
Gentle Guidelines for Designing Mediated Communication

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Abstract

We explore a mixed framework to include social concerns and mechanisms in the design of personal communication technology. Our approach draws from a practice-oriented approach, to include social convention in analysis, and the framework from the “Vision in Product Design” method, to translate a socially-oriented vision into product guidelines. We apply this approach in a case study with the aim to design technology that supports polite disconnection. Concept “Fog” is born from the design guidelines and a preliminary evaluation is held through a small-scale user study with an interactive prototype, with promising results for future development.

Author Keywords

Personal mediated communication; vision-driven design; sustainable HCI; practice theory; reflective HCI

ACM Classification Keywords

K.4.m. Computers and Society: Miscellaneous.

General Terms

Design, Human Factors

Introduction

Despite the affordances of consumer electronics and communication technology, such as easy access to

music, entertainment, and people, there are social concerns over the present and future of living with these technologies. Devices are seen to disrupt face-to-face social interactions, our ability to focus [13] and quality of thought. The affordances of technology that enable flexible work also risk of overwork. As people spend more time daily in front of screens [2], concerns are raised over loss of “quality time” [14,20] and the ability to socially support one another [17]. Despite HCI’s expertise in researching human factors, technology-mediated solutions can also contribute to the fear of technology “taking over” if it seems to replace social capabilities. In DiSalvo’s recent survey of sustainable HCI, they reflect on the importance to discuss how problems are framed, what disciplines are consulted, what roles researchers and practitioners play, and what value system is used to define success [5]. This paper documents one case study exploration of these factors, in order to contribute to the discussion of how technology-related designers can be conscientious of broader contextual factors in the process of a specific product.

In this paper, we experiment with an organized approach to include social concerns and mechanisms in the design of sustainable CHI. It is an exploration to see how a change in approach can better align design intent with outcome. We draw from two design methods, one reflective and one vision-driven, to structure our process and illustrate their use through a case study. From our starting point that emphasis on respect for privacy and disconnection will positively contribute to the design of mediated communication, we develop guidelines based on previous work and current reflection, then perform a preliminary evaluation a concept generated by them though a

small-scale user study. Our qualitative review highlights how users operated under new expectations and appropriated features enabled by technology. We then discuss the implications for this approach moving forward.

Design Approach

In this paper, we explore a structured approach to (1) include broader social factors in analysis, problem formulation, and the technical design process and (2) align design intent with outcome. We draw influence from two approaches: a practice-orientation towards designing sustainable behavior [12] and the Vision in Product Design (ViP) method [8]. These methods align with our position that designers embed values in the technology we create. In this background, we introduce the approaches and our modifications for our case study process.

Practice-oriented approach

A practice-orientated approach asks us to acknowledge that technology has embedded values and to reflect on what users define as “good,” “normal,” and “desirable.” Practice theory is a concept from social sciences that is being explored to design behavior-driven innovations in resource consumption [3,12]. The purpose is to design options that users feel viable to incorporate in everyday routines. For example, a practice-level innovation to a car-based commute problem would involve sharing cars or offering alternate means of transport, instead of a technological innovation of more fuel-efficient motors. This approach broadens the scope of analysis from products alone to the overarching practices, or behaviors, that they are a part of. Our purpose is to use this frame to facilitate new routines that will benefit user well-being.

Components of a Practice

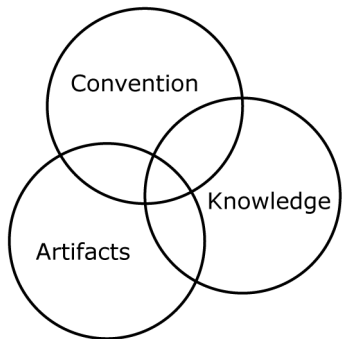


Figure 1: The unit of analysis is a practice, routine, or behavior, and is broken down into artifacts (“stuff”), knowledge (“skills”), and convention (“image”). Practices are acknowledged to change over time as these factors continuously influence each other.

In this approach, practices change over time as a result of three factors that continuously influence each other (See Figure 1): artifacts, knowledge, and convention. Artifacts are the objects, products, and spaces that allow certain practices to happen, while discouraging others. Knowledge is the common perception of how to perform, including skills, and implicitly create indication of quality. Knowledge can be embedded in both artifacts and their users. Convention, or “image,” is a shared idea of what is socially acceptable or desirable.

Vision in Product Design (ViP)

Vision in Product Design (ViP) was developed as both method and philosophy for designers who “value taking the responsibility” of first establishing a *raison d’être*, reason for existence, in the final product [8]. The method is used to explore possible futures and to define “appropriate” concepts for a given domain, e.g. personal transportation. After analyzing current product-user interactions to get insights on present-day context, designers anticipate a future context and design for it in three stages to guide their concepts:

1. The **Vision** is a personal response to the future context, based on personal principles and values. It focuses on what the designers want to enable for people and purposefully delays thinking of products. Products are specific means of achieving goals and because there are many ways to achieve goals, it will narrow our solutions too early.
2. **Interaction Qualities** characterize product-user relationships that are appropriate, or make sense, given this future context. They focus on how or when a product would be used to address the user’s needs, desires, and concerns.

3. **Product Qualities** are characteristics exhibited in the products themselves to help achieve the desired interaction and vision. If the qualities were defined in the correct order, then abiding by these qualities creates an “appropriate” design for the future context.

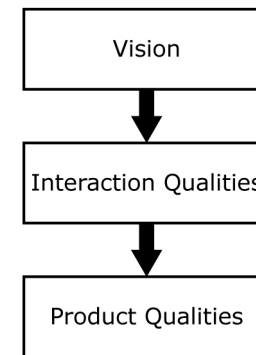


Figure 2: After context analysis and definition, the ViP method has three levels of guidelines for future concepts. It starts from a general, non-product specific, vision in order to derive “appropriate” solutions.

The three stages form a set of guidelines that can then be used to evaluate design proposals. We borrow the structure of the ViP guidelines to organize our intent along with technical and social considerations.

Case Study Process

We apply parts of these methods in a reflective, iterative design process. The practice-orientation plays a bigger role in the first phase of analysis and framing, while formulation of ViP guidelines facilitates a step

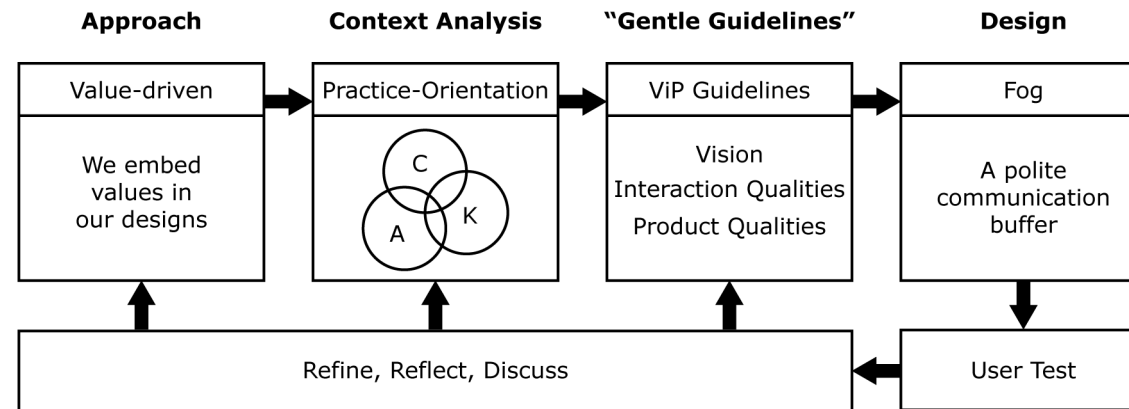


Figure 3: The process of our case study is shown above, placing influences from mentioned approaches. We started by aligning our *Approach* with others in which designers explicitly acknowledge their values as makers. We then performed a *context analysis* with a practice-oriented frame and discovered our position through seeing why other designs have “failed.” From this position we formulate a desired *vision* to what we defined as the problem. We then derive *interaction and product qualities* to evaluate ideas. We embedded these qualities in a *design proposal*, tested it with users in an everyday setting, and *reflect*.

between analysis and detailed design. (See Figure 3.) The set of guidelines are an intermediate output that orients design, evaluation and reflective discussion.

During the context analysis, we reviewed well-being studies and reflective works on technology’s social impact to orient us to the theme of division of attention. Under the practice approach, we analyzed the embedded knowledge of personal devices and looked for relationships between users’ interactions and social conventions found from our exploratory user research. We conducted surveys, cultural probes, and interviews to explore users’ practices and identify problems in expectations of availability. We define our problem with the intent to design technology to better support the practice of “being available,” then combine findings from previous work in HCI that align with our vision. We then perform a preliminary study with users to check ourselves and reflect on the process.

Case Study Analysis

Problem Area through a Practice-Oriented Lens

Through our literature review and exploratory user research, we found division of attention a common factor in work-related stress [4,6], social tension, and unhappiness. In work-performance, handling interruptions and requests via communication technology was an obstacle to focusing, and multitasking is seen to be paradoxically unproductive. This leads to stress or feeling overworked [6] and has a heavy impact beyond work. People reported feeling less successful in personal relationships and less able to cope with everyday life events. A 2010 sampling survey via mobile phones [11] observed that people think about “what is not happening almost as often as they are thinking about what is” happening and “doing so typically makes them unhappy.” Users reported the best moments were when their friends would leave their phones alone.

If we focus on just the user and the device, multitasking or “addiction” could be framed as a self-control problem for the user. A practice-oriented approach, however, suggests that this is an indication of high willingness to participate [12]. From the perspective that users have high desire to be in touch, we concluded that while current devices excel at making users accessible, the practice of “being available,” and asking for someone to be, still lacks support. Despite the perceived “non-intrusive” nature of these mediums, they interrupt frequently and multiply the effort and stress around maintaining relationships [1]. Despite the potentially unsustainable energy of these obligations, people do not see disconnection as an option and instead multi-task, drop, or hurry communications.

Gentle Guidelines

We summarize findings, insights, and design intentions through our “Gentle Guidelines.” We start with our goal of “respectful communication” in a near-future context and use the ViP structure as guideposts to translate it into a concept for “polite disconnection.” Our concept, Fog, was then preliminarily evaluated with users to see if it fulfilled our vision and desired interactions.

Vision

We identify the problem as accessibility without proper handling of availability and embed this in our **Vision**. In context of increasingly present communication technology, we want to

1. Relieve the fear of technology “taking over” social interactions and draining energy by protecting the right to disconnect and be unavailable.

2. Treat people on the other side of a mediated communication with the same respect as people face-to-face, thereby making technology-mediated communication more polite and patient, and less stressful.

Work in the field of conflict management [15] shows that haste can promote a cycle of hurt feelings and problems for both the communication and the relationship. Our aim is to design communication technology that reminds users to be sensitive to unknown context, feelings, and intentions from the other side. We want to recognize and support differences in context and availabilities, thus support polite disconnection and respect of privacy. Basic respect of this will make us more self-confident, more patient to listen to another’s perspective, and more likely to peacefully resolve an issue of differences [15]. Through a practice-orientation, we saw the opportunity for user’s capabilities and etiquette conventions as a social mean to reduce stress and slow down “instant” communication. We then hypothesize what kind of product-user interactions are “appropriate” and connect to previous HCI findings to define interaction and product qualities.

Interaction Qualities

We want to enable more forgiving, give-and-take relationships between communication senders and receivers and between people and their technology. Our **Interaction Qualities** hypothesize what kind of product-user interactions are needed in order for users to

1. Elicit patience and cushion differences in availability status, individual context or communication style

2. Give the product a passive role, or personality, that follows the active role of the user. Allow ambiguous space for social means such as face-work to act.
3. Encourage acknowledgment and proactive boundary setting to be respected.
4. Keep actions forgiving, temporary, and fluid, because exceptions happen every day. Let technology be forgiving to previous decisions made by the user.

The third guideline aligns with recommendations for smooth collaboration, or "social translucence," from a study that investigated the failures of an automatic interruption handler: that both "visibility" and mutual "awareness" of status are needed to encourage to socially "accountable" behaviors [16]. From our reframed approach, we hypothesize that the most effective acknowledgment and boundary setting comes from users themselves, and not an automated manager, building off of other work that discourages design priority on automatic features in streamlining communication[9]. From the perspective that capabilities are shared between people and technology, it then becomes an interesting challenge to design technology to support users to set and acknowledge boundaries themselves. If the boundaries feel respected, users may feel more at ease to focus on one task or event and to leave their devices alone. The last quality paves the way for "face-saving" opportunities to decrease stress of relationship maintenance.

Product Qualities

On one hand, more space for face-work and is needed to design for differences. At the same time, eliciting patience requires careful disclosure of information regarding why one should not expect an answer and

when acknowledgment can be given. Knowledge of how a communication technology works influences plausible deniability, or possible alternate stories, when disconnection or lack of response occurs [1]. Our **Product Qualities** tie in recommendations from HCI work with social translucence and plausible deniability in communication systems:

1. Support plausible deniability by considering "reviewability" and "leak-through" of information.
2. Present availability cues before actual contact is made and leave choice to users on how to act.
3. Provide face-saving opportunities for the users involved.
4. Use low-threshold triggers for acknowledgment of status, incoming information, or communication to encourage low distraction from current activity.

The first quality uses two factors from Aoki's study on conceptual features that enable plausible deniability[1]: (1) lack of "leak-through" that informs the sender of the receiver's state, and (2) shared knowledge of "reviewability," or how the message can be received. The rapid adoption of personal devices and their convergence email, IM, and various social media from the same device raises expectations of "reviewability" and amplifies "leak-through." For instance, a user could feel strange to not receive a response by social media chat if recent activity is seen from the other's feed.

From practice analysis, we found current methods of declining a mediated interruption unsatisfactory, acting blindly and not demanding socially responsible manner. For example, if a recipient went on vacation, senders may wish to discontinue or change the nature of an email, instead of first leaving a message and then being

notified by an automated on-vacation response. By making technology more forgiving of our actions, it can help us save face and be more comfortable with its role in everyday personal communication. We use these qualities to define our concept that shows unavailability status upfront and combines face-saving opportunities with boundary-setting.

Concept: Fog

The goals of the design case are to decrease everyday communication stress and support socially-acceptable disconnection. The metaphor of fog was chosen as an ambiguous sign of unavailability, for the immediate cautiousness it invokes in those navigating an unfamiliar area. Its temporary occlusion creates a buffer in which users have face-saving opportunities before it lifts. It also reminds us of the uncertainty with which we treat the future regarding weather: we may predict it, but should not dwell if different events occur.

Concept Introduction

For users who need uninterrupted time without becoming unreachable, Fog is a polite communication buffer that turns a waiting period for response into a grace period for both sender and receiver. Fog is a cross-platform coordinator for mobile devices and communication. The "fog" status is visible from all modes of communication, such as phone lists, email or chat. Fog can also be accessed and updated by computers to let others know of everyday exceptions, such as accidentally leaving a mobile phone at home. The main tools of Fog are introduced in a brief scenario. Robert is the receiver and Saul the sender.

Scenario

Robert puts up his **fog**, a signal known by others that he will not automatically receive messages. He also has the option to display a text status and an anticipated time when it will dissipate. When Saul initiates contact and sees that Robert is "in a fog," he has three options: (1) discontinue and leave no trace of his contact, (2) leave a message in Robert's fog, or (3) **push** through the fog and interrupt. Saul decides to leave a message. He can edit or remove this message later via **Stealth Mod** if Robert is still in a fog and has not yet checked or **pulled** his messages. Any changes to the original message will be invisible to Robert. If Robert sees Saul's message, but does not want to respond right away, he can give it a **Transparent Star**. Saul will now be able to see the star on his message and know that Robert opened his message. Later when Robert contacts Saul, the Transparent Star will disappear.

Product Qualities

Fog's passive personality is intended to behave as a buffer when there are differences in availability between message senders and receivers. We hypothesize that if receivers themselves set their unavailable signals, senders will feel more responsibility if they choose to interrupt. Three main tools of Fog facilitate a more balanced relationship. **Fog** gives users the opportunity to express ambiguous unavailability. This status is presented upfront when senders are initiating contact, but it does not itself dictate what they should do. It also preserves space for plausible deniability by not requiring a message that explains why one is in a fog. **Transparent Star** is a visual acknowledgment cue to encourage engagement from the receiver without message composition. It can only be accessed once the message has been opened.

Stealth Mod enables face-saving opportunities by allowing revisions and deletions of previous messages.

User Study

A live, interactive prototype was built to test the main functions of Fog and get feedback on how well our design intent aligns with the social practices of endusers in an everyday setting. Without disclosing the goal of polite disconnection, we wanted to see how the tools were interpreted and how shared knowledge of how the system works affected users' expectations. The study was a preliminary evaluation of whether our approach helps users feel more comfortable to be unavailable and not tend to incoming communications.

SYSTEM

Our bench-level prototype, "Protofog," consisted of an online space where Fog and messages could be accessed. Participants were asked to use the Fog interface instead of email and to use it when initiating chat or other conversations. A smaller interface was available for mobile phone. Users were able to do the following: set current Fog and optionally set a timer send, retrieve, and manage sent messages; star and see starred messages; edit unloaded messages; and send messages to SMS when "pushing."

SET UP

Protofog was used by a group of nine young professionals between the ages of 24 and 30 for one week. The group was formed from distant networks: four participants were asked to choose a partner with whom they use technology-mediated communication on a regular basis during the work day. Three types of relationships were sought: professional, friend, and significant other. During the test they were free to

contact others. We made it known to participants that everyone using the system has the same features to use, without disclosure of why it should be used. We asked them to rate their relationship before and after the study with a list of qualitative characteristics. After the week, participants were asked to rate the features that were important for themselves have and important for others to have, for the purpose of preparing the interviewers. Exit interviews were conducted with the pairs to stimulate comparative reflections on interpretations of tools, perceived usefulness, and effects on social expectations.

Results and Discussion

FULFILLMENT OF VISION

Fog qualitatively fulfills our vision to protect disconnection through social etiquette. Users trusted others to act out of courtesy, without the need for auto-priority features. One participant particularly liked how he could read the message now or at the end of the day, but it depended on the other person's consideration: "I thought it was nice to have this filter. I kind of trusted that only the most important ones would be there." Users also felt encouraged to "respect" their own fogs by keeping focused on work. The fog status also relieved senders of checking for messages, because it lowered their expectations for a response. As a counterpoint, pushing a message raised expectations for both receiver and sender: senders were expected to be more mindful of interruption, while receivers were expected to respond quickly to a pushed message. One user reported feeling more ignored and more frustrated than normal if her partner didn't return her (pushed) SMS message, but this is a desirable change according to our vision.

FULFILLMENT OF INTERACTION QUALITIES

The design shows promise in buffering different communication styles and media. Fog supported everyday exceptions in online accessibility, mobility during one's work, and employment transitions. One user used Fog to redirect important messages on days she had to work in another location without a computer. Another user speculated Fog's integration with the physical environment, due to his shared office space. One unemployed participant said she appreciated knowing if she was not intruding. Further refinement is needed to enable patience and acknowledgment. Participants appropriated Stealth Mod to know if a message was received, because they would be unable to change their messages. In combination with lowered expectations of response with the Fog status, acknowledgment cues did not play a big role. We also saw that while our design lessened frustrations in waiting, it did not explicitly promote patience.

Reflections on Design Approach

The main benefit acknowledging our values as designers was how it oriented our design process and facilitated previously difficult evaluations of intent. Making our value system explicit guided how we judged success and whether our solution aligned with the overall vision. The practice-orientation benefited context analysis and problem framing by broadening our analysis to consider behaviors that users perform to fulfill their needs. The explicit inclusion of social

"image" expanded the problem scope outside of addiction to devices. It helped us reflect on what is good or desirable availability and articulate the change we wanted to design. Through the attitude that capabilities are shared amongst people and artifacts, the approach also opened us to ideate on solutions of product-user interactions instead of technical features alone. The ViP guidelines helped imagine future scenarios and possibilities and translate our desired social intent into product qualities that leverage previous HCI findings. The vision reflects the values within our problem definition and helps justify, with respect to our process, why automated acknowledgment was not investigated with our end design. It suggests a place for HCI knowledge in the Interaction and Product Qualities with the guidance of a vision. Instead of providing endless configurable options, our reflective design targeted the energy required to maintain everyday social relationships.

As artifacts and shared notions of knowledge and image change over time, new reflections and visions will need to be made. Future work can explore aspects of one or both approaches used. The "Gentle Guidelines," as a process output, helps orient and stimulate discussion on the different levels of concreteness and amongst HCI researchers and designers. Our work is just one out of many ways to frame and solve problems, but we hope to contribute to and stimulate discussion over the roles of and processes in HCI community.

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