

CHAPTER 8

A COMPARISON AND CONTRAST OF ACTIVE WORLDS, blaxxun's CONTACT 4.0 IN THE CONTEXT OF COLONY CITY, AND ONLIVE! TRAVELER

Three-dimensional virtual worlds are complex applications. They construct the user in many ways and on many levels. In order to gain a fuller understanding of how these applications work, it is important to look at them in relation to one another. While looking at how design features of individual applications serve to construct the user within the context of that world, it is also informing to compare features across different applications. The following analysis is a comparison and contrast of the various design features of Active Worlds, blaxxun's Contact 4.0 (used in the context of Colony City), and OnLive Traveler. This analysis focuses on those features that serve to construct the user in the same categories used in chapters four, five, six, and seven: Presence, Representation, and Embodiment. Because the focus of this research is on the use of 3D virtual worlds for educational purposes, each analysis is followed by a discussion of the educational implications of the findings.

Presence

AW, Contact 4.0, and Traveler are approximately equal in the prerequisites for hardware, software, and general computing skills. All three require Pentiums, Windows 95, 98, or NT, at least a 28.8 modem, and Internet access. Traveler has the additional requirement of both a SoundBlaster compatible sound card and a microphone. None of the three applications offer Macintosh versions. In addition to the hardware requirements, users must be able to download these applications and load to their machines. While all three applications currently offer free versions, AW does require users to pay an annual fee of \$19.95 to register. Contact 4.0 users wishing to access Colony City must register in order to interact with other users, however, registration is currently free¹. Traveler is currently free for downloading and does not require registration.

Language

AW provides the greatest documentation and browser support for non-English reading/writing users. Indeed, there is a sizable non-English population with many cultures represented. AW has a history of supporting a variety of language-based worlds. Prior to users being able to purchase their own worlds, both Worlds Inc.² and COF supported several language worlds (German, French, Russian, and Mundo Hispanico). Overall, AW has a history of facilitating and supporting non-English environments.

¹ As of February 15, 1999.

² Previous owners of AW.

blaxxun's Contact 4.0 offers limited support for language other than English. Unlike AW, information for downloading can be found only in English and German. The Contact 4.0 browser supports French and German (as well as English). blaxxun interactive is a German based company and also has a history of supporting a variety non-English worlds such as "Virtual Paris", however, overall Colony City has not attracted the diverse non-English using population of AW. In most Colony City settings, English continues to serve as the language of wider communication.

OnLive Traveler is no longer under development³. English is the predominate language spoken and no non-English version of the browser were found at this time.

Conclusion

All three applications permit and prevent users from being present. In terms of hardware, software, basic computing skills and language AW and blaxxun have an advantage over Traveler. Neither requires as much hardware, and they provide support in several languages. AW supports the many more languages than blaxxun. While AW does require registered users to pay a small fee, there are provisions where world owners can provide full access to designated users. Also, the lack of registration with AW only disables some of the features, not all. Many users participate daily in the AW universe without registering.

³ Recently OnLive! Traveler was purchased by Electric Communities. It is not known whether they will resume development of Traveler.

Presence: Educational Implications

While users are just beginning to explore the unique educational opportunities afforded by these 3D virtual worlds, it is important to note that for widespread educational use the potential is somewhat limited by the hardware requirements. In addition to the hardware, users must be able to download applications or have access to someone who is able. This is not a difficult task, but may intimidate students with little computer experience.

AW by far offers the greatest support for languages other than English. One need only spend a short time in any of the major COF worlds to quickly see how AW has fostered in international following. Indeed, there are communities where English is rarely used. AW offers many exciting possibilities for foreign language learning. Many of the language-based worlds offer a contextually rich environment reflective of various cultures and countries. These worlds hold many possibilities for authentic communication between language learners and native speakers of a target language.

While blaxxun's Contact 4.0 also allows some opportunities for authentic communication for language instruction, the lack of user-extensibility (customizable building) limits users from constructing culturally reflective and diverse settings. Additionally, the community itself is not designed for educational purposes, and while it may support activities, it would probably be most difficult to use Contact as a primary learning environment.

Traveler offers some admittedly limited, but interesting opportunities for foreign and second language learning support. The real-time voice feature provides opportunities for students to speak with native speakers of a target language.

Representation

Avatars

All three 3D virtual worlds handle avatars in different ways. For the most part, AW and Traveler users must select an avatar from an existing library of avatars. The Traveler avatars represent a variety of cultures, animals, and fantasy characters. Additionally, users can customize their avatars by easily changing the colors of various polygons as well as squashing or stretching the shape. It should be noted though that the Traveler avatars are basically limited to heads. While the AW avatars do contain entire bodies, the COF library is fairly limited. Gender, age, ethnicity, culture, body size, and physical abilities reflect the values of Western culture. Additionally, there is no mechanism by which users can customize an avatar to reflect their interests or values.

Overall Contact 4.0 provides the greatest degree of personal representation by way of avatars. While users may select from various libraries (blaxxun as well as others), they may also import their own avatar. Various users have also created avatars for public use. One group who created publicly assessable avatars even provided an avatar in a wheelchair. Additionally, users wishing to create their own avatars have that option. blaxxun provides instructions for those users comfortable with VRML. For those users not comfortable with VRML, there are other options such as graphical VRML editors. One such editor, Spazz3D, provides an avatar wizard that converts a VRML file into a blaxxun avatar.

Identity

Both AW and Colony City (used with Contact 4.0) require users to register in order to gain a unique identity. While AW charges a small fee, Colony City is currently free of charge. Traveler does not have provisions for unique identities. Users may use any name they wish. While there are many privileges that come with a unique identity, there are some limitations. With AW, name changes are reflected on other users contact list. This may impose some limitations on users whom for whatever reasons wish to explore different roles. Despite this limit, unique identities establish both a sense of trust and accountability. Because it is difficult to rely of visual recognition of users, unique identities are often the only means by which users are able to recognize one another.

Communication

Contact 4.0 and AW rely solely on text dialogue as the primary means of communication. Contact 4.0 is only beginning to delve into the use of real-time voice and at the time of this writing, real-time voice was not functioning at a sufficient level to comment upon. The reliance on text-based communication imposes limits on many users in terms of language and typing skills. However, there are also advantages to text-based dialogue. Both AW and Contact 4.0 allows users to create a log of conversations. This allows users the chance to save a conversation to review at a latter time. There are some disadvantages to text-based communications because it may be difficult for some users to follow the multiple threads that one must be able to sort through to follow a conversation. While most users seem able to adapt, most

likely those users who are not able to adapt merely stop participating. Multiple threads of dialogue also allows users to maintain two completely different conversation threads with one person. This is difficult if not impossible to do with real-time voice.

While Traveler does provide a feature to allow one-to-one text based conversations, for the most part communication takes place using real-time voice. There are both advantages and disadvantages to this option. One advantage is users are not forced to continually shift attention between two screens; resulting in is a greater sense of "thereness" (Naimark, 1990) because users are speaking directly to one another. This is an advantage for users who are not adept at handling multiply threads of text dialogue. Real time voice also allows for more authentic communication. When users are angry, or excited, these feelings do not have to be described, but are displayed vocally. Additionally, users wishing for authentic spoken communication, such as the case with language learners, have that option with Traveler. There are also many disadvantages of real-time voice. In face-to-face communication, body language plays an important role in signally turn-taking and overall negotiation. Because the Traveler avatars are limited to only heads, there is no mechanism for representing body language. Large group conversations can easily become a muddle of voices. Additionally, because the voice data must travel through modems and telephone lines, conversations can be come halted and difficult to follow because of time lapses.

All three 3D virtual worlds provide users with the ability to mute other users as well as pass personal messages or whisper to other users. Contact 4.0 also allows

small group chats, whereas with both AW and Traveler users usually move their avatars to a less crowded area to engage in small group conversations. While the act of moving an avatar may seem to be an imposition, it also adds greatly to a sense of place and space. Additionally, AW also allows users the option of sending telegrams to users in other worlds, or to send telegrams to users who are not currently logged on. This greatly enhances the construction of community among users while at the same time preserving individual rights of privacy. Users do not have to rely on email or give out personal email addresses or ICQ numbers⁴, instead, they can send asynchronous messages within the AW universe.

Building

AW by far provides the greatest support and flexibility for building. The act of building in AW in many ways becomes a means of personal and cultural representation. The availability of building privileges also enhances the sense of community among users. Building various structures becomes a source of pride for many users. It allows users to impact the worlds and gain a sense of investing in the community. To build in AW, users need not possess any special skills in 3D modeling, but instead, they merely select from an existing library of objects and adjust them the way they choose. While to some people the existing library may seem limiting, according to Bruce Damer, building with AW objects is in many ways

⁴ ICQ is an Internet tool, which allows users to create contact lists of other users. ICQ informs users when a user on the contact list is online. Users can chat, send files, URLs, etc. ICQ numbers are unique numbers that help establish a unique identity for a user.

similar to how many individuals build homes in the PW. Damer (personal communication) argues that in the PW, when someone needs a new door, typically they measure the doorframe, and then go to a hardware store and purchase a suitable door from a selection. With the exception of a few carpenters, rarely would someone measure a door, buy the lumber and build a door. According to Damer, users skilled in 3D-object modeling are analogous to the rare carpenter who actually builds the door. For most purposes, the pre-fabricated door suits our needs.

Along these lines, it is important to note that while users are limited to using the object library, one short foray into one of the public-building worlds reveals amazing creativity and ingenuity users display in creating structures and environments that reflect their interests, personalities, and culture. Additionally, though users may be somewhat limited in by the selection of objects, they also have a great deal of freedom to import images, animate, add sound, and trigger web pages.

Colony City does provide users with the availability to own a house, however, these houses are pre-fabricated and predominately represent Western culture. Users cannot customize their homes, though blaxxun is working to provide that option.

Conclusion

Overall, all three applications hold interesting options and provide for varying degrees of user input. Contact 4.0 allows the greatest flexibility for visual representation (avatars). Traveler also offers some flexibility, whereas in AW, the user is allowed very few options or control over personal representation.

While both AW and blaxxun allow users a unique identity there are advantages and disadvantages to having one. Overall the registration systems provided by both Colony City and AW do more to enhance the construction of community by insuring a degree of trust and accountability among users.

The opportunities for communication vary in all three applications. There are parallel advantages and disadvantages to both text-based communication and real-time voice. Text-based communication does have the added benefit of allowing users to create logs of conversations. Out of all three 3D virtual worlds, AW is by far the most innovative application when it comes to user extensibility. The availability of building rights and privileges in many ways over shadows most of its shortcomings. One need only spend short time visiting one of the public-building worlds to see why the addition of this feature makes AW one of the strongest 3D virtual worlds currently available.

Representation: Educational Implications

All three 3D virtual worlds have various strengths and weakness in the applicability for educational use. The user visual representation in AW is somewhat problematic because of the limited avatar selection. Potential learners are limited to using a prefabricated avatar, which may or may not represent the values of the learner. One of the greatest strengths of blaxxun's Contact 4.0 is that users are able to use their own avatars. This in turn would give a learner the opportunity to create a representation consistent with his/her values. Traveler provides an interesting

compromise. The avatars are not photo-realistic. There is an ample selection of fantasy-types to choose from, and the learner has the opportunity to alter their avatar.

All three 3D virtual worlds offer varying degrees of persistence of identity. Unique identities contribute greatly to both trust and accountability, both of which are important in developing learning communities. While Traveler does not provide unique identities *per se*, the real-time voice features can server as a means of identification.

All three provide ample means of communication, however, AW does allow for a wide variety of avenues with *text-chat*, *telegrams*, *whisper*, *mute*, and *contact lists*. Additionally, users are able to some extent control various aspects of communication. The degree of flexibility in various communication features is an advantage in terms of educational use. Within the AW environment, learners are afforded a strong degree of privacy and protection while at the same time are provided avenues for collaboration.

One important consideration is that in text-based 3D virtual worlds, learners must possess both the typing and language skills in order to communicate. While it could be argued that there are parallel restrictions in a PW classroom, in a virtual environment, learners lack much of the non-verbal means of communication afforded to them in the PW.

One area that also deserves note is the user-extensible features a virtual world allows. In this respect, AW is by far the strongest application. Not only can users build within several of the public building worlds, individual world owners can select

designated builders within their worlds. Additionally, there are provisions for user to own and control their own worlds, which would allow potential educators to insure protection of the learning environment.

Embodiment

Avatars

All three 3D virtual world applications provide varying levels of embodiment. Though embodiment is tightly tied to the user's avatar, for the most part it is not dependent upon which avatar a user selects. AW avatars gestures provide an interesting study into the advantages and disadvantages of animated gesture cycles. The AW avatars are rarely idle. When viewing a crowded AW setting, the use of animated gestures add motions, movements, and gestures that are parallel to those displayed by crowds in the PW, enhances the environment by adding a sense of human presence. These animated gestures also serve to draw the user's attention back to the 3D window. Despite these advantages, there are some drawbacks to animated gesture cycles. The non-verbal communication, displayed by the AW avatars may be inconsistent with the message users want to communicate. There have been several incidences where novice users where observed attempting to override or explain that they could not control what their avatar was communicating non-verbally⁵.

⁵ Examples of comments include, "I'm not really bored, it's just my avatar", and "stop looking away". Other researchers in the area of 3D virtual worlds have made this observation as well. During an interview with Bruce Damer, he also commented on this feature, however, I could find not written documentation to support the observations.

While Contact 4.0 does provide animated gesture cycles, users with custom made avatars have experimented with the use of animation. For the most part animation was used not to replicate human gestures.

Traveler offers some interesting parallels to gestures. The application of lip-syncing to make an avatar appear to be talking is quite uncanny. The addition of this feature greatly enhances the sense of presence in an environment. While the lip-syncing is not always an exact match, it does come close enough to matching sound and lip movement to give the appearance that the avatar is talking.

None of the three applications offer a very intuitive way to project emotions or actions. All three applications provide few options for users to choose from.

Both Traveler and AW offer the most intuitive interface for displaying perspective and navigation. While Contact also allows users to navigate and shift perspective via the arrow keys, the mode must be selected from either a pop-up menu, or by knowing the correct short-cut key commands. In addition, the navigation dashboard that rests at the bottom of the Contact 4.0 3D window visually distances the user from being in the scene. The dashboard at times re-enforces the idea that users are viewing the 3D world through a window. Though the dashboard can be turned off, a small red button does remain in the scene to allow users to re-activate it.

One feature that does play a strong role in establishing a sense of embodiment is Traveler's use of both gravity and collision. Users are not able to drop below the ground of a scene. Additionally, users are able to experience collision from a first person perspective. As the taking heads move through an environment, they gently (and sometimes not so gently) collide with objects and other users.

Conclusion

Overall, Traveler provides the greatest sense of embodiment, which is somewhat ironic because the avatars consist of mainly heads. Despite the lack of a representative body, the talking heads do provide a great sense of embodiment because of the lip-synching, collision, and gravity.

Embodiment: Educational Implications

Initially embodiment may not seem to be a very important issue for the educational use of 3D virtual worlds. However, that may not be the case. While most 3D virtual world applications are far from providing the complex embodiment of the PW, there is indication that users do bring some of the PW behaviors in the virtual realm (Jeffery and Mark, 1998). Where embodiment becomes very important for an educational environment is the degree of non-verbal communication an application affords or limits. Granted none of these applications come close to providing the non-verbal information afforded in a PW classroom, they may offer more than is afforded in some forms of distance education (Web-based and one-way video). While Traveler provides the greatest degree of embodiment, it should be noted that both blaxxun and AW have made strides in the area. Embodiment is rich and complex, difficult to compress over narrow bandwidth.

In any discussion comparing the educational implications of these three 3D virtual worlds, it is important to state that these are emerging technologies. There

is a great deal of ongoing development. One of the most important contributions they offer the field of education is a mirror to watch and analyze how we perceive and construct our PW.

Constructing the User

Overall it is difficult to do little more than generalize when assessing how the user is constructed by a particular 3D world; however, some generalizations can be made. While each of the 3D virtual worlds in this investigation have limits and opportunities. Though many of the design features in all three worlds seem parallel, how they function within the context of the individual world sometimes alters the way users are constructed.

Contact 4.0/Colony City: Central Community

With Contact 4.0 used in conjunction with Colony City, the focus is on a more central community. Anytime a user is in-world, their identity is listed in the Peoples list. Lurking is not an option. One is always part of the community. Additionally, the act of claiming a home reinforces the community. Users are not able to create or customize their environment, but merely choose whether to participate and to what degree. While users are free to use their own avatars, it is difficult to recognize individual users by sight. The users attention is still drawn to the text dialogue box. The text dialogue box lists each users name, job, and points each time a user "speaks," this in turn once again reinforces the sense of the user being member of one central community.

Active Worlds: Personal Autonomy

Active Worlds also construct the user as a social being, however, there is a noted shift in emphasis. Users have a great deal of control over their privacy. If they choose not to "speak," no one may know they are present. While AW does stress the importance of community, it does not require the allegiance to one central governing body, but rather encourages users to develop their own communities. Throughout the AW universe, both in the public-building worlds and in individually owned worlds, are examples of small communities of users who have collaborated on creating and adapting an environment to reflect their own cultural and personal values and priorities. While AW is a medium for social interaction, it is one in which the user to a great degree sets the limits and parameters. It allows for a great deal of personal and small group autonomy within the larger community of users.

OnLive! Traveler: Experiential Embodiment

OnLive! Traveler is one of the few 3D virtual worlds to focus primarily on embodiment. Nearly all aspects of the design serve in some way to support experiential embodiment of users. In many ways, Traveler does not construct the user as part of a community due to the fact that there are no unique names or features to support persistent identities. There are also few provisions for building community such as contact lists, dialogue logs—or histories, and building privileges. This is not

to say that community has not developed among Travelers users. However, the focus is on a more temporal, "in the moment" experience, rather than on long term community development.

Summary

A comparison of the three 3D virtual worlds reveals that in terms of presence, all three require roughly parallel hardware, software, and overall know-how, however, both blaxxun and AW do offer information in languages other than English. While AW offers the greatest variety of language browsers, users are still limited to English in terms of "help" files and support.

All three virtual worlds displayed various strengths and weakness in the way users' representation is constructed by way of avatars, identity, communication, and building. While AW offered the greatest support for user-extensibility, the avatars proved problematic. blaxxun offered the greatest degree of user control of representation, yet offered very limited opportunities for building. Traveler does not allow users to build, yet does provide a great deal of flexibility in avatar control. The communication features offered by both AW and blaxxun's Contact 4.0 were fairly similar, but with varying degrees of user control. Traveler was the only virtual world in this investigation to employ the use of real-time voice and out the three virtual worlds provided the most interesting study of how embodiment can be constructed and supported in the 3D virtual environment.

It should be noted that this review is neither comprehensive nor exhaustive. There are many ways to investigate a world and all three of these 3D virtual worlds provide an interesting study into the design and development of computer mediated environment.