Scale, Form, and Time: creating connected sociable spaces

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ABSTRACT

In this paper, we describe how scale, form, and time affect communication style. We interrogate each of these factors with respect to three different communication systems: Visiphone, Chit Chat Club, and Telemurals. Each of the three installations break away and brake apart the traditional audio and video wall along these axes to further understand remote interaction. The projects are similar in that they are all audio-graphical two-sided interactions that provide a mutual experience, context, and a social catalyst for the participants.

Keywords

Communication objects, telepresence, ubiquitous computing, sociable spaces, social catalyst

INTRODUCTION

There have been a number of "media space" projects that connect geographically distinct locales with some combination of audio and video [1] as well as studies of the relative affordances of audio, video, and other media [3][6].

Much of this work has been done in the context of work environments, which differ from sociable spaces in many regards from privacy requirements, activities, and appropriate interface complexity and style. While most studies of technology for the home have tended to focus on labor-saving devices and home automation, some useful ethnographic studies have examined the importance of communication in a domestic environment and the types of technology that support it [10].

In the following pages, we describe three different interfaces and the features that make them not only sociable but more intimate.

VISIPHONE

Visiphone is a graphical interface for mediated audio conversations that is designed to support continuous, ubiquitous connections between people in different locations [2]. The graphics show the existence of the audio connection, provide feedback that one's voice is loud enough to carry across the channel, and indicate that someone on the other end of the connection has spoken. They also serve more
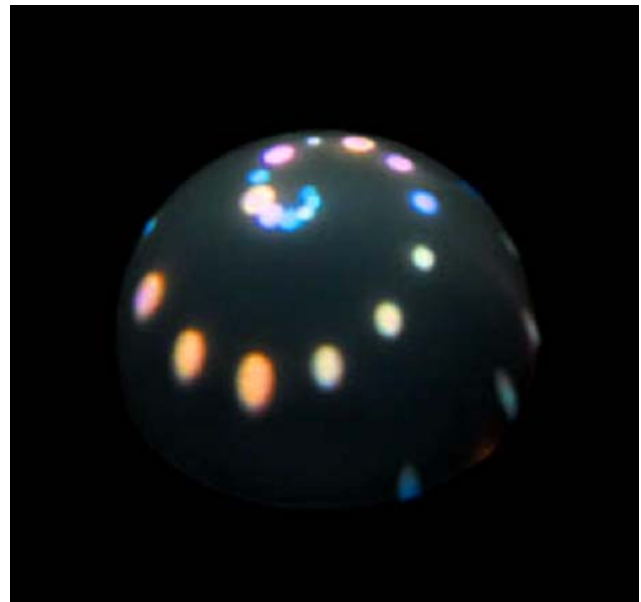
Figure 1:   Visiphone dome visualizing conversation.

subtle purposes, providing a focus for attention and visually representing the rhythm of the conversation itself. Our goal was to create an aesthetic object that enables users to perceive conversational patterns that are present but not obvious in traditional communication interfaces.

Each Visiphone station has a dome or surface on with the visualization is projected (see Figure 1). When a live connection exists, the dome displays a continuous moving spiral of circles. The central dot represents the present moment. If it is a small gray dot, there is no sound going between the two spaces. When the sound is originating locally, the current circle is orange; when sound originates at the remote location, the circle is blue. The size of the circle is proportionate to the volume of the audio. If sound is coming from both locations, the colors are shown as concentric, blended circles. The dots spiral outward from the center, so the display shows the history of the last half minute or so of conversational rhythm.

Scale, Form, History, and Intimacy

Several sizes and shapes of the Visiphone were created. How they were used was influenced greatly by the scale, the shape, and duration of the history of the conversation.

Figure 2:   Large angled Visiphone display.

Figure 1 depicts the dome shaped Visiphone; Figure 2 depicts the flat angled Visiphone. The form of these different interfaces suggested that they be used in a different manner. For example, the dome shape encouraged people to draw nearer to the display and to grasp it with their hands. The flat angled display was viewed from a distance as well as close-up. This larger display was suitable for a larger auditorium setting where people faced the moving display. Alternatively, people would gather around the dome from all sides.

The size too altered public and private uses. The three inch diameter dome was suited to private conversations and was often cupped in the palm of the hand. People tried to rotate the dome to go back in time. The eight inch version was usually surrounded by several people; it was of a good size to rest both palms on it and many people did just that. The twelve inch display was usually viewed at a distance.

History affected the color palette of Visiphone. If the display was larger and the spiral longer, sustaining a volume became more difficult. One could easily dominate a conversation with a short history of circles. A shorter bead length implied more immediacy.

CHIT CHAT CLUB

The Chit-Chat Club is an experiment in bringing people together in a mixed physical and virtual environment [7].

Online chatrooms and real world cafes are both venues for social interaction, but with significant differences, e.g. the participants' knowledge of each other's expressions and identity and the more governing introductions, turntaking, etc. Our goal was to create, thru careful design of the physical environment and computer interface, a place that gracefully combines these two cultures; the analysis of how well this space actually functions will further our understanding of social interaction, both online and in person.

Cafes function very well as informal public gathering places. One can enjoy the company of others or be quite comfortable alone. And they are great places to sit and watch people.

The online world also functions as a public gathering place. As in the cafe, conversation is one of the primary activities - but with some striking differences. Online, conversing with strangers is quite common and there are few barriers to such interactions, while in the real world such encounters are less common and occur couched in complex social rituals. In the online world, one is fundamentally alone: although there are many others virtually present, one's sense of their presence is minimal. In the real world cafe, the number of people is fewer, but their presence is far greater.

These two worlds come together in the Chit Chat Club. It is a real cafe, with real tables, real coffee and pastries. Yet the customers seated round the tables may be present physically or virtually. Some of the chairs are ordinary seats, accommodating the human form. Others are seats for avatars equipped with monitors and network connections.

Form, Scale, and Intimacy

Chit Chat Club was designed through several iterations. Care was taken to make the avatar seats human scale. If the seat is bigger and looks down on the person, it is intimidating; if it is much smaller, it is often ignored. This way, the remote participant occupied a similar space as the physical participants.

Figure 1:   Chit Chat Club attendees: physical and virtual.

Figure 2: Top left: original avatar seat. Top right: motorized avatar seat. Bottom: remote user interface.

The seat was made to look anthropomorphic. There was a head, a seated body and arms. We did not want it to look so human that participants would expect human attributes, but we also wanted it to be accepted as an interesting seated visitor. The second avatar seat was motorized so the remote user could direct the gaze. This offered more control to the remote user.

The customizing of the facial features added a level of intimacy to the interaction. Remote users could choose from a series of features how they appear at the physical cafe. The face palettes were hand-sketched, claymation, and cartoon-like.

Chit Chat Club did not alter much in the time domain unless the seat was being ignored, in which case it would look away in spite.

TELEMURALS

Telemurals is an audio-video connection where a communication space is created by breaking apart the pixels and speech of the participants at each end and reassembling them abstractly [9]. The initial setup is straightforward. Two disjoint spaces are connected with an audio-video wall. Video and audio from each space is captured. The two images are then rendered, blended together, and projected onto the wall of their respective space. The difference between Telemurals and traditional media space connec-

tions are the image and audio transformations that evolve as people communicate through the system and the blending of the participating spaces.

Participation is required for this communication space to work. To reinforce a sense of involvement, we provide the system with some intelligence to modify its space according to certain movements and speech inflections. First, the image is rendered non-photorealstically. Second, words spoken in both spaces are captured, converted to text, and rendered on the screen in blocks left to fade away over time. The immediate feedback of seeing one's spoken word alter the window lets them know they are adding to and affecting the shared environment. More complicated image manipulations are affected by changes in pitch and volume of the voice.

Scale, Time, and Intimacy

The Telemurals projections were human-scale. This made it possible for the display to occupy a large wall of a room and blend in with the passersby. Participants would sometimes dance together remotely and perform kicks onto their remote companions. This also helped users negotiate space and proximity within the space and between their remote companions.

The silhouettes encouraged people to begin conversations. This is ideal if the people involved don't know each other. We realized over some time, that to sustain a conversation, especially with an acquaintance, people wanted to see more of their remote companion. Telemurals handled this by gradually fading from few features to many features the longer a person talked and the more they moved. This became a reward in a sense for investing time into a conversation and encouraged participants to continue speaking.

The first fading algorithm progressed form a solid colored silhouette to a photorealistic image of the participants. We discovered that this was disturbing to the users. The change given this interface was too drastic. We altered the fading through several iterations so that the more one spoke and

Figure 1: Telemurals blended space. Local participants

Figure 2: First attempt at fading algorithm. Fades from single color to black and white photorealistic.

moved, the more detail was shown in two-tone color. This made for a more intuitive and aesthetic display.

It should be noted that Telemurals was a public display. This display would necessitate clear boundaries to be used for intimate interaction.

DISCUSSION

Scale, form, and time are by no means the only features responsible for directing the intimacy of interfaces. They are three factors I have found invaluable in designing such communication systems.

In these projects, scale influenced the number of people that used the device. If the device was an object, smaller implied more private as was the case with the smaller Visiphone.

The form and size of the interface signalled to people whether to stand back or come in closer. Some Visiphone forms such as the dome were more inviting for tactile interaction. In fact, some users insisted that there must be some form of tactile interaction and persisted in trying to move the dots with their fingers.

Chit Chat Club encouraged people to sit down at the level of the avatar seat to interact. With the first avatar seat, people at both ends had to negotiate to alter the gaze of the avatar seat. This prompted more interaction, however, the remote user was more content with the ability to control where they looked. Gaze alone added to the connection between person and avatar seat.

Time provided a perspective in Visiphone. In Telemurals, it represented seeing the remote participant with more clarity as the interaction progressed. Thus, if people were interested, they could keep talking. This acted as a catalyst to further interaction.

When discussing such interfaces, we should also consider the environment in which they exist. The setting plays a great role in how that space and the objects within that space are used.

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