

ONLINE 3D CVE PERFORMANCE OF T S ELLIOT'S COCKTAIL PARTY: AN EXAMPLE OF VIRTUAL STAGE

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ABSTRACT

Researchers are beginning to explore the role of digital design collaboration within multi-user 3D virtual environments. In the latest instalment of an ongoing remote digital design collaboration project with the Sydney University Key Centre of Design Computing and Cognition (KCDC), the University of Queensland Information Environments Program (IEP) co-coordinated an online production of T. S. Eliot's *The Cocktail Party* in a 3D virtual world environment. This paper describes the process, socialisation, and pedagogical outcomes of early learners collaborating remotely in 3D digital media, analysing the adopted place metaphors and associated design features versus underlying educational goals

KEY WORDS

Socialisation, collaboration, 3D educational CVEs, place metaphors, characterization framework

1. Introduction

Collaboration is a process of socializing (see e.g. [1, 2, 3, 4, 5]) – an opportunity for collaborating partners to: get to know each other; learn how to work together; and, discover what sort of support one can garner from the other. What a Collaborative Virtual Environment (CVE) offers in this context is the opportunity for participants to enter into a simulated workplace, interact, socialise and collaborate directly on a shared design project. Worldwide, the number of key centres for design collaboration research which are actively investigating this emerging field is expanding (see Chalmers' MediaLab, Sweden; MIT media lab, USA; CASA, UCL, UK; MiraLab, Switzerland; HitLab, USA; Martin Centre CADLAB, UK; Key Centre for Design Computing and Cognition, Australia; Information Environments Program, Australia, among others). To test the efficacy of the various systems developed, ongoing remote

collaboration between and within design schools has proven to be an invaluable data source (see [6, 7, 8, 9]).

The place metaphors behind the design of educational CVEs are quite diverse, from replication of real universities to other worlds. A characterization framework suggested by Prasolova-Førland [10] seeks to systematize the place metaphors in terms of outlook, structure, roles/purposes and associated facilities, in order to identify the suitability of different metaphors for various educational goals. This paper analyses an ongoing remote digital design collaboration project in terms of this characterization framework, with a special focus on the virtual stage and workplace metaphor and associated design features. The remote digital design collaboration project described here was conducted with the Sydney University Key Centre of Design Computing and Cognition (KCDC) and the University of Queensland Information Environments Program (IEP) (Brisbane) in 2005. Together design students from each institution collaborated on an online performance of T. S. Eliot's (1962) *The Cocktail Party* [11] in a 3D virtual world environment (Active Worlds). The students were engaged in a self-directed learning exercise which focused on using digital media to transform prior understandings about what a 3D collaborative virtual environment (CVE) can be used for. It extends earlier work done from the University of Adelaide which involved a similar remote design collaboration exercise where digital media students showcased digital animations in the 3D VE. In that project they embedded rich media in deep media in a process of both working in and with the media [8].

2. Place Metaphors in Educational CVEs

There is a broad variety of place metaphors used in educational CVEs. In this context, a question arises:

what is the connection between the place metaphors expressed in a virtual environment and the underlying learning goals? To perform such an analysis, we need a characterization framework, within which the metaphors and their features can be considered.

In this framework the place metaphors can be characterised in terms of outlook (e.g. resembling real campuses and buildings or looking completely “abstract”), structure (mutual relations between different parts of the environment, e.g. rooms within buildings) and roles (meeting place, information space, virtual stage, demonstrations and exhibitions, workplace). The role of a virtual place can be determined by several factors: e.g. places intended to play a certain role (a meeting place) do not always do so, due to inadequate design or various social factors. For example, a meeting place started by end users (e.g. students) directly, is more often likely to be actively used than an “official” meeting place – one “enforced” by the teacher. The role of place is also defined by the design, available facilities and artifacts contained there, such as announcements and pictures. In the following we will concentrate on two such roles most relevant for the project described: virtual stage and workplace metaphors [10]:

Virtual stage metaphor seldom exists in a “pure” form, but its elements are present almost everywhere as users in virtual worlds always “play” a role as they express identity in a different way than in reality and are “disguised” behind avatars and nicks. This metaphor allows different kinds of acting to take place, by learners personally or by artifacts or agents created and programmed by the learners. Such artifacts or agents can act as “substitutes” for the persons and “play roles” on their behalf. Sometimes, we can have virtual stages not as an arena for role-playing, but in its own right, e.g. created by scenography students.

- Creator: teacher, students or agents
- Purpose of the virtual stage:
 - o “Unintentional” role-playing, e.g. via chat
 - “In person”: resembles the meeting place, possibly workplace metaphor
 - Through substitutes such as created artifacts and agents (see Fig. 1)
 - o Intentional roleplaying, e.g. as a part of a history subject. Demands specifically designed surroundings
 - o Scenographic design
- Facilities/design:
 - o Outlook of the place, creating an appropriate atmosphere for the roleplaying (e.g. historical scenes)
 - o Possibilities for flexible scene modification, with a set of “building stones”, e.g. props and furniture pieces
 - o Templates for artifacts/agents with programmable behaviour and designated places

where learners can create stages for personality expression

Workplace metaphor aims at facilitating working together in a shared context using shared artifacts. It often overlaps with other metaphors, e.g. when students create exhibitions or virtual plays as a part of their projects.

- Creator: teacher, students or agents
- Purpose of the workplace:
 - o Synchronous vs. asynchronous cooperative work
 - o Different type of working activities
 - Meetings and discussions
 - Construction of environment
- Facilities/design of the workplace
 - o The outlook of the place, creating a working atmosphere: a classroom, a construction place
 - o Facilities for performing work tasks, e.g. building elements, message walls, links to informational resources
 - o Facilities for mediating of workplace awareness: e.g. leaving messages on the message wall, automatic event notification of users, visualized overview over other’s activities etc



Figure 1. A jumping wedding couple (programmed artifacts) in a house of a girl who recently got married

3. The Project

The remote design collaboration project described here fitted within the broader curriculum themes of an introduction to digital technology and a design studio as part of the first year of an undergraduate Multi-Media degree in the school of Information Technology and Electronic Engineering. The technological issues revolved around constructing, hosting, and acting in a 3D CVE. The studio issues address the narratological themes of 1st, 2nd, and 3rd-person narratives and their applicability within an online 3D VE. T. S. Eliot’s *The Cocktail Party* was chosen because it presents complex yet accessible social interactions in a series of short acts

and small spaces which were easy to reconstruct within the CVE.

77 first-year Bachelor of Multi-Media students in 5 groups of 15-16 members participated at the Brisbane campus with 30 second-year Design Computing students in groups of 6 participating at the Sydney campus. The play was divided into 5 acts which coincided with Eliot's original combination of acts and scenes. Each student brought their own skills and abilities to the group collaboration where the various tasks and roles were negotiated.

3.1 Participant Background

Students came from diverse backgrounds – international students, interstate students, and a range of ages 17-43. For many, English was a second language. Their acculturation to digital media was equally diverse – from extensive self-taught students, some already working in the multi-media industry coming back to 'upgrade' their qualifications, to those with little exposure to digital technology. Teams in Sydney and Brisbane were able to communicate only via email, chat, and within the Active Worlds (AWs) environment. The reflections expressed in this paper were drawn from the teaching journal, conversations with students, email correspondence between collaborators, chat logs from the AWs environment, and the students' final project reports.

3.2 CVE Interface

The collaborative virtual environment described here included access to a studio space with a projector and 20 2GHz PC's running windows XP. Each PC had a version of the Active Worlds (AWs) client application in Brisbane (the server was hosted by Sydney). The usual array of word, graphics, and CAD packages were installed including email. Participants also had access to their own telephony.

The main collaborative interface, AWs, incorporated a navigable 3D window, http browser, and hypercard-like organisation of its various features (see Figure 2). Within the 3D navigable space, participants were able to manipulate and insert new objects from a library. Prototype 'props' could be constructed in any 3D CAD program, converted to the native format for AWs using Accutrans and added to the library database for later retrieval. Participants are represented in the AWs 3D environment by an avatar selected from a pull-down menu list. The chat textfield provided another method for real-time interaction, while the http browser facilitated support such as faq's and project guidelines which could be dynamically and remotely updated by students and teacher alike.



Figure 2. Active Worlds interface with, from left-to-right, hypercard organisation of program features, 3D navigable space, chat textfield (below), and http browser

3.3 The Process

First, each group analysed the play. From this they were able to identify all the props, stage settings, actors, roles, interactions, actions and so on for the whole play and for their particular act. Second, tasks and roles were negotiated within the local group and with their remote collaborators. This involved email at first, followed by the transfer of prototype props for insertion into the AWs environment.

Initially little social interaction occurred between local and/or remote partners. However, as the pressure of a deadline approached there was a marked increase in communication between the various members of a team. However, their later communication efforts were hampered by the perceived inability for the technology engaged to support the level of social interaction needed to communicate effectively. Consistent across all groups was the complaint that communicating via email or chat was inferior to face-to-face or telephone exchange. The fragmented nature of the medium means little detail is included in communiqués, leading to further confusion. Students complained that they "could[n't] get a 'picture' of what... [the others] wanted". In response to the perceived 'unacceptable' variability and arbitrariness of email communication, remote partners tended instead to work alone – only forwarding information as a courtesy, if at all.

Despite this apparent lack of collaboration they found ways to compensate. At least, 'formal rehearsals' (when the first author was present was present) and the final performance demonstrated a concise level of collaborative understanding of the overall process. The 'phantom'¹ audience in Sydney contributed beforehand by applying their knowledge and skills with the AWs

¹ Phantom in the sense that their ghostly presence gave few clues about their 'real' identity.

environment² and during the performance by adopting an ancillary narrative role – they relayed their visual and textual interpretation of the various acts as they were being performed (see figure 3). The pedagogical benefits of this process for the actors and their entourage were immediate and tangible feedback in a rich learning environment, which was also of their own making.

Socialising seemed to occur either asynchronously via shared emailings, synchronously within the Active Worlds environment as avatars and using the chat texting interface, or more intimately in the same room, café, or at other physical locations. Most reported that the face-to-face communication between members of a local group was the most efficient for “getting things done”. While the AWs environment proved to be a novel, exciting, and engaging environment the effort required to coordinate meetings overshadowed the, by comparison, brief time spent there. Most of the time spent in the AWs environment involved constructing and following instructions – little or no spontaneous or impromptu socialisation, such as idle chatting, was recorded.



Figure 3. View from the stage. Note the phantom audience in the background

3.4 The Play

Groups used their interpretations of the play to re-construct it [2] in a collaborative VE. Their interpreted re-constructions tended to include elaborate imaginary spaces which borrowed heavily from pre-conceptions about computer game settings. Scripts were prepared in advance in Word, Excel, and Notepad text etc. These ‘texts’ were then simply cut and pasted into the chat text field of the AWs interface at the appropriate times.

To appeal to a modern audience, contemporisation of the script was used extensively. This included SMS-style text (txt) messaging, chat jargon, and emoticons. This ‘txting’ was further accentuated by movement about the virtual ‘stage’ generating a dynamism not ordinarily experienced in a less ‘structured’³ VE encounter. At

² Brisbane participants were reliant on their Sydney partners to upload props into the AWs server.

³ A less structured VE is one where users interact without purpose, pedagogical or game-play motive.

times their recently acquired facility with the technology saw them ‘working the audience’. In this way they were identifying the various ‘layers’ of reality between: each other in the lab; their agents in the VW; and, the phantom audience in Sydney, who’s only identification came via chat messages. Oversized props were used to exaggerate the spatial characteristics of the AWs forum – typical of computer game scaling.

In a sense, the use of SMS-style ‘txting’ leveraged a pre-existing sub-culture of socialisation via mobile phone text messages. In this manner, we get a glimpse of how the students brought their own understandings of other digital technologies to bear upon the need to find a social medium. Whether this would be sustainable in a larger production or commercial setting is the subject of further research.

4. Evaluation

According to Bruckman [12] when using digital collaborative software cultural differences in perception of the technology used and the social and institutional context within which the technology is situated should be foreground. The co-evolution of technology and pedagogy within a CVE should emphasise the social and cultural influences on and of technology. Hence, adopting Guba and Lincoln’s [2] constructivist methodology, in a forum-like manner, a series of short questions was asked of each group following the final performance:

- 1) Was this a worthwhile exercise?
- 2) What did you learn about remote collaboration?
- 3) What did you learn about each other?
- 4) What did you learn about the technology?

Typical responses included:

- 1) “We can see this is a very interesting technology and we can have fun in it but why do we need the 3D?” “...it only slowed things down.”
- 2) “Remote collaboration only works if everyone collaborates.”
- 3) “We learnt that we have different skills and some people surprised us with their ideas for instance.” “I didn’t think X could do that.” “When we did work with Sydney they were able to ‘fill the gaps’ we couldn’t and we could only describe what we needed in chat.”
- 4) “we’re all used to the realism in computer games” “...this render engine was very basic but we were still able to get our message across!”

Their responses were then negotiated as a class in an iterative process until consensus was achieved on agreed meanings. The outcomes of this process indicated that:

- Despite the system’s fallibility, the opportunity to design virtual spaces, to communicate through text,

and motion, to a captive audience, was empowering in ways traditional CAD, video, or animation does not allow. The real-time collaborative interactivity provided for instantaneous (or almost instantaneous) feedback on design moves, in Schon's [3] sense— in this case 'moves' were of a performative/gestural nature. According to Guye-Vuilleme et al [13], gesturing provides for what psychologists (e.g. [14]) call 'non-verbal communication' – tacit communication that occurs without the use of voice, text or signs, such as facial expressions, posture and so on.

- The notion of collaboration, remote or otherwise, was not something that had been broached seriously in their prior education experiences. This exercise was instrumental in transforming the students' ideas about the need for, and potential rewards from, collaborating both within a team and across a time zone.
- Through this process students were able to reflect on the transformative outcomes of deconstructing their prior concepts about what a CVE could be used for. From this they constructed a new reality whereby the accepted realisms of a computer game are not necessary to communicate performative design concepts.

While any media addressed as a learning environment can be shown to influence learning outcomes, what distinguished this exercise is the way none of the participants had considered remote collaboration could occur in a 3D CVE. This is despite their familiarity with multi-user 3D computer games. Unlike 3D computer games, however, the participants in this exercise felt empowered to construct their own play environments on a virtual stage in a virtual workplace.

In the terms of the characterization framework outlined in Section 2, there was both intentional and unintentional role-play on the 'virtual stage'. Intentional role-play followed the major intention of the exercise – an online performance of T S Eliot's play. Unintentional role-play included those instances before and after the formal play when participants simply 'played around' on the virtual stage. In this sense, the virtual stage afforded a platform where participants could 'practice' their gestures, moves, and texting in a risk-free environment. This environment was also their workplace. They could conduct conversations via the chat field, instructing others on how to execute the play on the virtual stage. During the preparation phase, the environment served as a workplace for the collaborative construction effort. The virtual environment framed and hence, influenced the possible learning goals – to transform prior understandings about how a CVE could be used.

When we compare the provision of facilities to the associated learning goals within the characterisation

framework [10], we find a direct correlation between the deliberate choice by the teacher to not provide any stage templates and similar facilities and a varied and creative stage design outcome leading to deep engagement by the students in the exercise. Facilities were not provided by the teacher at the beginning in order not to limit the students' freedom of expression in designing the scenes for the play. This resulted as planned in the students taking control of their own design/work space/place. Although this also meant it took some time for the students to get started. The fact that they chose to use a 'real' stage with realistic props and a designated area for the audience proved crucial to create the appropriate "atmosphere" and support the performance and associated communication. This was demonstrated by the manner in which the audience found their 'correct' location within the 'theatre' and the actors being able to be seen from the audience. Applause and laughter was engendered at the right times and by the texting as well as the participants' gesturing suggesting a further level of realism supporting the effectiveness of the virtual environment to host a play.

As a counterpoint it is worth mentioning that while no specific facilities (apart from the base stage) were provided to facilitate the collaborative work online such as specially designed working and meeting rooms, resources and enhanced communication facilities, much of the negotiating communication for the preparatory work happened through the use of other means such as email, IRC, and MSN messenger. This raises a question whether the collaborative working activities in this case could have been better supported by integrating the AW application more closely with other tools thus enriching the common workplace with other resources to motivate students to spend more time there.

5. Conclusion

Through the vicarious experiences of the students engaged in this exercise we can construct a pedagogy that recognises the need for collaboration (both local and remote). To this end the 3D CVE described here provided a vehicle for its exploration. While socialisation within the virtual environment and the adapted communication technologies was found to be mostly deficient there were indicators that suggest socialisation did occur. However, whether the technology actually fosters socialisation is not apparent. Indeed, the inability for the technology engaged to support socialisation provided a contrasting environment for students to become more aware of the important role socialisation takes in collaborative ventures.

It is proposed that future versions of this exercise will include initial and ongoing video-conferencing capabilities as a supplement to AW, in order to address

the issues mentioned in the previous section. Another proposed feature is to establish facilities online not directly related to the performance such as meeting and recreation areas within AW to encourage more prominent presence and involvement in the world in general. The intention is to facilitate more intimate social connections leading to more pronounced collaborative outcomes in the form of deeper intuited understandings, hence better prediction of each other's design moves toward a more concerted overall design orchestration. Also, while the base stage set in this exercise was dictated by the teachers, future collaboration should allow participants to establish their own platforms upon which they can construct and own their stages.

Two main lessons were learned from this exercise: the importance of face-to-face social interaction in collaboration exercises. Participants found they could not rely on the technology to instigate the collaboration; and, that better collaboration comes from more intimate socialisation. Furthermore, the goals of collaboration may not always be those circumstantially framed by the pedagogical exercise, rather more pragmatic aims were needed, such as being prepared for the reviews which attracted marks. From this study it is difficult to make any direct correlation between collaboration in a pedagogical setting and the requirements of commercial design collaboration apart from the assumed common need for socialisation. Nevertheless, it is only a small jump in imagination for the students involved in this exercise to see themselves engaged in such activities in a professional setting. Hence, in broad terms, we can speculate that such a system can be effectively used in an educational setting to facilitate remote design collaboration. An important issue to explore in this context is what facilities and design features would be most appropriate to support such collaboration in different situations. However, in its current form, it is not clear that it would support, let alone enhance, the socialization which is a key component of any collaboration. Nevertheless, it could be used as an adjunct to other methods of communication to at least provide for an environment where direct, interactive, and shared, design actions can take place.

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CVE Labs:

MediaLab, Chalmers, Sweden; <http://www.ckk.chalmers.se/>

MIT media lab, USA; <http://www.media.mit.edu/>

CASA, UCL, UK; <http://www.casa.ucl.ac.uk/>

MiraLab, Switzerland; <http://miralabwww.unige.ch/>

HitLab, USA; <http://www.hitl.washington.edu/>

MartinCentre CADLAB, UK; <http://www.arct.cam.ac.uk/research/>

KCDC, Australia; <http://www.arch.usyd.edu.au/kcdc>

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