned incense and that is very unusual in a Baptist church… so technology, it's not just a matter of what they see, we tried to create what they felt and what they smelled as well. In the Baptist life we have primarily been what you hear, you hear the sermon, you hear the scripture, you hear the prayers you hear the music, in our setting here we are trying to create through the audio visuals and other mediums also to bring in the other senses and technology certainly helps you do that, at least in a worship experience…"—Pastor, large church.

Historians have argued that creating an engaging and rewarding worship experience has always been important in the United States. The separation of Church and State they suggest creates a religious marketplace with people being free to choose among different options, thus demanding that each church and its minister in particular create the most engaging and meaningful experience or risk losing or failing to gain laity (Morgan 1999; Noll 2002).

Beyond enriching the experience, ministers also spoke about crafting the message. As one minister succinctly put it,

> "I think PowerPoint… gives you flexibility to alter the text of songs. Say you are using an older hymn and you don't like the fact that it uses Elizabethan

English you can update that, you can even take a modern praise chorus and say I don't totally like the theological bent of that so I will twist it in this other direction"—Pastor, small church.

This use of multimedia allowed ministers to achieve several things. They could tailor their content towards what they thought their audience would prefer, such as removing old language and updating to new. But it also allowed them to refine and craft their theological messages, by writing them to align with their values. ICTs allowed this minister to preach his particular message with greater ease by simply omitting portions or changing them appropriately to communicate. Historians suggest that the most effective denominations in the United States have been those where ministers have some individual control over their theological message (e.g., (Noll 2002)). Editing religious text gave these ministers a very high degree of control over their message.

Despite the ministers' embrace of ICTs, many reported that their laity was split on the value. While some of their congregation did respond to these multi-sensory experiences favorably others did not. One recurring concern ministers heard from their laity was that ICTs were turning worship into entertainment. For example,

"Not everybody applauded the idea when we decided to do it, some saw it as entertainment, you know you are always going to hear that you are just trying to entertain people."—Pastor, large church.

Some ministers faced with a split laity had solved the tension by separating their congregation by offering two services. Members could chose either a "traditional" service implying minimal technology (perhaps a microphone) or a "contemporary" one. Separating the laity also allowed ministers to make other changes. For example, one minister described his contemporary service,

"…the setting is different. I don't preach in a robe at that service I preach in just a suit. I don't preach behind a pulpit, I preach free.'"—Pastor, large church.

This minister also described using secular sources of music and humor in the service. In one instance, he entered the sanctuary to the theme of Mission Impossible to promote the church's mission. And he described what we saw in other churches, using changes in dress, music selections, instruments played, and the absence of a pulpit to create a contemporary worship experience that he and other ministers saw as being crucial to create a relevancy for their laity.

In addition to theological flexibility, ministers had other reasons for adopting ICTs in worship even if it meant more work (i.e. the creation of two services). Some saw technologies as a medium, not the message. For example,

"You know so long as the message stays the same, the mediums are always going to change. This is just a medium it's a form, it's a you know, it's a new method, but it's not the message itself…"—Pastor, large church.

Others saw a connection between entertainment and engagement even knowing that their laity might not see it the same way. Ministers, in their role as faith leaders and responsible for educating their laity in theological matters, wanted their audience to pay attention and sought a variety of means to engage.

> "If entertainment is what gets someone to pay attention long enough to hear a message… But some people, entertainment is seen as quote secular. And I guess the opposite of that is that I come to church not to be entertained; does that mean you come to church to be bored? I am not sure that is a good way to be. I think people come to church hoping to hear some whisper or something holy…"—Pastor, large church.

A final argument that some ministers used to explain the tensions in ICT use was a perception that it was elder people, less familiar with those technologies, who resisted their use. For example,

> "Our younger generation… have Blackberries, they have computers, our seniors have not been exposed to all of that, they don't have computers, … that is not how they relate…"—Pastor, large church.

This argument stemmed from their perceptions of their laity, and given the degree of contact ministers had with individuals in their congregation, it was clear that they had some empirical evidence for that argument. But they also saw this as a reason to not abandon ICTs in use. Despite the potential alienation, they remained driven by the upsides, aware that they needed to recruit more, largely younger people to the church since studies show that in the last decade the most growth in church attendance has been experienced by megachurches who are aggressive users of technology in worship (Thumma and Travis 2007; Twitchell 2005). History suggests when it comes to the adoption of media, that the ministers will ultimately see ICTs being largely accepted in the worship experience, but with a vocal minority expressing concerns (Bruce 1990; Hadden and Shupe 1987; Morgan 1999; Noll 2002)

CSCW has long been interested in understanding why adoption of ICTs either succeeds or fails (Grudin 1988; Grudin and Palen 1995; Orlikowski 1992). What emerged in our discussions with ministers was a risk calculation, the risk to continue to adopt technologies for all their upsides (engagement, part of a changing worship experience, appeal to younger people and new members of the laity and so forth) and manage the downsides (those who rejected their use). One solution ministers adopted to accommodate those with concerns was to create an alternate service.

While the development of multiple workable solutions may have some analogy in the workplace, two features stand out. First, the scale of the commitment, some ministers were essentially opting to double their Sunday workload. Two services that had to be prepared entirely differently, even if the theological messages were the same. And it was beyond ICT use, it was the program of music, the style of

dress, the physical delivery of the sermon (pulpit or not), all of which together had to be planned with relation to the message being preached. Second, ministers were responding to an audience who had more say than employees in a corporation might have about how they receive a leadership message. Ministers, while taking risks with ICTs, were very aware that their audience could simply leave without the penalty that an employee would face. But, a minister intentionally crafting the service is not without relation to activities such as crafting a customer sale in which a whole variety of resources such as dress, location, delivery as well as ICT use would be purposed. In CSCW we have long argued that adoption of technologies must be understood contextually and ministers provide a particularly rich example, being very explicit about how the use of space, physical appearance, message structure, and ICTs together could create a particular outcome.

4.3. Church community: spiritual social networks

All the ministers in this study, irrespective of denomination, emphasized the importance of their faith community (the member of their church both laity and staff). But while ICTs played a role in that community there were technologies and uses that were considered inappropriate. Unsurprisingly, ministers thought it was inappropriate to replace the physical with a virtual service. For example (and illustrating the importance of physical community to the ministers),

> "I don't believe that religious life is meant to be lived in isolation. I don't think that anyone who sees the Bible as any kind of religious authority, certainly the teaching there that it's not meant to be lived in isolation. …Most people realized that although TV can be pretty helpful it can also be pretty sterile, it can't hug you when you are feeling sad. It can't walk with you to the graveside; you know there is a community context in this thing. So long as these technologies don't create an environment where a person feels like they can and should live their life in isolation then I bless it."—Pastor, large church.

Ministers made decisions about the appropriateness of ICTs not just for themselves, but also for their laity. And they used their position as a leader, and opportunities to speak explicitly to their laity about what constituted appropriate ICT use. Like householders creating their own code of practice around appropriate technology use at home (Silverstone et al. 1992), so ministers created a theologically based code of good ICT conduct for their laity. But, in addition to articulating the code, they also spoke about positive use as being blessed, thus connecting it to being faithful. Finally, ministers spoke about how it was important that faithful uses followed the end-user from home, to work, to church, and where ever else they were.

One area where ministers seemed uniformly interested in leveraging ICTs was in managing the relationship that a minister seeks to have with each member of

the laity (thus ensuring the type of connection that builds community and commitment to the faith). Ministers told us that they used PDA's and cell phones to manage contact lists, create to-do's of people that they wanted to call during the upcoming week, and maintained calendars reminding them of laity members' birthdays and anniversaries prompting cards to be sent. Ministers at larger churches also created social structures to manage these relationships. One minister described how his deacons routinely met with small groups of laity to keep in touch with their lives. After a meeting the deacon sent a "tribe report" via email letting the minister know what happened, and reminding him about any upcoming events (e.g., a laity member's birthday prompting a card from the minister).

The ministers also engaged in pastoral care, (tending to the laity in a time of need) and used ICTs to support that work. For example, in the case of a member of the laity being ill, the minister would visit them in hospital, and if there were multiple ministers in the church use email to coordinate a rotation of visits. But, they also used ICTs, and email in particular, to let other members of the laity know about the illness. Frequently, the latter leadership took the form of sending out electronic prayer requests to the entire laity. For example,

> "There was a surgery yesterday and we were talking at the hospital that there were people literally praying almost around the world, …we had people in India… were praying because they received the e-mail, …we had some people from London… I think it opened up the network so much more for prayer, and plus it is a lot quicker than calling people, because we can send one e-mail from the office and within 2 min 45 or 50 people have the e-mail and they can begin to pray."—Pastor, large church.

In addition to prayer requests they also encouraged the laity to organize a rotation of activities, which could include the bringing of prepared meals to the family home, as well as a daily visitation schedule. Email was frequently used to manage this type of organization. As one minister put it,

> "…this dear lady dies last Tuesday and by Wednesday morning it was on prayer list, will you pray for her family, remember that the family has suffered a grief so that they don't have to wait until Sunday they find that out the next day, and can be doing the things they need to do to be good friends and to be fellow neighbors and to be of support and comfort to them."—Pastor, large church.

Email allowed ministers to rapidly disseminate news, coordinate the laity, and in so doing reaffirm their leadership of the church community. By speeding up the dissemination of the information, the laity member experiencing bereavement or illness was also viscerally and quickly reminded of their own place within their faith community, which ministers saw as an advantage (reminding the person of their importance in the faith community). Pastoral care, beyond caring for individuals, also served to reinforce the community itself. The ministers spoke

about encouraging laity pastoral care via ICTs and in person by equating it to being a good Christian.

A further benefit of this use of email was that some ministers saw it as an appropriate incentive to get members of their community online. They described how being able to participate in the care network was an incentive for some of their members to get an account (along with the free availability of email accounts) and get involved. To be involved in the church community, and through that to be demonstrating appropriate Christian values, meant having an email account, and so ministers were telling us that even their most technologically phobic or skeptical members were adopting technologies to retain their ability to appropriately participate in their church community.

ICT for health and wellness is a well-established area of CSCW focusing on the collaboration in support. One thrust in this space has been focused on community involvement whether it be online (Maloney-Krichmar and Preece 2005), families (Consolvo et al. 2004), co-workers (Consolvo et al. 2008) or even the local physical community (Grimes et al. 2008). Community ties also have been discussed with respect to bereavement, another emerging focus area in HCI (Massimi and Baecker 2010). Our work highlights another type of community, the faith community, and the online and physical work that it does in support of the individual/family needing support. As these agendas evolve, understanding the intersections among these communities, say for example, between the family and the faith communities, and how they interact to collectively provide support may suggest new opportunities and directions for CSCW.

4.4. Beyond church community: disaster and growth

Finally, ministers described how they used ICTs to reach beyond their current community. We learnt about two types of reaching out, to those in physical difficulty (disaster response) and those they perceive to be in spiritual difficulty (the unchurched). By chance, our study took place in the aftermath of Hurricane Katrina, a category 5 hurricane that severely damaged the city of New Orleans and caused widespread destruction across the states of Louisiana, Mississippi, and Alabama (collectively, a damage zone larger in area than the United Kingdom). The State of Georgia's government, including the Georgia Institute of Technology, responded to the disaster and used technology to coordinate shelter, education, and resettlement for those made homeless by Katrina.

And it is this type of narrative, now complemented by one focused on actions taken by citizens to communicate with each other, that dominates the discourse about disaster response and the role that technology plays (Mark and Semaan 2008; Shklovski et al. 2008) as well as how citizens will interact with governmental institutions (Palen and Liu 2007). But the ministers in our study were also responding to Katrina, and using technology to coordinate their response. Indeed in retrospective analyses of the Federal response to Katrina, it

was concluded that religious organizations were among the first to successfully respond to the disaster (Sparks 2009) and the Federal report even recommended that FEMA and other agencies partner with religious institutions to get aid to affected areas more rapidly (Townsend 2006).

While there is far more to be done to understand how and why religious institutions were able to respond as rapidly as they did, our study provides some insights. When talking with us, ministers described their own responses. For example,

> "I said Sunday [during service] that we are going to Mississippi, because 15 Methodist Churches were destroyed and I didn't ask anybody's opinion I didn't even ask for a committee vote, I just said we are about to do a capital campaign and I think it would be a sin for us to spend all that money on ourselves and not doing something for their church or maybe more than one church in Mississippi that has no way of rebuilding itself, and I think I have the support of the congregation or enough of the congregation and we will do that."—Pastor, large church.

In this example, the minister explains that he broke with traditional procedure (of seeking committee consent on how to spend resources) and reallocated resources that would have been used to support the church's own needs. Reallocation was possible, of course, because ministers are constantly in the business of generating donations.

Other ministers also explained how ICTs were used to help redirect resources and get supplies into the disaster zone. For example,

> "We are organizing a truck of things to take to Mississippi I will go with that truck. … I just was in the office of one of my administrative assistants and said I want this e-mail sent to the whole congregations, and… on that e-mail I said I am leaving to go to Mississippi either Thursday or Friday of this week on the truck I have got to have diapers, I listed this whole list [recites list]. And I need these by Friday of this week, so technology is huge in that."—Pastor, large church.

In addition to being already in the process of raising the resources needed, the ministers also had distribution channels to get the resources out to the people. Their affiliation to particular denominations gave them the knowledge of and access to particular locations. For example, ministers in the Baptist denomination identified Baptist churches in the disaster zone as places to take the donated goods to for distribution, and some spoke of how they used their denomination's website to look up churches in the affected areas. Other scholars have described how denominations used their affiliated members to coordinate a nation-wide response of raising resources, organizing volunteers, and spreading it across the disaster zone evenly (Sparks 2009). And technologies are clearly implicated in this work. But, to our knowledge our findings are the first to identify how those technologies are used, particularly within a church and led by the minister.

As the focus on disaster response, and the role of technology to coordinate and communicate, continues to grow within the CSCW and related communities, religious responses provide an interesting contrast class. Closer analysis of their institutional arrangements, as well as their ongoing practices of volunteerism, revenue generation, and the roles that ICTs play in those processes, suggests a valuable complement to secular responses, and potentially offers explanations as to how religious institutions prove so effective in times of emergency.

People affected by the disaster also used these same networks. Ministers told us about the people that they were counseling via technology, often to try to make sense of what had happened. Some ministers explained that they also received requests from people to ask their congregation to pray for them, and that when they did they put these videos online so that people could see that the church was thinking about them. We also learnt that ministers were receiving emails from people moving out of the disaster zone, either as temporary refugees or permanently, saying that they would like to join their church.

Disaster response is one type of outreach; a far more common one is church growth, the recruitment of new members. Church growth is related to denomination (and their orientation to headcount), for some the goal is to create a new church by splitting the congregation when it becomes too large, for others growth can continue within a single church. However, all of the ministers interviewed wanted to grow their churches—although some ministers had a much more aggressive notion of how quickly and by what percentage—and all used technology in this process.

While some saw the Internet as being just another medium for recruitment (along with print, television, radio etc.), others also described it as being a socially appropriate way to solicit new members than more traditional approaches (although they also relied on verbal referrals from current laity, adverts, to postal solicitations). For example,

> "If you go back 50 years, you probably would have showed up at their home unannounced. In metro areas today most people don't want you doing that… there's not a comfort level… if someone shows up at your door unannounced and so… you are asking permission… to contact them via email. A hundred years ago that evangelism would have been door to door, and I am not saying that this is better or worse, but it certainly fits more with where our culture is."—Pastor, large church.

The church website played a role in this, being an opportunity to provide materials (descriptions, images, community activities information, podcasts and videos of sermons and so forth) that would collectively communicate the religious values of the church. An email address was also provided on the website to start the conversation. But although email was good to begin with, ministers explained that at some point in the conversation they sought to shift it from an online one to a face-to-face one. The reason for this shift was simple, to help the

recruits experience the community more viscerally, and they worked hard to get people to come in, meet the minister and even other members of the church.

In this, more than any other area of the life of a church, ICTs seemed to fit. In all the other computerized aspects of ministry that we learnt about we heard about tensions. Outreach did not seem to produce any such concerns from the ministers' perspective. In the case of disaster allowed them to rapidly respond to unpredictable (or unpredicted) situations. In the case of recruitment, it allowed them to reach people, and even to have potential laity take the first step.

5. Discussion

In this paper, we presented results about the possibilities and problems associated with the adoption of ICTs in religious life from the perspective of the leaders of individual church communities, ministers. We focused on four areas of ministry that had been infused with ICTs: the corporate work of ministry, the Sunday service, the laity community, and outreach. In each of these we explored the role of technology, and of the minister in experimenting with its use in their church and dealing with its consequences as the laity adopted and rejected them.

One question that must arise when dealing with this topic is that of whether, and if so what, the role of HCI and CSCW research might be within organized religion. To some extent this has been answered in the body of work that has been produced since Bell's (2006) seminal paper. Studies have shown that it has infused the lives of practitioners of multiple religious faiths, allowing them to explore, deepen, and even create a heterogeneous experience of their own composition (Bell 2006; Campbell 2005; Dawson and Cowan 2004; Woodruff et al. 2007; Wyche and Grinter 2009; Wyche et al. 2006, 2008a, b). And in turn, these authors, and others have made the argument that a focus on religion is a means to reassess technology design (Gaver et al. 2010). Religion opens up possibilities, and provides an example that sometimes sits counter to secular ways of engaging the design space of ICTs.

Almost all of the research to date (with the exception of (Gaver et al. 2010; Wyche et al. 2006)) has drawn on the laity experience. And given the ratios of laity to church officials this balance may be warranted. We were drawn to understanding ministers' use of ICTs by the potential possibilities suggested from the results of this previous work, and also by the idea that it would not be impossible to imagine that religious institutions might have resisted technology (in much the same way that history reports the arrival of the printing press). However these ministers did not and understanding why they sought to embrace ICTs drove this research. What drew ministers to incorporate ICTs into the life of their faith community we wanted to know?

A simple answer to this is that a portion of their laity encouraged it (perhaps also fueled by reports that suggest that people want to and do use technologies in their spiritual development). For example, as one minister put it

> "everyone in our church is tech-savvy enough that if I wasn't using e-mail they would think I was behind the times."—Pastor, small church.

So, at least one response was in order to maintain connection to the laity by having a common shared facility with technology. But, as we have shown in the results, the relationship between the minister and the laity was far more deeply involved in the reasons for adopting ICTs. Church staff and the laity collectively form a faith community in which the minister plays a unique role. Ministers, as the church leader are responsible not just for sustaining and growing the current faith community, but extending it to include new members. Their successes with ICTs often reflected this goal. Whether it was using ICTs to draw members of the laity into the church service, or using email to organize and coordinate community responses, ICTs were being purposed to deepen the ties between the minister and the members of their congregation.

But this, as the ministers were acutely aware was balanced by the simultaneous and almost always present possibility that that very ICT use would alienate others in that same community. Whether it was people leaving the church after feeling that Sunday service had been reduced to entertainment, or whether it was not being able to find ones place in the volunteer culture, being displaced by others who had the appropriate knowledge to operate the machinery of coordinating the faith community, almost each opportunity contained that risk. Our ministers, knowing each member of their laity well made decisions about whether to adopt technology based on whether he thought enough members would be able to engage the positive outcomes rather than being repelled by the negative ones. And where possible, if a significant divide existed they sought to come up with solutions that worked for all, with the most visible being to offer a choice of traditional or contemporary Sunday service.

Only in one area did we not hear about any risk calculations of the sort we have just described, and that was in outreach. Outreach in disaster seemed to have nothing but upsides. Even the most technically skeptical seemed to either agree that time, and electronic coordination was of the essence (or either they did not voice their concerns to the minister, perhaps because of the sense that being critical about responding to others is not Christian), but none of the ministers had received any complaints about this response. In the case of the unchurched, ministers were aware that technological approaches would only target those who used technology. They knew that some would be missed, but most felt that the numbers of ICT users versus non-users significantly advantaged the use of ICTs. Also, by moving the conversation from email to face-to-face conversation as soon as they could, they felt that the risk of people feeling that email was out of line with religious values and beliefs was low. The use of email was really to bootstrap a face-to-face conversation that would be deeper, and hopefully on the part of the minister, last a lifetime as the inquirer joined the laity.

For ministers then, the adoption of ICTs is inherently about developing and growing relationships between the clergy and congregation and within the laity itself. Its positive uses are about strengthening their existing faith community by deepening every member's commitment to shared Christian values and consequently to each other, while continuing to grow that same group through the addition of new members. When ICTs worked for the ministers, they made members feel more committed to the faith and to each other. When they failed, it was that they damaged those relationships, replacing members with others, or alienating a member from the experience of the community because of the technologically mediated quality of the engagement.

And ministers are intentional about adopting ICTs to achieve these positive effects. They are explicitly trying to design a community whose ties strengthen over time. Without explicitly focusing on ICTs, Clark and Lelkes' (2005) examined religion as a form of insurance (i.e., people's religiosity as a support system) and found that religious people felt more protected when coping with negative life events. Other research has shown that Internet use within a local community can also strengthen ties among neighbors (Hampton and Wellman 2003). So, the reason that ministers turned to ICTs was to experiment with those uses to identify ways in which they could further bind their community together.

Faith communities are volunteer communities. Volunteering was a means by which to engage members of the community, and this extended to ICTs, which we learnt were creating a new class of leadership, while simultaneously marginalizing others who used to have a role. Another reason to create multiple services was to provide more members the opportunity to volunteer in ways that were familiar to them. Handing out hymnals at the traditional service survived in the face of the volunteer who put the words to the hymn in PowerPoint for the contemporary service.

Recently, volunteer organizations and volunteering has become a subject of interest to CSCW. Goecks et al.'s (2008) study of non-profits uses of ICTs in fund raising has relation to the work of ministers, who all raised resources. However, due to physical proximity and regular meetings, ministers had both offline and online opportunities to request donations. But their work finds a shared characteristic of using ICTs to create shared community among the donors, and among donors and other stakeholders. Giving, whether it is time or money, takes place in a community, where it can be seen and where feedback that reinforces the action can be offered and received.

Like Le Dantec and Edwards' (2008) study of non-profits supporting the homeless, we saw a similar dependence between what ICTs volunteers knew about, and what systems got used and how. Indeed, in some of the interviews we, perceived as technical experts by the ministers, were asked for our advice and opinions on the systems in place. Le Dantec and Edwards (2008) found that for volunteers who moved from clients to being volunteers, notably in Center B, so they advanced along a trajectory of apprenticeship as described by Lave and

Wenger (1991) and consequently became committed volunteers through their centrality to the enterprise. For ministers, this was very intentionally the goal, to increase this centrality, to make members feel indispensible to the community. But, this utility goal was also married to a faith goal, to develop members' spirituality. Perhaps that is one reason why ministers seek to integrate ICTs into faith by explaining that those with the skills to manipulate them have a gift.

A final thrust in this work was to see Protestant religious institutions in the United States, at least partially, in transition. Thumma and Travis (2007) argue that this transition is driven by megachurches powerful ability to recruit new members and the hypothesis that this is due to the changing format of church worship. In other words, traditional churches are driven to contemporary service because of megachurches perceived success with this format. Our study also sees that and highlights the role of ICTs as being one piece of this change. But, our ministers also revealed the same tension between engaging some while alienating others in this transformation. As one put it,

> "This is my struggle always, there is a fine line that I want to walk between being relevant and being reverent… what I mean by that is I think being relevant is embracing technology, and using it, but there is also the reverent side of the word of God"
> —Pastor, smaller church

Our ministers were experimenting, and not just with technology, but also with other elements of the entire experience. As they removed items (the robes, the pulpit, the hymnal) long associated as part of the faith experience, and replaced them with others such as suits, a microphone and slides, so they were redefining what constituted reverence. ICTs are a part of a broader set of reconfigurations being experimented with each Sunday in churches, being defined collectively by the minister and the laity.

6. Conclusions

In this paper, we describe the results of an empirical study to understand the role of technologies in Protestant Christian ministry. Our focus on ministers, church leaders, led to the identification of the role that ICTs play in the creation, maintenance and evolution of church communities. But this highly desirable outcome has to be balanced against the risk of alienating members of that very community. This is the promise and the risk of ICT use that ministers find themselves experimenting with. Additionally, we suggest that religion has connection to other topics of interest such as health and disaster, where the secular and the religious interact to provide the total community response.

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