
I Just Clicked To Say I Love You: Rich Evaluations of Minimal Communication

Joseph 'Jofish' Kaye

Cornell University
Information Science
301 College Ave.,
Ithaca NY 14850
USA
jofish@cornell.edu

Abstract

Virtual Intimate Objects are low bandwidth devices for communicating intimacy for couples in long-distance relationships. VIOs were designed to express intimacy in a rich manner over a low bandwidth connection. VIOs were evaluated using a logbook which included open-ended questions designed to understand the context within which the VIO was used. Users constructed a complex, dynamically-changing understanding of the meaning of each interaction, based on an understanding of their and their partner's context of use. The results show that users had rich and complex interpretations of this seemingly simple communication, which suggests the necessity of exploring context of use to understand the situated nature of the interactions as an intrinsic part of an evaluation process for such technologies.

Keywords

Evaluation, intimacy, minimal design, minimal communication, bandwidth.

ACM Classification Keywords

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

Copyright is held by the author/owner(s).

CHI 2006, April 22–27, 2006, Montreal, Québec, Canada.

ACM 1-59593-298-4/06/0004.



Figure 1: 6 snapshots of the Virtual Intimate Object (VIO) in taskbar, showing color changes over twelve hours. The final image displays the remote partner's VIO state on mouseover.

Readers may download the VIO program and source code from <http://io.infosci.cornell.edu/>

Footnote 1: HCI has a long history of designing technologies for communication in intimate relationships. Space limitations restrict us from including a study of this informative history here; we refer interested readers to the excellent overview in [11].

Introduction

Geographical separation can put a strain on the most intimate of romantic relationships. It is hard to sustain feelings of intimacy without touching, seeing, smelling, and hearing your significant other. Some traditional information processing views see this as problem of bandwidth: information exchanged is necessarily impoverished without channels with sufficient bandwidth for full haptic, visual, olfactory and auditory communication. Therefore, to increase feelings of intimacy at a distance, all that's necessary to do is to increase the bandwidth.

In this study we explored the opposite possibility: adding a single-bit medium of communication for couples in long distance relationships that nonetheless allows each partner opportunities for rich interpretation. The VIO, or Virtual Intimate Object, is extremely simple. Both partners of a couple have the VIO installed, which shows up as a circle in their Windows taskbar, or window on their Mac desktop. When one circle is clicked, the other user's circle turns bright red, and then fades over time. When a user moves their mouse over the VIO, it changes to show the state of the remote partner's VIO (Figure 1). [10]

The experiences of our subjects in our pilot study, as presented here, suggest that the addition of a single bit to a repertoire of existing high-bandwidth communication channels can have a powerful interpretation because it is situated in an emotionally and socially complex pre-existing relationship.

A further advantage of the VIO is that it provides an excellent experimental platform for evaluation of this fundamentally affective communication. Once our basic

usability issues were ironed out, we were left with a simple technology that had only one function, and did that well. But how were we to evaluate something that simple? A measurement of whether or not the VIO technically worked would not help us to understand how our users experienced the VIO *in context*, as part of their repertoire of techniques for dealing with their long distance relationship.

Pilot Study

We recruited five couples in long distance relationships for a week-long pilot study, in which they used their VIO and filled out a daily logbook reporting on their experience. Each participant was also sent a package that contained instructions, an informed consent form, pre- and post-test questionnaires, and a logbook.

Logbook Design

To give us sufficient material for evaluation, we wanted to gain a rich understanding of our subjects' experience of the technology. We felt this was particularly important in this case as tracking subjects' *use* of these technologies would not necessarily tell us a great deal about their experience of using the technology, unlike, for example, the video communication device used as a technology probe. [5] The goal was to understand the *context* within which the device was used. As such, the content of our logbook was strongly influenced by cultural probes [3]: we wanted to inspire our evaluation by having rich user-generated content.

Each day, the subjects were asked to answer a series of identical Likkert scale questions on their current attitudes to the VIO and to their relationship, and then three or four open ended questions. As described in [10], we didn't find the results from the Likkert scale

Sidebar 1: *Define intimacy in your own words*

- Intimacy is based on mutual sharing and trust. It's a trust unique to the relationship, and those two people alone can understand it. It's also understanding each other, and accepting what you don't without judging them.

- The bond people share: personally, emotionally, and physically and having a knowledge and respect for a partner and as a couple.

- The chance to speak about our deepest enthusiasm and frustration, without fear. Also it shows how we feel to reveal our sentiments towards each other",

Sidebar 2: *What do you miss most about your partner?*

- snuggling - cuddling
- I miss all the sensory aspects, like the way he smells, the way it feels to snuggle, all the mushy stuff. I miss it more when we're talking than when I'm completely alone.
- I miss to have a REAL date with him.
- Every physical contact.

questions particularly useful in understanding how the technology was used in practice.

We asked three kinds of open-ended questions in our logbooks: questions about the technology itself, questions about the relationship the technology was meant to affect, and questions about the survey itself. Each of these categories was designed to unpack a different aspect of this otherwise simple communication. Within each of those categories, the majority of our questions fell into three areas: questions about the context of use, questions about metaphors for use, and requests for value judgments – things they liked, things they hated. We always tried to provide balance in the value-judgment questions: so, for example, we always asked what aspects of the technology they hated, as well as what aspects they liked. For all of the questions, we tried to ensure that the questions were provocative and open-ended. Our aim was to defamiliarize [2] subjects with their standard constructions of stories around their relationships to encourage reflection [13]. The style was deliberately chatty and familiar to encourage discussion.

Pre-Test

We started our study by having users fill out a pre-test questionnaire. This gave us some basic demographic information, and asked them to tell us some facts about their relationship: the length of time they'd been together, the amount of time they spent together and their reasons for being separated. We also asked about their current communication habits, and found all of our users regularly used telephone (landlines, cell and VOIP), instant messaging and email to communicate. All preferred voice communication, as they felt that phone conversations were more emotionally revealing.

Recognizing that defining intimacy is hard, even for those who study it in depth [12], we also asked couples to define intimacy in their own words (Sidebar 1), and to say what they missed most about their partner. (Sidebar 2)

Reflection on the Technology

A key part of the evaluation was to understand users' experiences with our technology, and give us feedback to refine and improve it. Our questions about the technology included:

- What's the thing you hate most about using the VIO? What's the thing you like the most?
- Draw a picture of your ideal intimate object. What is the worse intimate object you can imagine?
- What would you name your VIO? What would you name your partner's VIO?

We incorporated feedback from many of these questions into our next release of the VIO software. For example, we added options for users to specify their own sounds to accompany incoming clicks after reading the variety of suggestions put forward by our subjects. One user's drawings of elephants encouraged us to enable users to define their own images for the different states of the VIO in the next version, as well as allowing them to pick different starting colors.

Reflection on the Relationship

We felt it was important to try and understand the relationship within which the technology would be used. While useful in evaluations of all communicative technologies, this was particularly necessary for the VIO, as the technology is explicitly designed for couples

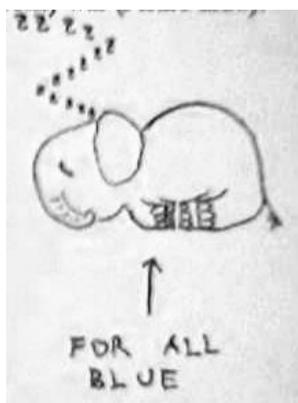
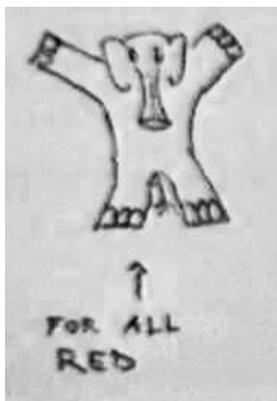


Figure 2: One user's proposed Intimate Object, with an alert elephant for the recently-clicked condition and a sleeping elephant for over twelve hours of inactivity. The drawings were subtitled *My Favorite Animal*.

in long distance relationships, and based on interviews and discussions with such couples. [9] (After having completed the study, but prior to publication, we were intrigued to see that Kjeldskov et. al. suggested a 'single point transducer (such as a light)' as a design idea drawn from their six week cultural probe of intimate couples. [11])

Our questions about the relationship were again deliberately open-ended, and designed to encourage couples to think of their relationship in a fresh manner. They included

- What season is your relationship? Why?
- What TV show currently best represents your relationship? Why? What song?
- What do you like the most about being in a long distance relationship? What do you hate the most?

We were particularly impressed by the level of analysis that users put into their answers to a question that simply asked what color represented their relationship. Users were not explicitly encouraged to explain or unpack their answers, but the vast majority did so at some length. One user wrote, "*Purple - we have a more matured, aged relationship rather than a new, boundless one which would best be described by red. Purple is the more aged, ripened form of red.*", while her partner described their relationship as "*Amber / yellow --> do I proceed w/ caution or speed up to beat the red or slow down anticipating a stop.*"

Reflection on the Study

We realized that the experience of using the logbook itself was important: colleague Kirsten Boehner pointed

out that we had been referring to the VIO alone as the intimate object, when for our users their experience of the intimate object was the VIO and the logbook together. We felt it important to recognize that the study was not merely a passive instrument to objectively record our subjects' impressions, but rather an experience that itself had an impact on the users' experience. The answers to these questions were interesting and relevant, but not necessarily germane to the issue of simple communication. They are further discussed in [10] and [13].

Post-test Questionnaire

After the study, we asked our users a similar series of questions to those we asked before the study. In addition, we asked about their expectations in using the VIO (Sidebar 3), about what they liked best and least. 7 of 9 respondents said that the VIO had made them think about their partner more often, and about half felt it was optional while half felt an obligation to use it.

We also looked at the cumulative statistics on the server, and found that over the course of the one-week pilot study, couples used their VIOs on average a total of 35 times a day, although there were wide variations: one couple only used theirs an average of 5 times a day, while another couple clicked the button average of 123 times a day between them.

Minimal Communication: What's going on?

The minimal nature of VIO-based communication affords, allows and perhaps requires the users to comprehend each act of communication differently based on their awareness of their own and their partner's current conditions. For example, the first click of the morning can mean "I'm awake! Call me!". Or, as one

Sidebar 3: *Did the VIO fell short, fulfill or exceed your initial expectations?*

- To be sincere, at the beginning I was thinking about something more sophisticated [sic] like a machine... When I see that it was a program to install, in a way I was happy, because it is more simple.

- For the first ten seconds I was deluded. I thought to myself 'How can this be better than the rest or how can it say something new?' Then I asked myself why it was [I] thought that. By the end of the day, I was totally sucked into it, finding good and new reasons for its existence.

user wrote, in response to a question about if the VIO had made them feel closer to their partner, *"I was surprised to see one morning that my partner had actually turned on his computer just to push VIO and then turned it off again."* It's a fundamentally different kind of click to a click in a reciprocating sequence of dozens of clicks, a situation one user referred to as "Clickwars" – rapid call-and-response clicking of the VIO back and forth – in response to a question about what aspects of using the VIO the user had particularly hated.

We found several analogies in previous work, in addition to previous studies of intimacy in HCI as detailed in [11]. A key part of the VIO is the ambiguity inherent in the communication, much as Aoki & Woodruff found in their study of push-to-talk phones [1]. Many of our users felt an obligation to reciprocate clicks – leading to "Clickwars" – similar to Taylor & Harper's findings in their study of teenagers' text messaging practices. [15] We also found parallels in Ito & Okabe's study of mobile phone use, in which a key role played by the communication was to give a sense of connection and mutual awareness to reduce loneliness. [7]

However, our key understanding from the study was the *situated* nature of these communications. [14] By itself, without context, a single bit of communication – like any other unit of communication – has no value. However, when received by a individual within a certain context – or, in this case, shared between two people who share a context – that single bit of communication can leverage an enormous amount of social, cultural and emotional capital, giving it a significance far greater than its bandwidth would seem to suggest. Clearly, the utility of a single bit of communication cannot be judged by how many packets of information are transmitted and received, but rather are dependent on external factors.

The fact that such a simple system of communication ends up having such a rich interpretation has some interesting implications for the design of systems for simple communication. As Karat [8] observes, when designing tools for affective engagement it's no longer sufficient to concentrate on the task itself. Clearly, contextual design [4] and related approaches become even more relevant, but it's important to realize that such an approach is not just applicable to the design section of the design–build–evaluate iterative design cycle, but to the evaluation portion as well. Hutchinson et. al.'s technology probe [5] is one approach to the problem, gathering information about the technology's context of use while *in use*. However, the nature of the thin-bandwidth VIO requires the evaluation tool to gather context information, rather than being able to rely on the technology to do so.

While we whole-heartedly acknowledge the importance of usability evaluation as a necessary underpinning for usable designs, designing for more than just task completion means that we must also evaluate our technology with metrics that go beyond task completion. As Isbister & Hook have called for in [6], designing technologies that mediate, utilize or provide affective communication requires exploring, understanding and evaluating the impact on the affective communication in question. As an extreme case of simple affective communication, the VIO shows the role that effective evaluation can serve in building a picture of the role of technology in intimate relationships.

Acknowledgements

The VIO project was a collaboration between Joseph 'Jofish' Kaye, Mariah Levitt, Jeff Nevins, Vanessa Schmidt, and Jessica Golden: this group is often referred to in this paper as 'we'. This research was partially

funded by a Hatch grant awarded to Jeffrey T. Hancock, and by National Science Foundation grant IIS-0238132 awarded to Phoebe Sengers. This paper is partially based on a talk at the Less is More conference at Microsoft Research UK in May 2005. This work would not have been possible without the support of Bridget Copley. Many thanks also to Phoebe Sengers, Jeff Hancock, Kirsten Boehner, Liz Goulding, and Janet Vertesi.

References

- [1] P.M. Aoki and A. Woodruff. "Making Space for Stories: Ambiguity in the Design of Personal Communication Systems." *Proc. CHI '05*, 181-190.
- [2] Genevieve Bell, Mark Blythe, Phoebe Sengers: Making by making strange: Defamiliarization and the design of domestic technologies. *ACM Trans. Comput.-Hum. Interact.* 12(2): 149-173 (2005)
- [3] Gaver, B., Dunne, T., Pacenti, E. Cultural Probes. *interactions*, 6(1) 21-29 (1999).
- [4] Holtzblatt, K., & Beyer, H. *Contextual Design*. Morgan Kaufmann, San Francisco. (1998)
- [5] Hutchinson, H., Mackay, W., Westerlund, B., Bederson, B. B., Druin, A., Plaisant, C., Beaudouin-Lafon, M., Conversy, S., Evans, H., Hansen, H., Roussel, N., & Eiderbäck, B. 2003. Technology probes: inspiring design for and with families. *Proc. CHI'03*.
- [6] Isbister, K. and Höök, K. 2005. Evaluating affective interfaces: innovative approaches. *Ext. Abs. CHI'05*
- [7] Ito, M. and Okabe, D. Technosocial Situations: Emergent Structurings of Mobile Email Use. in *Personal, Portable Intimate: Mobile Phones in Japanese Life*. M. Ito, M. Matsuda, D. Oakabe, (eds.). MIT Press 2005.
- [8] Karat, J. Beyond Task Completion: Evaluation of Affective Components of Use. In *The Human-Computer Interaction Handbook: Fundamentals, Evolving Technologies and Emerging Applications*, J. A. Jacko and A. Sears, Eds. Human Factors And Ergonomics. Lawrence Erlbaum Associates, Mahwah, NJ, 1152-1164.
- [9] Kaye, J.'J' and Goulding, L. Intimate Objects. *Proc. DIS '04*, 341-344.
- [10] Kaye, J.'J.', Levitt, M.K., Nevins, J., Golden, J., and Schmidt, V. Communicating Intimacy One Bit At A Time. *Ext. Abs. CHI '05* 1529-1532.
- [11] Kjeldskov, J., Gibbs, M.R., Vetere, F., Howard, S., Pedell, S., Mecoles, K., Bunyan, M.. Using Cultural Probes to Explore Mediated Intimacy. *Proc. OzCHI '04*.
- [12] Moss, B.F. and A.I. Schwebel. Defining Intimacy in Romantic Relationships. *Family Relations*. 42,1 (1993).
- [13] Sengers, P., Boehner, K., David, S., & Kaye, J. 'J.' Reflective Design. *Proc. Critical Computing '05*
- [14] Suchman, Lucy. *Plans and Situated Actions*. Cambridge University Press, 1987.
- [15] Taylor, A.S., and Harper, R. Age-old practices in the 'New World': A study of gift-giving between teenage mobile phone users. *Proc. CHI '02* 439-446