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Maintaining intimacy at a distance: an exploration of human–computer interaction's approach to mediating intimacy

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An analysis of information and communication technology designed to support communication between intimates at a geographic distance is carried out via a framework that consists of five themes. This framework was developed by considering what has emerged from human–computer interaction's (HCI) research on supporting mediated intimacy. Themes are: (1) drawing on existing practices, (2) a focus on the capability of technology, (3) increasing levels of contact, (4) idealising intimacy, and (5) prescribing what constitutes intimacy. The HCI research on intimacy is explored thematically in light of the social psychology of intimate relationships. The tensions that are reported in HCI research on intimacy can be interpreted as emanating from a tendency to fragment what is necessarily a holistic experience. Intimate relationships are complex and delicately balanced, thus a reductionist approach to mediating intimacy may be undermining HCI's potential to address the challenge of supporting intimates living at a geographic distance. While a fragmentation of the experience of intimacy can be methodologically productive for HCI, a more holistic approach to intimate relationships may enhance technological support for communication between geographically distant intimates.

Keywords: mediated intimacy; HCI; social impact

1. Introduction

The convergence of technology and our social world continues, with personal relationships established within the ambit of human–computer interaction (HCI) research. One of the most personal relationships, intimacy, is now also of interest to researchers in HCI. Globalisation has ensured that information and communication technology (ICT) that supports intimacy continues to spark the interest and creativity of HCI researchers. Research on transnationalism and migration also highlights the importance of ICT for people relying on them to maintain long-distance intimate relationships. For instance, Wilding (2007) found that new ICTs are assimilated into existing practices, soon becoming part of everyday communication in personal relationships. This process of assimilation is important, particularly for the constitutive theories on communication (e.g. Duck *et al*. 1997, Baxter 2004). This theoretical perspective regards the interaction that sustains social relationships as being creative of the relationships themselves. For instance, our recurring everyday social practices and interactions constitute us (Butcher 2004, 2009). From this theoretical perspective, therefore, the ICT that mediates intimate relationships participates in the creation of intimacy itself. This process is evident in the constraints and affordances of ICT, as they play a creative role in the communication between geographically separated

dyads. As such, ICT becomes part of the communication between intimates, and thus part of creating the personal relationship itself. HCI, therefore, has an impact on social relationships through its conceptualisation of intimacy. The salient issue is how to understand that impact.

Mantovani (2002) and Pacey (1999) point out that the process of assimilating new ICT into existing practices is gradual and partial: the possibilities for communicating and interacting offered may be adopted piecemeal. The impact of new ICT often becomes apparent only with hindsight, with the gradual adoption of features in unforeseen ways. One contemporary example is short message service (SMS via mobile telephones): an afterthought saw the inclusion of a paging service on mobile telephones, and its popularity was unanticipated (Vincent 2004). The iterative development of SMS is illustrated by the inclusion of message templates, together with increased storage capacity to enable retention of SMS that serve, for instance, as diary reminders or have become emotionally meaningful (Grinter and Eldridge 2003, King and Forlizzi 2007). Thus, while the development of ICT may appear to be linear in retrospect, what is characteristic is surprise and uncertainty. Pacey (1990, 1999) argues that the locus of uncertainty is the interaction between people and technology: the site of emerging uses. This interaction between people and ICT is

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not linear, rather it is dynamic, responsive, and mutually constitutive.

While it is not possible to foresee how a particular ICT may be adopted, much less predict the ensuing consequences, the discourses surrounding intimacy and its mediation in HCI have an impact on, and indeed participate in, the creation of intimacy itself. Consider the implicit expectations and social norms communicated, for instance, through particular affordances and features in ICT: from these it is possible to infer not alone what we are, these also inform what we have the potential to become. In the context of HCI, Bardzell (2009) distinguishes between two types of user: the intensional and the extensional. The former is the kind of person considered as an appropriate or felicitous user, while the latter refers to anyone who may use the system. Using Bardzell's (2009) distinction, what is implicit in the affordances and constraints designed for the intensional user participates in the creation of their social world, and thereby the person. While the extensional user is less focal, they too are created by the same affordances and constraints. The implicit and explicit characteristics of ICT play a part in this construction, as does the surrounding discourse in HCI. What is conveyed about social relationships in HCI has an impact on users, and therefore, their intimate relationships. With the constitutive role that ICT has in communication, and thus social and personal relationships, the impact of the HCI community's conceptualisation of intimacy and intimate relationships is increasingly important as technological support for geographically separated intimates has become of interest to the research community. However, this particular area is one where drawing distinctions between components of personal interaction can be a site of tension. For example, Gibbs *et al.* (2006), draw a distinction between two areas: one is the exchange of emotion, juxtaposed with the communication of information. While suggesting a dichotomy between these two areas might appear useful at first glance, this highlights what is a challenging issue. The issue is that with the suggestion that emotion can be exchanged, it becomes reified, and thus is regarded as being analogous to information. Boehner *et al.* (2007a) have explored the impact of HCI's creative role as it conceptualises affect formally, despite being inherently unformalisable. They argue that in contrast to a concept of affect as information, a more constructive approach for HCI would be to focus on the interaction between those involved, as affect is argued to be contingent on the interaction that creates the relationship. Drawing on Boehner *et al.*'s (2007a) work, a similarly constitutive perspective on communication and social relationships provides the theoretical framework for the analysis of mediated intimacy undertaken in this paper. As the personal and ICT become increasingly intertwined, others emphasise the inclusion of human values in HCI research. For example, Le Dantec *et al.* (2009) reported on the impact of evolving ICT and its unanticipated consequences for those living homeless. They propose eliciting participant values early in the design process by means of, inter alia, photo-ethnography. In the context of their work on mediated intimacy, Alsheikh *et al.* (2011) highlight the importance of cultural variation in the interpretation of interaction with ICT, arguing that HCI adopt a critical theoretical stance, grounded in literature, to enable understanding and validation of participant values.

The lacuna being addressed in this paper is a focus on intimacy as conceptualised by HCI. Through an exploration of examples of ICT, the five-part framework draws out some of the salient issues for HCI on mediated intimacy. It is argued that the concept of intimacy has been fragmented, reduced to its component parts and represented as observable. What is observable is the physical act, and in the process of emulating the transmission of this act, intimacy necessarily becomes reified. As such, intimacy is conceptualised as transmissible, therefore analogous to information. There is a tendency for the observable to become focal, at the expense of the meaning of the interaction and an underplaying of the characteristic responsiveness of intimacy. Mediating intimacy in this manner suggests that it is possible to communicate the qualities of intimacy via technology, as information flowing. This approach, as we shall see, is not coherent with research on the social psychology of intimate relationships.

2. The five-part thematic framework

The HCI research on supporting communication between geographically separated intimates is diverse. Five distinct themes have been identified to facilitate discussion of the issues. Themes are:

(1) *Drawing on existing practices*: based on the practices possible for those co-present, and their application to ICT.
(2) *Focussing on the capability of technology*: the technology *per se* is the focus of the research: artefacts to support intimacy are inspired by what is technologically possible.
(3) *Increasing the level of contact possible between people*: the development of a continuing awareness of the distant other.
(4) *Idealising intimacy as desirable and positive*: a focus on capturing and emulating specific moments of idealised intimacy.
(5) *Prescribing what constitutes intimacy*: what the artefact is intended to support is specified.

The framework facilitates a thematic discussion of the impact of HCI research on intimacy. Each of the five themes will be explored with specific examples illustrating the emerging issues, and the implications for mediated intimate relationships. The implications concern the conceptualisation of intimacy within the HCI community, and how ICT is integrated into such concepts.

2.1. *Theme 1: drawing on existing practices*

Boon (1994) characterises intimate relationships as ventures that require delicate balancing in order to be preserved intact, and maintaining such complex relationships has traditionally involved the physical proximity of face-to-face contact. Taking the physicality of a face-to-face activity as a starting point and extrapolating from that in order to emulate what is possible for those co-present, is an approach that has inspired researchers in HCI seeking to support intimacy. There are, however, ensuing limitations with this approach. Through an exploration of some examples where the inspiration of this theme may be seen, some of what inheres with such an approach can be rendered explicit, as can some of the underlying tensions. The first example is holding hands and the second example is giving gifts.

2.1.1. *Holding hands*

The physical gesture of handholding has generated interest for supporting mediated intimacy (e.g. Kaye and Goulding 2004, Vetere *et al*. 2005), prompting its emulation via technological artefacts. For instance, O'Brien and Mueller (2006) reported on the development of their handholding probe. Described as a yellow stress ball, the aim of the probe was to 'better understand if and when intimate couples desire to hold hands when apart' (O'Brien and Mueller 2006, p. 293). Despite initial enthusiasm from the participants, the researchers reported a subsequent lack of interaction with the probe. This was attributed to physical characteristics thought to have rendered the probe unattractive, such as tactile uniformity. As a response and remedy, a second probe was designed with more varied tactile characteristics. It is interesting to consider the importance attributed to the physical characteristics of these probes. Given that physical qualities are placed centre stage, it would seem that the probe was intended to simulate the physicality of handholding. Implicit in this is that the gesture of handholding was conceptualised as the physical act *per se*. However, if the lack of interaction with the initial probe is considered from a different perspective, one emphasising the meaning of handholding, an alternative possibility for the lack of interaction emerges. The handholding that inspired O'Brien and Mueller (2006) involved the desire to touch another, however, the tension lies in what extends beyond the tactile. Handholding takes place within the context of an intimate relationship: it is embedded in a shared past, the gesture is part of building the relationship (Montagu 1971), and is also symbolic of its meaning, such as a commitment to a shared future. A conception of handholding as tactile reduces the physical gesture to the observable. The meaning of the physical gesture when people can touch each other is underplayed: this includes, for instance, the possibility of responsiveness to the perceived needs of the other. The responsiveness associated with intimacy has particular characteristics: it is embedded in prior interaction,

and addresses the needs or wishes of the other (Laurenceau *et al*. 2004). Thus while it may be possible to simulate the physical act, doing so rather sidelines other essential components of the gesture. The intimates' interaction is reduced to its individual components with a reliance on one of them, physical action, to express the holistic interaction of the intimate relationship.

The incorporation of responsive interaction between the intimate dyad (Laurenceau *et al*. 2004) can be seen in Kaye and Goulding's (2004) design to support mediated intimacy with handholding. This design provided for the heartbeat of an absent intimate to prompt a matching rhythmic pulse in a silicone hand shaped device. The idea was to enable the person at a distance to feel this pulse when they placed their hand on the device, representing the heartbeat. Creating the possibility of interaction between the intimates when both members of the separated dyad placed their hands on the device, the silicone would become warm. The challenge for researchers seeking to support mediated intimacy is clear: the interaction envisaged emulating the physicality of the co-present. Despite a representation of a heartbeat that was tangible to the absent intimate, together with the sensation of heat, the extended meaning inhering in the physical gesture was sidelined. Without other simultaneous communication between the dyadic pair, the meaning that the gesture of touch might convey relies on what one member of the dyad might imagine, sidelining the meaningful responsiveness that is characteristic of intimacy (Kaye and Goulding 2004). The second example that illustrates this first theme is gift giving.

2.1.2. *Gift giving*

Giving casual gifts was the inspiration for a design by Truong *et al*. (2004). Casual gift giving was interpreted as the communication of affection, and the example for the inspiration was bringing the gift of a peppermint candy back after having been at lunch. Truong *et al.*'s (2004) aim was to enable those at a geographic distance to share the same personal interactions as those who were co-located. What is interesting in this research is that the candy was taken as having meaning in itself, symbolising affection. The symbolic nature of the gift was foregrounded. Thus, while physicality was important, the meaning of the gesture was also important. The design was for a device that dispensed candy once a particular number of hits were registered on the recipient's web page. The number of hits was high initially, attributed to novelty. A decrease followed, and then an inconsistent level of hits. The inconsistent level in use subsequently became more consistent, and this was attributed to the recipient of the candy including personal updates on their web page. Let us now consider the gift giving and varying level of hits in light of the research on intimate relationships.

Supporting meaningful gestures when intimates are at a geographic distance is challenging, as we have seen. With

this first theme, drawing on existing practices, those who are co-present can engage in such gestures effectively. One essential component of this is the responsiveness that is particular to intimacy, as described by Laurenceau *et al*. (2004). Applying this responsiveness to gift giving, the practice that inspired Truong *et al*. (2004), particular characteristics are material. When engaging in the casual interaction of intimacy, such as joking around, catching up, and making plans (Goldsmith and Baxter 1996), intimates develop an on-going awareness of each other, enabling them to respond to changing circumstances, hence gestures such as handholding and gift giving acquire meaning within the intimate relationship. Gift giving is therefore characterised by a dynamic and responsive quality. The gift itself might be linked to previous interactions, to their shared history. It is in such interactions that the gift is embedded, and thus acquires meaning. Such gifts, as meaningful symbols, are woven into the mutual on-going knowledge between intimates. The dispensing of candy on foot of website hits has a somewhat automated quality, although the recipient may be unaware of the number of website hits required to produce the gift, there is a routine that belies gift giving that is spontaneous and responsive, and embedded within a dynamic relationship. Despite this somewhat predictable quality of the gift giving, what the prototype conveys is symbolic of affection. However, in terms of supporting the intimate relationship, there is a tension that is linked to the inability to reference the dynamic and on-going relationship of those involved. The ability to respond to the needs of the other is just where gift giving acquires meaning within relationships. Unlike what is possible for intimates who are co-present, a routine action is somewhat at a remove from the fluidity of perceiving changing needs and responding to them. It is interesting also to consider the recipient's web page updates as being a response to the dispensing of candy, prompting a more consistent level of hits on the web page. While this responsiveness does not have the particular quality characteristic of intimate relationships, the response itself does have an impact on the activities of those concerned, as the number of hits levels off.

2.1.3. Implications

The importance of face-to-face contact is such that some regard it as the benchmark by which other forms of contact are evaluated (Gibbs *et al*. 2006). This suggests that physical contact is an authentic ideal and, hence its emulation via ICT. Implicit with this approach is that physical separation is a barrier to this authentic ideal, and, as we have seen, ICT is conceived of as a means to overcome this separation. What is underlying this approach is twofold: first, that it is possible for HCI to solve something that is being conceptualised as a problem, that is geographic separation, and second, that attempting to do so is desirable. What is being put forward is ICT as a solution, a metaphorical

silver bullet, to what is positioned as the problem of separation. The notion of the metaphorical silver bullet is that a new technological solution will help us progress towards an ideal, by solving what are conceptualised as problems (Marx 2001). As this theme has illustrated, such an approach has limitations.

2.2. Theme 2: Focussing on the capability of technology

The second theme is where there is a shift in focus: from the intimate relationship being supported to technology *per se*. What comes to the fore is the creativity of researchers in supporting mediated intimacy, inspired by technical capability. The artefacts created are often delightful and playful, sometimes whimsical in their appeal.

Gibbs *et al*. (2005), for example, sought to support intimate interaction that was playful, in particular they were inspired by the serendipitous and synchronous contact that may seem trivial, but is meaningful to the dyad, and part of the relationship. According to relationship researchers Prager and Roberts (2004), contact that constitutes and sustains intimate relationships includes joking around and trivial contact, in addition to feelings of deep connection. Gibbs *et al*. (2005) designed SynchroMate to be worn in the palm of the hand by both members of a dyad. When a message was being composed, a light pulsated, alerting the recipient, affording them the opportunity to reciprocate simultaneously. The design was inspired by a user study: the serendipity of sending and simultaneously receiving a message suggested a special connection between the dyad. However, it is possible that in designing ICT to support serendipity, an intrinsic part of the metaphysical connection experienced by the participants was sidelined. While alerting the intimate that a message was being composed for them facilitated reciprocation, it was serendipity that created the potential for surprise that was part of the special metaphysical connection experienced by the participants in Gibbs *et al.*'s (2005) user study. Let us now consider some of the implications of this.

2.2.1. Formalising the ineffable

It is arguable that as technical capability inspires functionality, the consequences of Pacey's (1999) technological imperative come into play to a greater extent. The imperative is the very possibility of technological achievement compelling its realisation. In short, we create an artefact because we can. The possibilities in technology resulted in characteristics of the special contact being sidelined, despite their being where the initial inspiration for serendipity was drawn. This can be seen as a shift in focus, from the intimate relationships HCI aims to mediate and support, to a focus inspired by technical capabilities. The interactional approach to emotion developed by Boehner *et al*. (2007a)

advocates that HCI avoid formalising the unformalisable, and this is useful here as a means of understanding what the participants experienced and the response of HCI to supporting that experience. The co-incidence that the participants interpret as a metaphysical connection between them is regarded as something to be created and designed for them. The question posed by Boehner *et al.* (2007a) concerns whether the resulting technologies enrich or flatten out emotional experience. In this example, the desire to provide technological support for a metaphysical connection means that something that is unformalisable, serendipity, is conceptualised formally. In the process of designing for the ineffable, the quality of serendipity that inspired the design is sidelined with the shift in focus to the possibility of technical achievement. Sidelining parts of experience results in the complexity of intimacy being fragmented as individual components are isolated, such as those of serendipity and surprise.

Let us draw out the nuances of shifting the focus to technical capability further via another example. This example is slow messaging for intimates living at a distance, developed by King and Forlizzi (2007). With slow messaging, the importance of the emotional connection for the dyad, as well as the complexity of intimacy is foregrounded. King and Forlizzi (2007) reported that 'Limitations in interaction and technology problems led to a loss of emotional connection and difficulty working through complex issues' (p. 453). This suggests a link between the loss of emotional connection experienced by the dyads and problems with technology. It is possible, however, to interpret this link in another way. Methodologically, consider the situation of the dyads: participants were living away from their partners, valuing time and effort in their communication. The link identified is interesting: given that the participants were living at a distance from each other, it would be possible to suggest geographic separation as being more salient in terms of the emotional loss that they report experiencing, rather than with technology problems. By interpreting the findings from such a perspective, it is possible that the focus had indeed shifted from the participants' experience of separation and mediated communication, to technology *per se*. The material point is what is implicit in this approach to supporting intimate relationships lived at a distance. Implicit is its corollary, which is that if problems identified as inhering in technology could be surmounted, and perhaps ultimately eliminated, then the emotional losses attendant on living apart might not occur. This echoes a possibility discussed in the preceding Section 2.1.3, the idea of physical distance being conceived of as a barrier, and that it is possible to surmount such a barrier via technological solutions. Underpinning this notion, technology is positioned as the focus, and ICT becomes the remedy to the problem of living apart. The implication is that technology absent problems is the elusive silver bullet: a solution that provides a remedy.

2.3.   *Theme 3: constant contact*

The theme of constant contact involves increasing the level of contact between the geographically separated such that there is on-going awareness of the other. Contact might extend, for instance, to knowledge of their whereabouts and current activities. An example that draws out some of the nuances of this theme is a mobile telephone that displayed the current activities of a social group to each other, designed by Satchell (2008). The background to the inclusion of this feature was a dilemma arising from constant contact reported by Satchell (2008). Participants responded to increasing levels of contact by associating unwanted telephone calls with vulnerability. Hence, there was a desire to be uncontactable on occasion. A tension emerged between this vulnerability and the benefit derived from constant contact, namely, that of reassurance. A solution created to balance the tension was a mobile telephone that displayed avatars representing the user and his/her friends. A symbol indicating current activity could be selected by the telephone user, and attached to his/her avatar. The symbol was then displayed on the mobile telephones of the group of friends, and social, and cultural norms were relied on such that unwanted telephone calls would be minimised. Satchell (2008) links intimacy with presence: the contextual information about others provided by the avatars is intended to help maintain intimacy among the close friends. Let us now consider some issues that arise for the mediation of close and intimate relationships in light of the tension that Satchell (2008) identified and the proposed solution. Wilding's (2006) work on virtual intimacy among migrants found that feelings of closeness were associated with regular email, and that contact included mundane topics, such as the weather and sporting events. Such on-going interactions help to sustain intimate relationships, even in the face of difficulty and conflict. For instance, Boon (1994) writes that those who trust others, important for intimate relationships, are able to do so because they incorporate the negative aspects of their experience into the positive experiences of others. Doing so illustrates something of the dynamic and changing quality of relating, whereby there is the possibility of a reinterpretation of the past, such as allowing for positive motives for actions to be attributed retrospectively. Relationships are, as this illustrates, characterised by a dynamic quality, rather than being static entities. In the current example of the mobile telephone (Satchell 2008), the awareness among intimates that is envisaged is conveyed via the symbol selected for the avatar. While this is a connection to others, the awareness is constrained by the set of preformed symbols from which a selection can be made. Boehner *et al.* (2007a) have argued that HCI develops a priori concepts, onto which human emotion is then mapped, however inadequately this may represent the emotional experience. The symbol for the avatar does not represent emotion, rather it represents an activity, however, a formalisation of human experience is represented by the symbols. The complexity

of human interaction is underplayed by formalisation, and interesting features designed by Satchell (2008) suggest a focus on the relationships involved, going beyond supporting constant contact and awareness in a formal way. One feature was the possibility for deceit, achieved by displaying different symbols to different people, or groups of people, simultaneously. What this meant was that the telephone user could selectively deceive regarding their current activity. The potential for deceit is interesting from a relationship perspective. Let us consider the possibilities that might flow from this. The rationale given for including deceit was the need to manage information about oneself (the particular example given is work colleagues). Perhaps this feature might be extended for use among the group of friends. For example, there are many other reasons for contact to be regarded as unwelcome, such as simply not being in a receptive mood or the ordinary ebb and flow of relationships. It would be interesting to see how the members of social groups might develop their own shared histories and styles of choosing symbols by incorporating this feature. Such patterns of interactions could become assimilated into the group's evolving knowledge of each other, allowing them to incorporate the negative aspects of relationships into their experience of the positive, which is part of intimacy, as we have seen (Boon 1994). Individuals might develop unique symbol use to convey more than what the overt symbol suggests. An example would be if a member of the group displayed a symbol that represented their activity in a way that could be open to interpretation, as Boehner *et al*. (2007a) suggest, based on their evolving shared knowledge. With interpretation being more open, outside of the constraints of the symbols, there is potential for enhancement of their mediated interactions, and ICT use could enrich their experience, for instance, by being incorporated into what are dynamic and evolving relationships.

2.3.1. *Implications*

Satchell (2008) reported that much of the media response to the prototype focussed on the possibility for deceit. The inclusion in Satchell's work of what is generally perceived as negative, viz conflict and deceit, is interesting for two further reasons. First, aspects of the design prompted media interest and public response, suggesting that it struck a chord with the wider sphere of mobile telephone users. Arguably, this illustrates the value of a shift from technology *per se* to the personal relationships that ICT supports. Second, much work on the mediation of intimacy tends to conceive of the notion of constant contact as being a positive development, in contrast to Satchell's (2008) work. Approaches that shy away from addressing the complexity of personal relationships, such as the disadvantages experienced via increased contact, miss out on addressing the conflicts that are part of personal relationships (Perlman and Duck 1987), as the interest in deceit, and the feelings of vulnerability reported by participants indicated. Intimate relationships are built

on a shared and evolving history. The assimilation of the avatar's symbols into such relationships could reflect this dynamism and complexity. However, the telephone being assimilated into mediated intimate relationships would be more challenging if the symbols themselves were conceptualised as lynchpins on which the maintenance of intimacy depends. With the possibility for assimilation into an evolving relationship, mediated intimacy may be enriched, as the intimates extend their mutual knowledge and understanding. Perhaps ICT that is capable of being assimilated into dynamic intimate relationships, as this mobile telephone would be, seems best placed to support those living at a distance. Artefacts that are capable of being adapted in a dynamic manner seem almost a contradiction in terms, as well as being impractical. The dilemma is how an artefact and its capabilities can be designed such that those very capabilities can be adapted in ways that may not even be envisaged. Adaptations would be based on contingencies and the needs and desires of the individuals involved. This does not even begin to take into account what might suggest itself from existing artefacts. However, the issue does not lie in the confounding desire for technology that can morph as an unknown future unfolds. A less prescriptive approach to human experiences of emotion in HCI is part of Boehner *et al.*'s (2007a) interactive approach, and its application to intimate relationships would suggest a focus on, for instance, the meaning of the interaction. The integration of this approach into the design of technology that supports mediated intimacy may not be the illusive silver bullet discussed earlier. Nevertheless, as Satchell's (2008) design illustrates, with such integration the possibility for reflection on the dynamic relationship is enhanced, and this sets the scene for an enriched experience for intimates living at a distance.

2.4. **Theme 4: idealising intimacy**

The idealisation that will be considered in this section is romantic interactions, generally communication between heterosexual couples in a romantic scenario, with loving messages and emotions taking centre stage. Let us consider some examples of idealisation in HCI in order to draw out some of the surrounding issues. An example of a focus on particular and idealised aspects of intimacy can be seen when intimate messages are confined to specific types of communication, as per Kaye and Goulding's (2004) design sketches. These design prototypes include the silicone hand shaped device that warms and pulsates when touched by both members of a geographically distant intimate dyad, discussed earlier in Section 2.1.1. The Love Egg is a design for a prototype to allow couples to leave a message for each other by speaking into an egg-shaped receiver; a corresponding egg rolls gently to indicate to the recipient that a message has been transmitted, and this can be heard by picking up the egg from its concave shaped

dish. While conversations between intimates are acknowledged by the researchers as including the mundane such as property and family, with the Love Egg, such mundane topics are specifically excluded. In excluding the mundane from the sphere of the intimate for particular conversations, there is the implication that what is intimate has a particular quality setting it apart from other interactions. In this example, quality relates to explicit expressions of love, and refer to the 'loved one' and the 'lover's ear' (Kaye and Goulding 2004, p. 343). The issue is that idealised qualities of intimate relationships become focal, isolated, and separated from other aspects of the relationship. Relationship researcher Baxter (2004) describes the sublime moments of intimate relationships as punctuating everyday experience and, as such, becoming memorable. These experiences are described as aesthetic moments: occasions where the engagement of the dyadic pair with each other is significant, meaningful, and fulfilling. Recalling such moments, there is a blurring of boundaries between self and other, described as the 'merging of the two parties into one relational entity' (Baxter 2004, p. 13). Baxter and DeGooyer (2001) found that a commonality among these reported experiences was a sense of joy, stimulation, and deep pleasure. Descriptions of such moments are characterised by the conversational flow seeming to take on a life of its own. Describing such conversation, Meares (2000) also evokes the sensual pleasure that is possible: there is a peculiar warmth, a wandering form, associated with a feeling of well-being. In this type of conversation, images from the past come into awareness, particular episodes, which, for many people, can be visualised in what he describes as an almost cinematic way. Baxter and DeGooyer (2001) also refer to the temporal continuity that characterises such experiences: there is a merging of the past and present, or the present and the projected future. The quality of these experiences of intimacy is at a remove from the mundane. Yet it is engaging in the everyday and mundane that creates and develops intimate relationships. It is within the auspices of these trusting relationships that the scene is set for the memorable experiences that are meaningful. The mundane is therefore an important part of intimate relating, whether it is mundane activities or topics of conversation. A HCI focus on supporting mediated intimacy via idealised expressions of romantic love means that intimate interaction is fragmented. While Kaye and Goulding (2004) clearly include the mundane within the ambit of intimacy generally, a particular aspect of intimacy is being isolated from others, namely, expressions of love. The challenge that stems from dichotomising intimacy into ideal and mundane interactions is that the everyday mundane interaction sets the scene for ideal memorable moments. Both components are constitutive of intimacy and, as such, inseparable. Conversations are often unpredictable and dynamic, and no less so when those involved are intimate. Chatting about a mundane topic, for instance, may be the precise interaction where memorable intimate conversation is experienced, as

empathy and engagement with the day-to-day concerns of the other come into play.

Another useful example is found in a prototype for a three-dimensional virtual cube that aims at supporting the feeling of presence-in-absence for intimate partners (Garnaes *et al.* 2007). A combination of selected symbols could be attached to one side of the cube in order to communicate with an absent partner, who could be notified electronically that a message has been composed for him/her. The hypothetical use scenario exemplifying the use of the cube is idyllic: Bob has been left a sweet message the day before, and continues his work with a smile. With this idyllic description, the scenario shapes how intimacy is conceptualised, telling us what is being supported. While such an idyllic description does not at all constrain the use of the cube, the material point is that such idealisation contributes to a fragmented concept of the interaction that sustains intimate relationships. If we consider intimate relationships and the interactions that support them as dynamic and evolving, what would be interesting for supporting mediated intimate relationships is how the prototype might be incorporated into on-going relationships, as Satchell's (2008) mobile telephone could. For instance, its use could be adapted to communicate a wider range of interactions than envisaged, perhaps with its intended use subverted, reflecting the extensive knowledge that intimates share, and thereby enriching their mediated interactions. The fragmentation that idealisation illustrates tends towards a concept of intimacy as being a particular act, and thus reifies intimacy, suggesting that such an isolated act may be the basis for maintaining intimacy, hence the essential qualities of interaction and responsiveness are underplayed.

2.4.1. *Implications*

With a fragmentation of how the experience of intimacy is conceptualised, HCI tends to focus on supporting particular elements and aspects. Broadening its concept of intimacy to take account of the complexity of relationships, as the approaches of King and Forlizzi (2007) and Satchell (2008) reflect, may be a more sustainable approach to supporting the separated intimate dyad.

2.5. *Theme 5: prescribing intimacy*

When HCI researchers focus on supporting intimacy, an inevitable part of the research process is that personal perspectives and experiences shade what emerges. Such an observation might appear commonplace, Lincoln and Denzin (2003) point out that there is no neutral 'god's-eye view' where a given reality is revealed. Nevertheless, the personal nature of intimate relationships tends to lend research on their mediation by technology a tendency to foreground, what might otherwise be considered idiosyncratic, and thereby specifying what constitutes intimacy

As an example, Vetere *et al.* (2005) report that the data is 'often discussed in terms of the researchers' own experiences of intimacy' (p. 474). Subjective analytic practices, such as that described, are not out of the ordinary in research, particularly where qualitative research methods are being used. In such cases reflexivity brings subjectivity into the substance of what is reported, a technique that facilitates transparency and supports findings. In Vetere *et al.* (2005), however, reflexivity is limited to being mentioned as above, and what emerges from this is interesting. The researchers wanted to develop a shared understanding of intimacy with the participants, and thereby develop an interpretative understanding of their practices. However, there is a sense that something is lost between the idiographic aim of the research question, as described at the outset, and what is reported. What is reported is a synthesis and overview of the data in the form of dominant themes. Thus, rather than gaining an interpretative insight into the practices of the participants, what is reported seems more in line with an agreed consensus. The significance for HCI is that the complexity of intimacy is underplayed in what emerges. Methodologically, the inclusion of reflexivity in the process could have shed light on the concept of intimacy from the perspectives of both the HCI researchers, and that of participants. Incorporating these different perspectives would be a valuable resource, drawing out how their particular expertise and insights might be informing how intimacy is conceptualised within the HCI community.

To consider another example of prescription, Gibbs *et al.* (2006) make a case for retaining the emotional aspects of mediated sex in their research, as a means of avoiding 'reducing mediated sex to a series of "differently embodied" [...] one night stands or bordello visits' (p. 2). The approach taken implies a hierarchical distinction between different types of sexual activity when technological mediation is the focus. The distinction drawn is between sexual activity within relationships that are strong-tie and intimate, and a reduced version, exemplified by casual sex. Specifying the ambit of interest is intended to embed the work within the nuances of social relationships. What this implies is that a hierarchical distinction is being drawn between mediated sexual activity, based on the particular relationship of those involved. Another implication is that casual sex is excluded from the ambit of social relationships. Gibbs *et al.* (2006) critique intimacy being idealised, and perhaps their critical approach has scope to be extended to how sexual activity is described. For example, by dichotomising sexual activity, perhaps the sexual act itself is being idealised. There is an implication that those who engage in sexual activity in the context of strong-tie, intimate relationships, do not engage in other types of sexual activity. The implication is that social relationships exclude one night stands. However, casual sexual relationships necessarily take place within the ambit of social relationships.

2.5.1. *Implications*

Duck *et al.* (1997) make the point that relationship researchers 'typically determine *a priori* the nature of a relevant relationship based on social norms associated with relational labels' (p. 6) and relationships thereby become exclusive categories with unpredictability and complexity downplayed. As an example, they cite the hybrid relationship of 'flovers' identified by Bradac (1983, cited in Duck *et al.* 1997), that is, friends who are lovers. Their critique of the formalisation of human experience echoes Boehner *et al.*'s (2007a) critique of the imposition of a priori concepts onto emotions in HCI. The desire for formality that both of these approaches represent seems, therefore, to be at odds with lived experience, from the perspectives of both relationship research and HCI research. If HCI is indeed to 'service truly intimate contact, or mediate intimate human-human interaction' as Gibbs *et al.* (2006, p. 4) hope, then perhaps what constitutes an intimate relationship may best be left to those interacting. By prescribing the relationship type where intimate interaction takes place, there is an imposition that sidelines the dynamism and complexity of human interaction. If strong-tie relationships are a marker for this research area, parameters are being set for mediated sexual interaction, which may detract from the potential of HCI to support intimacy.

3. Discussion

There is a dilemma in creating technological support for intimate relationships. Intimacy has been described as one of the most important social relationships: within its ambit are experiences that range from the mundane to the aesthetic. The complexity and dynamism of intimacy are challenging, yet the geographically separated intimate dyad presents HCI with the potential to enrich lived experience. The five-part thematic framework structured this discussion, drawing out what is implicit in the technological mediation of intimacy, and adds to the understanding of how intimacy is conceptualised in the HCI community.

This paper considered some of the challenges associated with supporting geographically separated intimate dyads where the emulation of face-to-face practices is a starting point. Conceptually, one limitation stems from a focus on intimate acts *per se* (Vetere *et al.* 2005). Equating the experience of intimacy with an act carries limitations, as discussed in the examples. This is because any emulation of the act lacks the qualities that renders the physical act meaningful for those who are co-present, for instance, the emotional quality of the act, and its meaning for those involved. Vetere *et al.* (2005) make the point that the intimate act is laden with emotional significance. Nevertheless, as we have seen, the tendency towards emulation of the physical act itself reflects the importance of physicality in the orientation that HCI takes to supporting of intimate relating. It is worth noting that in a critique of definitions of intimacy, Vetere *et al.* (2005) highlight the dearth of design traction provided. It is

possible that the focus on physical acts to support mediated intimacy is a means of gaining some of the design traction that is perceived as lacking when intimacy is brought centre stage in HCI. The challenge presented to HCI by the intangibility of intimacy is similar to that presented by emotion. The consequences for HCI of rendering emotion in informational terms is noted by Boehner *et al.* (2007a). They point out that while that it is methodically convenient to do so, the difficulty is that a range of issues is obscured. For instance, with the formalising of the unformalisable, not just what emotion is, but what it does is obscured. The result is that what is subtle and complex about emotion is rendered in terms that sideline these qualities. Intimacy is similarly subtle and complex (Boon 1994), requiring, for instance, a particular responsiveness. Rather than a focus on what intimacy *is*, that is, in defining intimacy, a focus on what the intimate relationship *does* may prove useful. For instance, Laurenceau *et al.* (2004, p. 64) comment that 'responses have to demonstrate concern for the discloser, be sincere and immediate, capture the content of the original communication and meet the needs of the discloser'. Intimacy is not reified when we think of it in this way, rather we think of the significance of the interaction between the dyad, of what the relationship means for them. Supporting such responsive interaction for intimates living at a distance highlights what is prioritised for the separated dyad, and this underscores the challenge for HCI.

It is noteworthy that among several themes there was a commonality, for instance, between idealisation of intimacy and technical capability. The commonality is that there is a tendency to isolate and then focus on aspects of intimacy. In doing so, there is a fragmentation of the experience of intimate relating. This fragmentation suggests a pursuit of an essential component of intimacy, with a view to its being recreated via technology. The consequence of such an approach is that the holistic experience is somewhat undermined. The tensions identified in this paper highlight how any conceptualisation of intimacy that tends towards the reductive limits HCI's potential and effectiveness. At a practical level, perhaps the challenge presented by intimate relationships is too complex. Consider that the initial enthusiasm for incorporating human values into HCI's agenda (Harper *et al.* 2008) has waned (Le Dantec *et al.* 2009). The methodological challenges presented may shed light on why this is the case. For example, Alsheikh *et al.* (2011) argue that it is critical 'to fully understand a culture when designing for it' (p. 83). Their research encompassed the use of ethnographic and other texts, an engagement with participants, and a lead researcher 'from the culture under study' (p. 83). The methodological demands posed by the inclusion of human values may present challenges beyond HCI's ambit. If so, then support for mediated contact may be a more useful focus than mediating intimacy *per se*. As probes and prototypes were originally intended a means of provoking a dialogue or response (Boehner *et al.* 2007b), perhaps the responses of the research participants in the

examples tell us that the intimate relationship is indeed one that demands care if it is to be maintained in mediated contexts, just as it does in traditional contexts (Boon 2004). Perhaps the strength of HCI is in its capacity to support contact in imaginative and novel ways that may be taken up by those involved as suits their particular needs, rather than any striving to create the technological lynchpin on which an intimate relationship rests. Affording the separated intimate dyad, the opportunity to reflect on their relationship and its meaning could be enriching. There can, after all, be no solving of the 'problem' of living at a geographic distance.

3.1. *Limitations and future work*

The discussion structured under the five-part framework does not indicate that the themes are represented discretely in HCI's research on mediated intimacy, as indeed, they are not. For instance, another possible theme is the conceptualisation of intimate relationships as static. However, because of overlap among themes, issues such as these were discussed as and when they arose.

Intimate relationships are crucial for human well-being and optimal functioning (Prager and Roberts 2004). Delicate and carefully balanced interactions constitute such relationships, and developing an understanding of whether they can be maintained at a geographic distance, and if so, how technology plays a part in this, will be informative for the HCI community as people continue to incorporate and adapt ICT to personal and social needs. As we have seen, the intimate relationship was conceptualised as something that could be transmitted, the experience of intimacy something that could be fragmented. The attempt to capture and emulate aspects of intimacy separates them from the context whence they emerge. In the process of doing so, their representation in HCI tends to miss out on the complexity of experience that it seeks to mediate or support. The questions raised in this discussion point to the value of a holistic consideration of the experience of mediated intimate relationships. Continuing work involves a qualitative study of the experience of one member of a cohort of intimate dyads living at a geographic distance. A longitudinal engagement via a series of interviews with participants is being carried out with a view to adding to our knowledge of the lived experience of intimate relationships lived at a distance and the role of ICT in that experience.

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