10-2012

Eating alone, together: New forms of commensality

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Citation

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ABSTRACT

Eating with others, or commensality, is an enjoyable activity that serves many important social functions; however, many individuals eat meals alone due to life circumstances, meaning that they miss out on these social benefits. We developed and deployed a simple technology probe providing social awareness around mealtimes to explore how social systems might help alleviate the loneliness of solitary dining. Our findings suggest that these systems can convey a sense of connectedness around a meal; further, our analysis revealed three themes relevant to systems of this type: that contextually-located peripheral awareness engenders connectedness; that such tools can foster a feeling of shared social presence, and that they can be a catalyst for other forms of communication around the meal. These findings suggest that "remote commensality" is not only possible, but that it may take on forms entirely different to that which we are accustomed.

Categories and Subject Descriptors

H.5.3 Group and Organization Interfaces

General Terms

Human Factors

Keywords

HCI, Social computing, Awareness, Contextual information, Design, Food, Mealtime

1. INTRODUCTION

Eating with others is an important cultural practice that enables many social functions: a means for identity construction, a time and place for social engagement, and a shared experience for strengthening social ties [5]. In sociology, a meal consumed in the company of others is called a *commensal* meal [5]. While commensal meals traditionally take place within a family unit, life circumstances dictate that for many living away from family (e.g. college students, seniors, hospitalized individuals), eating alone becomes the norm [1]. For these individuals, traditional commensality is a challenge because it now needs to be actively organized and sought out with geographically proximate peers.

What role can social computing play in restoring the benefits of commensality for individuals that eat solitary meals? To explore this question, we developed and deployed a technology probe (Eating Alone Together Probe, or EATProbe) among a group of young adults. The design of the probe was inspired by prior work on simple ambient social awareness displays that support feelings of social connectedness around daily activities. Our probe provided a small group of friends with basic awareness information about their peers' mealtime activities: whether they were eating in or out, or whether they were preparing, eating, or cleaning up a meal. Five participants, all friends who sometimes ate together, used the system over the course of a week.

Our participants' use of and reactions to the probe suggest that mealtimes provide regular, daily opportunities for engaging social interaction, and that even simple awareness tools can provide people with a sense of social connectedness. Further, our analysis reveals several design opportunities for mealtime awareness systems, and new research avenues in this space. The main contribution of this work is an exploration into how technology might support altogether new routines and behaviors and mealtime activities for individuals lacking the setting of traditional commensality.

2. RELATED WORK

We briefly review work most pertinent to our explorations here: intimate awareness systems in domestic computing, and prior work exploring mealtime connectedness.

2.1 Awareness Systems

Awareness systems were first investigated as a means to connect remote work sites. A more recent theme that has emerged in social awareness systems is achieving "connectedness," or the positive feeling associated with ongoing awareness of a social relationship [2]. Pertinent to our interests, we see two important ideas arising from this prior work: (a) that even simple interactions can support rich expressive behavior as embodied by their use [4], and (b) that awareness systems either embrace an automatic or deliberate style of interaction.

Simple interactions can support rich expressive behavior. For example, Kaye et al. explore the use of a simple "one-bit" awareness system where the interface consists of a single button [4]. Clicking the button would trigger a light that slowly fades at the remote site. This work showed that even though the actual piece of useful information consisted of only a single bit of information, the *meaning* of this bit was embodied largely in its use by participants. That is, participants developed their own understanding of what the signal symbolized—gift-giving,
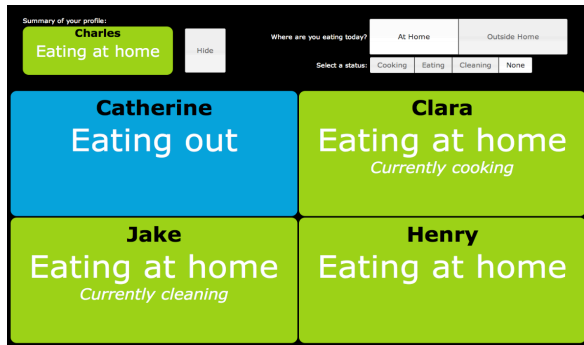
Figure 1. EATProbe interface consisting of a mosaic reflecting the status of each individual

Figure 2. EATProbe installed on the kitchen counter in a participant's house

thoughtfulness, and reciprocity of interaction. The ambiguity inherent in such simple systems seems to afford interpretation and reflection. This reflection formed a core goal of our interest in developing and deploying EATProbe as a means for people to reflect on mealtime interactions with others.

Awareness systems distribute social information either through deliberate user interaction or automatically (e.g. based on sensor information, or reasoning). For example, InPhase fosters a sense of "activity coincidence" when two remote individuals perform similar actions in different homes (e.g. opening a door) by automatically playing a chime when this occurs [6]. Others, such as the one-bit awareness system [4], rely on deliberate user action. The deliberate action of the latter maps closer to the shared experience of a commensal meal, where the social experience is a matter of active, or deliberate participation.

Many of these domestic awareness systems focus on bridging distance between families or intimate partners (e.g. [4]). Our work with EATProbe differs in two fundamental ways: (a) rather than general awareness, we are interested in how awareness systems might be used around what might otherwise be considered a shared social activity (i.e. eating), and (b) we are working with people who do not share the same intimacy as family members (i.e. they are friends). Thus, the basis for understanding what this awareness means is not "grounded in reality" in the same way as with prior domestic awareness systems.

2.2 Mealtime Connectedness

Work focusing on connecting remote individuals around mealtimes has largely explored how to provide an "eating face-to-face" experience. This is generally afforded through a video conferencing system placed near dining areas, or through shared tangible interaction [8]. While this works well for "synchronous meals," where people are eating simultaneously, it works less well for those who live in different time zones. Recent work by Tsujita et al. [7] study how phased recording and playback of "dining videos" can support these individuals. But broadly, these works raise the question of whether video is a necessary medium for this space. For instance, some may not be comfortable with video, as it may draw unnecessary focus on the visual (and aural) experience of the meal (e.g., mastication, or cutlery clinking on dishes). Instead, our work focuses on the unique qualities of this situation that people enjoy experiencing around mealtimes (e.g. company). Our thinking is heavily influenced by the ideas underlying celebratory technologies, where the focus is to support enjoyment and delight, rather than attempting to alleviate deficiencies around an experience [3].

This broadened perspective on commensality is shared in the sociology literature. Commensality is defined by structures: the commensal circle defining the primary social structure [5], and place and time structures facilitate these social organizations [1]. This provides a certain routine to a commensal meal. In contrast, meals eaten alone are usually more flexible and are described as "grazing or snacking" [1]. A system that attempts to support commensality for individuals who live alone should consider these more variant contexts.

3. TECHNOLOGICAL PROBE

At this early stage, it is unclear how the practices of commensal meals carry over when participants are not collocated. The prior work on awareness systems gives us good reason to expect that designs for this space should be fruitful. In this exploratory work, we designed and deployed a simple technological probe to understand this design space.

3.1 Probe Design

Requirements. The design of the Eating Together Alone Probe (EATProbe) was based on three simple requirements: (1) the system should support a group of individuals (e.g. friends)—we were interested in the "modern familial" commensal unit [5]; (2) the system should support only simple awareness signals; (3) the system should employ deliberate interactions. At this early design stage, we focused on simple, deliberate actions, as we were unclear as to the privacy requirements of individuals; further, the simplicity afforded some ambiguity, giving participants latitude in how they interpreted the use of the system.

Description. EATProbe is designed as a simple mosaic presented on a touch-screen tablet interface (Figure 1). Each tile in the mosaic represents the status of an individual in one's social network. A user selects one of six states (no status, eating out, eating in, eating in – cooking, eating in – eating, eating in – cleaning), and can change it whenever he chooses by simply touching the screen.

Probe Deployment. We deployed EATProbe to a small group of five friends, aged 23-28, all male. Each lived either alone, or with roommates with whom he did not typically eat dinner. These friends were technology-savvy, accustomed to using various forms of communication technology on a regular basis, and all lived within the same geographic region. We asked the participants to install EATProbe in their kitchens (e.g. Figure 2), and we logged a week of interaction with the system. We then followed up by interviewing each participant, where we asked him

to re-imagine his dinnertime activities given his experiences with the probe. Overall, the participants used the probe every day, except for one day when a participant experienced technical difficulties, around dinnertime. System logs indicate the system was used between about 5:15pm (earliest status change during the week) to 11:45pm (latest status change during the week).

3.2 Lessons Learned and Opportunities

We performed a thematic analysis of the interviews, and arrived at three salient themes that relate to EATProbe: its role as a peripheral, reliable awareness tool; its use in fostering a feeling of shared temporality and social presence, and its use as a catalyst for other forms of communication around the meal. We describe these themes holistically as a set of lessons learned about EATProbe, as well as opportunities for potential future designs.

3.2.1 Peripheral awareness: always-on and fixed

In contrast to social media applications that are opened on-demand, EATProbe was an always-on display, making awareness information available all the time. As an always-on display, users would not have to explicitly *remember* to look for awareness information, nor would it require explicit action to gain access to it. Instead, users would gather this social awareness information unintentionally: "[It's] like a surprise piece of information that you're not actively seeking, but that's present in the environment" [p4]. The act of setting one's status meant that implicitly, they would need to glance at the information on the probe's display—that is, gathering information was done in the same step as setting one's status: awareness was not something to be sought out; instead, it was always available.

This gathering of meal-related social awareness was aided by the fact that the display was fixed in the participants' kitchens, where many mealtime activities occurred. Placing the probe in the kitchen, where meal-related activities would naturally occur, meant that the information would be visible in a contextually relevant location: "When I was cooking, I liked to just look over at it to see what others were up to" [p4]. Placing awareness systems in functionally similar environments at both locations could facilitate the sense of shared experience. Here, users became aware of their peers' activities when they were both in their kitchens during contextually similar activities.

While the probe's kitchen location was well-suited for cooking and cleaning activities, this placement did not suit the solitary eating routines of many of our participants. Many reported that solitary meals were likely to be consumed in the privacy of bedrooms, or in front of the TV. In these locations, our fixed-location probe, and the information it offered was inaccessible. This raises a design tension for mealtime awareness systems: how should we support the same effortless gathering of contextually-appropriate awareness information given the fluid routines of solitary mealtime activities around the home?

3.2.2 Temporal sociability and connectedness

Participants derived a sense of sociability in how they made use of EATProbe's status changes. Plainly, our users enjoyed seeing statuses related to mealtime activities in the home, as they indicated that others were engaging in similar (mealtime) activities in a similar space (kitchen) in their own home. This co-temporality of activity gave users a pleasant feeling of sociability—something akin to the connectedness described by [2]. Beyond just "know[ing] better what's going on around you" [p5], participants reported that it was "cool to feel like there was some indication of company" [p4].

Similarly, the act of *changing a status* took on a social quality. For example, a participant interpreted the use of status changes as a "thinking of you token" [p4] invoked as a simple means of communication (much as in [4]). And, because these status changes were the result of deliberate action on the part of other users, they became a relatively reliable indicator of others' presence—both around the system, and in terms of related mealtime activity. While this may suggest the use of EATProbe as a rich messaging tool, some users were satisfied with these simple tokens of communication (i.e. a status change).

All but one participant reported generally feeling more aware of the group's eating patterns, and were able to articulate what they felt were patterns of others' behaviors, even given only a single week of use: "I got to say I got a better sense of when people eat, how often they go out… There was someone going out every night. Let's see, p2 eats at home quite a bit, um p3 goes out. I guess it's more information, it's like a mental model of what people do" [p5]. Thus, beyond the "in-the-moment sociability" of the status changes themselves, the information itself was helping participants gain an ongoing awareness of others' mealtime routines. This awareness would, in principle, allow participants to easily modify and adapt their own mealtime patterns if they were interested in co-temporal mealtime activity.

To be clear, participants did *not* feel that using the EATProbe was anything like actually eating *with* the other members of the group. However, EATProbe did provide participants with the ability to send and receive basic social signals around mealtime activities, allowing them to engage in additional interaction if they so desired. For example, taking note of the previous evening's statuses, one participant asked another where he had gone to eat out the night before: "I could tease p1 and be like: oh! I saw that you ate out last night" [p4], and another participant imagined that the information could be used to say: "I'm trying this [new recipe] out, who wants to come over and try it and have dinner at my house?" [p2]. This suggests that while the social signals and feelings of social presence may be "enough" in many cases, this type of social awareness around dinnertime activities can also act as a catalyst for additional sociability.

3.2.3 Catalyst for rich interaction

The social awareness afforded by EATProbe sometimes acted as a catalyst for richer forms of interaction, both through the probe, and with other media. For example, one participant reported that given the awareness he had of others' dinner activities, "[he] found [himself] wanting to communicate with them somehow," and toggled between different states as a means to draw the attention of others (unfortunately, our system design did not reflect these changes immediately, meaning his actions were not seen remotely). Consistent with this idea, some users suggested building a chatting module directly into the probe, allowing people to transition from awareness into interaction with the same system such as one participant who would have liked to know more about his friend's plans: "there were several times when p2 was eating out and I was curious where he's eating out" [P2]. Similarly, some participants imagined other potential forms of structured interaction, whereby the probe could be used to expose recipes that were being made, or where people could indicate whether they would be interested in going out for dinner (as a lightweight alternative to calling people explicitly). Thus, participants thought that the EATProbe could potentially act as a "hub" for mealtime communication.

Participants also used the probe as a gateway to richer interaction with other media. In at least one instance, a status change caused a pair of participants to transition to a text messaging interaction about the recipes they were trying that evening. Others envisioned this type of system helping them organize a more traditional commensal meal if they saw their friends eating at home at the same time. This implies that a social awareness system could be enough to nudge people who live alone towards social interactions around mealtime activities.

The conversations and interactions inspired by the awareness system can also extend meal-based conversations beyond mealtime. Participants imagined the status messages to be used for rich, ongoing interactions with one another. Since the people using EATProbe are friends who interact outside of mealtime, talking about the common experience mediated through EATProbe provides more opportunities for social bonding.

3. DISCUSSION

A commensal meal is a shared experience that strengthens the social bond within a family or a group of friends. Prior work has shown that social awareness systems affect feelings of social connectedness [4]. Our goal in deploying this probe was to explore how social systems could mediate remote commensality. We discuss here three research themes arising from this work: supporting a range of social opportunities, personal reflection on meal choices, and peri-synchronous interactions.

Because EATProbe was used by a group of friends, it acted as a catalyst for communication around mealtimes. Many felt the nature of this interaction could also include more explicit, or formal messaging mechanisms such as a chat feature built into the system or through text messaging from a phone. We also saw earlier that some participants were pleased simply with the social presence and "thinking of you token" aspect of the system. This suggests that systems of this type should support commensality among a group of friends in a number of ways: prompting opportunities for people to physically get together; providing transitions into richer forms of interaction (such as messaging); supporting simple social presence as EATProbe did, or giving people solitude if they choose, allowing them to disengage with the system altogether.

Conveying social information also had a direct effect on personal reflections and behaviors. A system like EATProbe can introduce these types of social comparisons, and foster reflection on people's own patterns and behaviours. In the context of food choice, this could lead to systems that might support accountability in a social dieting group (suggested by one of the participants). More broadly, this could have a direct impact on changing daily habits. Mealtime activities are deeply ingrained in routines both in terms of time and space [1]. A system like EATProbe could help people develop new routines such as eating in a fixed place where the awareness system is placed, or perhaps temporally, where people might begin to eat dinner at times to match their friends' meal times. The implications for this work points to possibilities for celebratory technologies to contribute to on-going research in behavior change and persuasive systems.

EATProbe's functionality was focused on dinnertime events, which were relatively stable for our participants (i.e. within six hours of one another). The likelihood of temporal co-occurrence of these activities across people is likely to be relatively high (i.e. two people are likely going to be eating around the same time), adding additional temporal structure around these interactions. This temporality is central to traditional commensality [1], since shared time is central to the shared experience. In EATProbe, the status messages stayed active throughout the night, this was meant to increase this sense of temporal proximity. Since dinnertime can happen at different times for different people, keeping this status available stretched the sense of togetherness by providing some ambiguity about the status change. The activity statuses were real-time, meaning these statuses could highlight activity coincidences, such as resulting in the interaction between the two participants who ended up texting each other. Augmenting the shared temporal experience of dinnertime is a unique design opportunity here.

The work we present here is clearly limited in a number of ways. For instance, our findings are based on a study of a small group of technologically savvy 20-30 year olds males. Yet, our findings already do present a number of interesting new avenues for designers to pursue. The observations reported here suggest that a social system that affords simple interactions around mealtime can support a shared commensal experience. Clearly, these experiences are different than a traditional commensal meal, yet we argue that users still find them meaningful.

4. CONCLUSION

Many individuals often eat alone due to the circumstances in their lives, and consequently, miss out on the social benefits of commensal mealtimes. Danesi argues that these individuals rely on different commensal patterns (e.g. casual BBQs rather than formal sit-down meals), effectively redefining meal-sharing norms [1]. Our findings from the deployment of EATProbe follows this general theme, suggesting that social technology around mealtime can create new opportunities for supporting connectedness and mealtime interactions, allowing these individuals to evolve altogether new forms of commensality.

5. ACKNOWLEDGMENTS

6. REFERENCES

[1] Danesi, G., Commensality in French and German young adults: An ethnographic study. *Hospitality & Society* 1, 2 (2011), 153–172.

[2] Dey, A., K., De Guzman, E. S., From awareness to connectedness: the design and deployment of presence displays. Proc. CHI (2006), 899-908.

[3] Grimes, A. and Harper, R., Celebratory Technology: New Directions for Food Research in HCI. Proc. CHI (2008), 467-476.

[4] Kaye, J. 'J.', Levitt, M. K., Nevins, J. , Golden, J., Schmidt, V., Communicating intimacy one bit at a time. Proc. CHI 2005 Extended Abstracts (2005), 1529-1532.

[5] Sobal, J. and Nelson, M. K., Commensal eating patterns: A community study. Appetite, 41, 2 (2003), 181–90.

[6] Tsujita, H., Tsukada, K., Itiro, S., InPhase: Evaluation of a Communication System Focused on "Happy Coincidences" of Daily Behaviors. Proc. CHI (2010), 2481-2490.

[7] Tsujita, H., Yarosh, S., Abowd, G., CU-Later: a communication system considering time difference. Proc. Ubicomp (2010), 435-436.

[8] Wei, J., Wang, X., Peiris, R. L., Choi, Y., Martinez, X., R., Tache, R., Koh, J., Halupka, V., Cheok. A.D., CoDine: an interactive multi-sensory system for remote dining. Proc. UbiComp (2011), 21-30.