Forum Contact Space: Exploration and Interaction in a Virtual World

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INTRODUCTION

Collaborative Virtual Environments (CVEs) are gaining visibility in the field of Computer-Supported Cooperative Work (CSCW). The purpose of a CVE is to provide affordances in order to reproduce conditions that augment interpersonal interaction in a physical environment. In certain CVEs, users are represented in graphical form as a figure called an avatar. Designers of these multi-user virtual environments have focused on creating the necessary conditions conducive to rendering a virtual place for geographically distributed users to interact, socialise, and communicate in a shared space [Pyrock, Palfreyman, Allanson, & Button, 1998].

Helping people who cannot be together, work together

The Forum is an online collaborative working environment aiming to bring people together both informally and formally. It is designed to allow people who should meet each other to do so easily and naturally, and provides the means for them to have richer online meetings. The Forum consists of two shared spaces; a space for informal interaction (Contact Space) and a workspace for synchronous meetings using audioconferencing support (Meeting Space) [McGrath, 1998]. It was created as a research project by the eCollaboration team at BT Adastral Park.

Let the system do the walking

One of the most problematic aspects of virtual spaces is navigation. If a ‘chance meeting’ is recreated between two people online, this should occur with the simplest navigation system while enjoying the strengths of the spatial metaphor. To address this issue Symbolic Acting is used.

Symbolic Acting is when you do all your normal activity on the desktop machine but the avatar representing you acts out the symbolic meaning of your activity. For example, if you are writing a GroupWare paper while a colleague reads a CVE document on the World Wide Web, you should each be navigated by the system into the same CSCW zone. This will put you in ‘visual proximity’ with other people in your Contact Space system working in a similar area (whom you can speak to, or politely ignore) without personally navigating your avatar.

Put simply – ‘you let the system do the walking’ [McGrath, 1998]. This process will put people together based on their subject interests. It should also be possible for people to be brought together based on their activity such as browsing on the World Wide Web (WWW). This is to address the ‘Meeting by the Photocopier’ effect. As nobody photocopies or takes a coffee break online, the conceptual equivalent of these activities are being looked at.

FORUM CONTACT SPACE DESIGN

Above are two illustrations of the Contact Space. The left picture shows the ground plane of the Contact Space - the circles with pyramids represent all the Interest Groups belonging to the working group as gathered by the Jasper agent. You can see avatars located in the space, positioned by the system depending on their subject interest. The semi-transparent layers above the avatars represent the ‘action’ layers where specific job defined activities, such as editing a workshop paper, are treated as special cases to position people on these planes when conducting these activities. Navigation may also be user-initiated.

Three avatars in one of the ‘action’ layers can be seen in the right picture. The ‘action’ layers open up the users to ‘meeting’ others through a common activity even though they may have different subject themes. As the system moves the avatars around, it orients the avatar’s viewpoint or direction of view towards other people in the space that have similar long term interests. This knowledge about the long term interests of the users is gathered by the Jasper Agent. In the right picture one of the avatars is shown in ‘sleepy’ mode. This is activated when
the user’s machine has been inactive for a period of time, resulting in the head shrinking into one’s body. Communication within one’s zone occurs through a text-chat pop-up window.

An evaluation study of the first networked version of the Contact Space was conducted with the purpose of gathering information from trail participants about its positive and negative aspects. This study, part of a larger investigation of the Forum, built on previous evaluation and usability studies.

**METHODOLOGY OF USABILITY STUDY**

The primary author, under the guidance of Andrew McGrath, conducted this study during a twelve-week term on a student internship. It took place June-August 1999 at the Advanced Communications Technology Centre at BT Adastral Park, U.K. using qualitative (interviews, focus group, personal diaries, video diary) and quantitative analysis (user data logs). There were thirty-five participants, twenty-six whom were active, both onsite and distributed (i.e. London) and consisted of Forum developers, Forum team members and BT Advanced Communications Technology Centre employees.

**DISCUSSION**

Navigating a shared information space

The Forum, as a CVE, is a kind of shared information space. A shared information space is characterised by the information contained within, in addition to how the users that inhabit the environment, interpret and derive meaning from it [Bannon & Bødker, 1997]. Artefacts within the Forum (i.e. text chat, avatars, Jasper pyramids) are conduits for sending, receiving and transmitting meaningful information, in a sense - information gathering tools. For example, participants used text chat for specific questions as well as general discussions (i.e. planning a meeting time or confirming everything is ‘ok’ before upgrading to a meeting space). Upgrading to a meeting space, provides the ability to transfer documents resulting in an enhanced qualitative and sometime quantitative exchange of information.

- *I use [the Contact Space] when I want to talk to somebody to get some information or to give them some information - sort of, if we’ve got a meeting coming up and I want information from them about the meeting then I’ll find them and chat to them...*

Symbolic acting such as leaving the Forum (one’s avatar bobs up and down) or being engaged (head sinks down into one’s body) provides visual information about one’s degree of presence within the Contact Space. Navigation is not necessarily a tool used in isolation but instead may be coupled with a symbolic action to enhance a common real-world behaviour.

- *sometimes when I log out I’ll go to I’ll fly to someone and click close which makes me bob up and down. So that I know that someone else can see that I’m leaving...what I find appealing is actually showing someone that I’m leaving and that’s no different to saying “Goodbye” to someone in the office.*

The previous example illustrates the use of movement to provide an awareness of one’s activities. Jeffrey and Mark [1999] in a discussion of information spaces, perceive social navigation as involving an awareness of other users that are currently present or have been there in the past. Social navigation has been described by Dieberger [1999] as direct and indirect. Direct navigation involves active and direct communication such as using text chat to ask for directions to a meeting room. Indirect navigation is asynchronous and may require recognising navigation cues left by previous users.

We believe that navigation within the Contact Space can be considered social navigation when the presence of others, one’s subject interest (short-term or long term) or desktop activity, influences one’s positioning or direction of movement. Participants reported moving to a person in order to initiate a text-chat, confirm the identity of another avatar (through a mouse-over), determine their status, or simply to share the space with another - ‘co-location without communication’.

- *I guess I feel if you can see somebody, that’s probably an easier thing to initiate a text chat...*
- *...sometimes I just actually go and see if someone is there and I don’t talk to them...something reassuring about checking that someone is there...

**Social behaviour associated with the Forum**

Participant feedback suggests the successfulness of the Contact Space in generating chance encounters. Interactions occurred in the Contact Space that participants reported ordinarily wouldn’t have happened, as previous real world encounters resulted in a different behaviour.

- *I have been next to people in the contact space...that I’m never next to in the office and I’ve chatted to them rather than just smiling at them as I walked past.

Participants recalled meaning to speak with another colleague, but not remembering until seeing them in the Contact Space. They reported that this triggering of their memory resulted in a text chat or instigated a workplace conversation.

- *...I’ve got a mind that I need to ask say Michael a question...and then I’ve seen him in the contact space and that’s reminded me that I need to ask him something and I’m there opening up a text chat and do that.

Further evidence from a participant is provided in the following two examples. The first incident involved her seeing a colleague in the Contact Space. This colleague spoke about how well a previous workshop that they had attended together had went. This then triggered in her the idea to invite him to another workshop she was organising. Ordinarily she wouldn’t have thought of inviting him since
they were short on spaces and she had no plans to email or phone him.

- *...having seen him in the space and talking to him about something else I just thought oh you know by the way do you want to come to this thing...I wouldn’t have perhaps asked otherwise.*

The second situation involved her seeing her colleague in the Contact Space shortly before lunch. After inviting him to lunch, he stated that he was about to go to a lunch-hour presentation. She then recalled she had forgotten about the presentation and had actually planned to attend.

- *And about five minutes after seeing him in the contact space I saw him at the ASK presentation so again I wouldn’t have found that out because I’d totally forgotten...but I just happened to mention to him about lunch time and he suggested it.*

**Areas for improvement**

Although participants felt that the concept of the Contact Space had been realised, issues of concern were also raised. The primary concern was that a greater population was required to increase the likelihood of chance encounters. In addition, system feedback after a system-initiated move occurred was recommended; for example, when two people were moved into the same circle, they should be aware of what they had in common with each other.

Based on the findings gathered from this study, the Contact Space has been redesigned and the changes are in the process of being implemented. The ability to provide social trails may be possible in a future version. Users commented that implementation of these suggestions may provide more significant findings, or enhance one’s Contact Space experience.

**Related URL’s**

Conference Call Presence information


Paper on on-line communities.

http://virtualbusiness.labs.bt.com/msss/IBTE_SS/

Info on BT’s Shared Spaces work.

http://virtualbusiness.labs.bt.com/msss/

The Mirror – web pages archive.

http://virtualbusiness.labs.bt.com/msss/the_mirror/

Space Syntax home page

http://doric.bart.ucl.ac.uk/web/spacesyntax/

Jasper Paper


**REFERENCES**


