Technology Appropriation as Discretionary Effort in Mediated Close Personal Relationships

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Abstract

In this paper we discuss technology appropriation in the context of close personal relationships. We review literature that reveals how collaborative appropriation is a natural and necessary feature of technology adoption by relational partners. We then advance a position whereby appropriations in close relationships can be characterised as a form of discretionary effort investment. We end by reflecting on elements of relationships that make them a compelling site for the study of collaborative appropriation more generally.

Author Keywords

Appropriation; Effort; Close Personal Relationships.

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction

Appropriation refers to the way in which people adopt, adapt and incorporate interactive technologies into their everyday work practices [3]. Such appropriation typically reflects usage that "lies beyond a designer's intent" [2]. This makes appropriation of interest to researchers because, in learning about the way in

which technologies are leveraged to meet emergent and unanticipated needs, appropriation provides clues as to how future tools could be improved to support people in their working practices [16].

CSCW has a long-standing interest in how technologies are appropriated in support of collaborative work (e.g. [15]), yet workplaces are not the only situations in which technologies are appropriated. In this submission we focus on mediated close personal relationships (CPRs) as a special case for designers of interactive systems. Our interest in CPRs is motivated by our ongoing research that is exploring how designers can enable meaningful effort investment in interactive communication systems [11]. Independent of this motivation, we believe CPRs are interesting for collaborative appropriation research because relationships, by definition, involve two or more individuals who each give input to the co-construction of a shared bond. Combined with the fact that many relationships are now mediated by technologies [4], this makes CPRs a potentially fruitful site for the study of collaborative technology appropriation practices.

Our aims for the present paper are twofold: first, we coalesce a small literature on technological appropriation in CPRs in order to consider how mediated relational work necessitates technological appropriation. Second, we advance a position whereby appropriations in CPRs can be characterised as a form of discretionary effort investment. This is based on our own research, in which we are interested in the value that such discretionary (or 'additional') effort might hold for CPRs. We conclude by reiterating the value of studying mediated CPRs for appropriation research more generally.

Technology Appropriation in Close Personal Relationships

Research has recognised that supporting communication in social and personal relationships presents interaction design goals that are different to those of the workplace [6,8,9]. Usability goals such as efficiency are subsumed by the need to support feelings of intimacy [9,10] and closeness [5]. HCI is building a body of knowledge about how to support these qualities [e.g. 4,6,8,9,10]. A key design goal is that communication systems for CPRs should invite meaning making and interpretation from their users [17]. That is, users themselves should be free to decide the purpose of a technology and how it should work for them. This makes technological use in CPRs interesting from an appropriation perspective—the interpretation required to create meaning from the system necessarily invites appropriation from the people using the technology. The literature on technology for CPRs contains a number of examples that can help us to understand the role that appropriation plays in mediated relationships.

Several studies describe *semantic* appropriations [13] in which the meaning of a technology changes as it is used in context. Kaye describes how users of his *Virtual Intimate Object* (VIO), a lightweight awareness mechanism for communicating with a partner, each interpreted the object differently and developed their own practices around use of the device. For example, an early morning signal came to mean "good morning" for one couple. Another pair used the VIO to engage in "click wars" in which each person sought to outdo the other's expressions of affection during the day [9].

Similarly, Riche & McKay describe an appropriation of *MarkerClock*, a system designed to support mutual awareness between older individuals through the sharing of abstract symbols. A participant in their study appropriated the system by sending seven discrete symbols at ten-minute intervals to celebrate her friend's 70th birthday [14]. This practice of creating higher-level meanings from low-cost symbols is also evident in Kelly and Watts' account of how emoji characters (originally designed to convey emotion) can enable phatic, idiomatic and playful behaviours [12]. Of particular interest are "emoji stories" in which interlocutors collaboratively construct larger communicative structures by weaving together discrete characters in novel ways. These structures are thought to become uniquely meaningful to the relationship [12].

Other research conducted by the second author of this paper highlights *behavioural* appropriation [13] in which novel usage patterns emerged during the use of communication devices for people in long distance dating relationships. The first case concerned *hotHugs*, a technology designed to mimic hugging [4]. The device consisted of a belt augmented with heating elements. Participants could transmit a "hug" signal that warmed up their partner's belt. A field trial with one couple revealed that the anticipated method of use did not make the participants feel connected. However, the couple adapted the system during their evening Skype calls. Rather than wear it about the waist as intended, they instead wrapped it around a pillow in order to simulate the experience of a loving cuddle.

Another example is *hotHands,* which was constructed from of a pair of clay hand-imprints augmented with heating elements. When each partner's hand was in

their respective device, both imprints warmed up to mirror the experience of holding hands [4]. This device was intended as a positive reinforcement tool—a way of augmenting the emotional connection experienced when couples feel particularly close to one another. The *hotHands* triallists took a different approach, using the device exclusively as a tool for repairing their relationship when they had argued and were feeling disconnected.

Finally, appropriation was seen in Thieme et al.'s study of *Lover's Box* [18], which enabled recording of intimate messages for one's partner. They describe an interesting case in which one participant elected to use the system to reflect on her partner's negative qualities, in turn giving her sufficient motivation to terminate the relationship. This use case is something that was not anticipated by the researchers but nonetheless had value for the participants.

What do these examples tell us about collaborative appropriation? From a design perspective, they emphasise that support for relationships requires technologies that go beyond the mere communication of facts [6, 8]. Technologies must instead permit the collaborative construction of shared meanings that cannot be predicted but instead emerge as devices are integrated into the routines of particular relationships [12, 17, 18]. However, we wish to advance a stronger claim: that appropriation is an intrinsic feature of relationships *per se*. This can be seen not just in these examples of technological appropriation but also in other aspects of life. Consider the age-old giving and receipt of flowers as symbolic of love and care. If the creation of meaning is a fundamental property of close relationships, then enabling collaborative appropriation

practices may be a critical criterion for a technology's success. If users are unable to appropriate a system and create their own personal practices, the system, by design, may be considered as "unusable". We believe that people will always seek features that allow them to express more than words, and thus understanding how devices are used in pursuit of this is critically important if we are to fully understand the work of relational maintenance in mediated settings.

Technological Appropriation and Discretionary Effort

The examples reviewed above are all cases in which people's efforts are geared towards making technologies suitable for their relationships. Our current research is concerned with understanding how people invest effort as part of their need to convey care for others when using communication technologies [11, 12]. In HCI, effort is typically seen as something that should be minimised. However, we believe that effort can carry significant value to CPRs. This means that the goal of effort minimisation may not be optimal for all interactive communication technologies.

One form of effort that we believe is especially meaningful in CPRs is *discretionary effort.* We use this term to characterise effort that is not necessarily mandated but is nonetheless invested for the benefit of a relational partner [11]. The following is an example from our early work [11] in which our first participant (a 23 year old female from the USA) discusses an experience that we believe represents meaningful discretionary effort investment:

 "This guy once read me a poem of Edgar Allen Poe… the audio wasn't just him reading me a poem. Before

he read the poem he said… it was for me, and that he hopes that I enjoy the poem, and it's a nice poem… it wasn't just him reading a poem and then that's it… it was more personal than that. Like he used his own little dialogue before and after the poem. He was clear and concise, it's not that he rushed through the poem, he took time to read the words and the pauses when it was necessary. I thought that took a lot of care into it."

In this example we see that the act of reading the poem was given additional significance by the work that scaffolded the act: the selection of the poem, the pace of its delivery, and the perceived investment of care create additional value for the recipient. Our aim is to develop a deeper understanding of this type of effort, as well as other practices that are meaningful to people, such that we can design interactive computing technologies to permit the investment of effort that is meaningful (as opposed to that which is meaningless).

The question in which we are now interested is: how might we support effort by design? It is one thing to increase the effort of an interaction by making an interface more difficult to use, but such an approach does not guarantee a productive user experience. We wish to understand how one might design an effortful experience that produces a relational benefit without creating a sense of frustration. This is something that we are actively investigating through a series of design studies that explore prototypes for communicating a sender's effort investment to a recipient.

Recently, we have come to believe that appropriations—as series of actions that "go beyond a prescription of temporal task sequences" [15]—might usefully be considered as a form of discretionary effort.

The aforementioned examples of *markerClock*, the *VIO*, and *hotHugs* all represent people investing additional effort to alter their use of a technology. The implication of this line of thought is that, since we are interested in designing for discretionary effort, perhaps we should also be designing for appropriation. This opens up an array of questions for our research, and these questions could be informed by discussions at the workshop. For example, how do we design to allow relational partners to collaboratively appropriate? Are we reliant on luck to continue learning about this space? And in designing to permit discretionary effort investment, is there a line at which a design becomes too effortful and leads to disappropriation?

Why Study Appropriation in Close Personal Relationships?

To conclude, we identify two broader reasons as to why researchers interested in appropriation might find value in considering the needs of CPRs. We hope these motivate our participation in the workshop.

First, CPRs are enacted due to relational rather than instrumental concerns. The examples reviewed earlier in this paper reveal that appropriation has a role in mediated relationships. But unlike workplaces, relationships do not hinge on a need to "get things done". Although relationships may be motivated on the basis of goals, these are often unclear and are achieved through acts of maintenance with implicit value [1]. Moreover, relationships are protracted yet in constant flux; feelings change over time and thus so might appropriation practices. We noted earlier that this makes design for CPRs different to workplaces. This is interesting because, if the goals of use are different, then perhaps the appropriations are too.

Second, relationships, by their very nature, are collaborative. In romantic relationships, for example, relational partners each make investments that contribute to feelings of commitment and stability [7]. In technologically mediated settings, understanding how this co-construction is supported by appropriation makes relational work an interesting counterpoint to the concerns of the workplace, and one whose study might complement future characterisations of appropriation practices more broadly. Again, this is something we hope to discuss further at the workshop as we try to align the subject of appropriation with our own work on effort in close relationships.

Acknowledgements

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