

Beyond Use and Design

The dialectics of being in virtual worlds

Anna Croon Fors & Mikael Jakobsson

acroon@informatik.umu.se and mjson@informatik.umu.se

Department of Informatics

Umeå University

Sweden

Abstract

Through a technalysis of a group of designers constructing a three-dimensional virtual world we suggest new concepts for understanding our relationship to information technology. By conceptualizing information technology as the organizing structure for social interaction and regarding it as an influential mediator and moderator of human experiences, we arrive at a new perspective that reaches beyond the traditional dichotomy of use and design.

In our analysis we attempt to show how being in virtual worlds is guided by the understanding of the system generating the virtual world - the personal cosmology - and desires inherent in the participant that the technology can release. We also demonstrate how being in virtual worlds substantially differs from the traditional view of functional and purposeful use of computers. A number of concepts regarding the habitation of virtual worlds are also discussed. For instance, we suggest that the design of a virtual environment can be conceptualized as a dialogue based on individual ideas that merge into a mutually constructed reality, an objectivation of a shared context. We also describe how inscriptions in the technology guide the behavior of the participants towards an endless development of the world, a re-conceptualization that is essential for the world to stay alive. It is also illustrated that virtual worlds lack the traditional structural properties of the physical world, but still reverberate with those structures as they are imported by the participants.

Our main conclusions are that studies of the particular through technalysis reveal important understandings that can be applied more generally; that virtual worlds are not used or conceptualized as computer tools; that there are no clear borders between use and design; and that individual conceptions of a system as well as its inscriptions are important factors in understanding being in virtual world.

Keywords: Cyberspace, virtual worlds, social interaction, dialectics, being, use, design.

Introducing the Dialectics of Virtual Worlds

[The] diffusion of technology endlessly amplifies the power of technology, as it becomes appropriated and redefined by its users. New information technologies are not simply tools to be applied, but processes to be developed. Users and doers may become the same... (Castells, 1996, p. 32.)

Technological artifacts are today part of almost all areas of our everyday lives. This is not least true for information and communication technology, which in many ways are changing the way we conduct our lives – at work and in our homes. (Monteiro, 1999.) Every new technology makes us ask the question of what or who determines how that technology is going to be used and how it will further develop. There is of course no easy answer to this question. It is rather possible to find a diversity of conceptions, statements

and findings concerning the relationship between technology, social interaction and change.

In the middle of the 90's Sherry Turkle claimed that we are moving into a new era of computer use. An era where information technology in addition to that of being a useful tool also provides people with new ways of exploring aspects of reality and self, not possible without the technology. Thus, Turkle opened up for conceptualizing information technology itself as the organizing process, that in contrast to the tool perspective, regards information technology as an influential mediator and moderator of human experiences. For scholars such as Benedikt (1991), Fernback (1999), Heim (1997, 1998), Jones (1999), Laurel (1993), Markham (1998), Rheingold (1994), Stone (1995), Turkle (1995), and Ågren (1998), online communication not only structures relations – it *is* the structure within which the relations occur. In this respect virtual communities and virtual worlds are some of the concepts used to describe the new forms of social life that exist and the new arenas where they take place.

We have chosen to emphasize, rather than tried to reduce, the diversity of our findings. Guiding our approach is *technanalysis* (Heim, 1998, p. 46), a critical but practical approach of describing and putting words to the human encounter with specific technologies. In this case, the specific technology is a system for interaction in graphical virtual worlds on the Internet. Through the analysis of the creation of a virtual world – *Confuse* – we have found that the participants' experience of both being in and creating the world varied in significant ways. We try to embrace these differences as part of an ongoing exchange between polar positions – on both an individual and an analytical level – as parts of a dialectical process.

Dialogues between people achieve more than mutual recognition and shared feeling; dialogues also expose conceptual and attitudinal differences as they apply to the issues under consideration. The interplay of differences about issues constitutes the original meaning of dialectics ... Dialectic comes from human differences, as they become articulate... (Heim, 1999, p. 40.)

One of the conceptual dyads, the subject–object dichotomy, fills a special function in our paper by structuring the presentation. The section called “Inhabiting virtual worlds...” focuses on the individual, personal and subjective aspects of our study. The other main section “...and making them habitable” concentrates on the aspects of constructing a collaborative environment and on issues concerning the material – the objects – used in the process.

Although separated in our presentation we found these two perspectives to be closely interrelated. We therefore question the dichotomy of use and design often implicit in descriptions and studies of information technology. What is questioned is the idea that on the one hand there is a product, an object that is designed and completed – and on the other are the users who appropriate and make sense of artifacts in their everyday life. In our case we have found these two notions to merge and in this process other significant dichotomies become revealed.

The purpose of this paper is to explore some important tensions characterizing the dialectics of being in virtual worlds that reaches beyond the notion of use and design. We begin our exploration through discerning participants understanding of virtual worlds – as tools or place – initially sketched above. Through the elaboration of the participants' personal cosmologies we ascribe significance to the participants subjective understanding of virtual worlds and their motivation or desires of becoming part of virtual world – in our presentation depicted as the longing for life or control. In the presentation of *Confuse* we portray how these subjective tensions intermingle in the process of creating the virtual world and become influential for the creation of the shared context, *Confuse*. Through the notion

of inscribed behavior we try to grasp some of the significant struggles within this process. For instance the one between functionality and structure which in this particular case results in a tension between *Confuse* as completed or unfinished. But before we dig into the analysis of the empirical material, we would like to ease the reader into the subject by saying a few words about the object of our study.

Virtual Worlds and the Confuse Project

There is no widespread consensual definition of what a virtual world is. The concept is used differently in different contexts. For the sake of clarity and coherence, we will offer our own tentative definition to create a common ground for the theoretical and empirical investigation to come. A virtual world emerges from a technical system that allows a substantial number of people to interact synchronously. The interaction takes place in a sustained environment based on some kind of spatial metaphor.

This definition does not say anything about what the purpose of a world should be to qualify as a virtual world or how big it should be; neither does it say anything about the form in which the world is conveyed to the participants. The definition is wide enough to incorporate a wide range of different implementations from text-based MUD game worlds, to virtual malls with 3D graphics and surround sound. It does, however, exclude e.g. systems for visualization of graphical information since they typically are not multi-user systems. These systems do have some very world-like qualities and we do not wish to deny anyone the use of the term virtual worlds. We only wish to distinguish our focus by emphasizing the social interaction aspect. The choice to not distinguish between e.g. text-based systems and 3D graphics systems in the definition is made based on a conviction that these systems have many important aspects in common. We do, however, believe that the specifics of an implementation are important to consider in trying to understand any aspect of these worlds and would consequently like to briefly describe the specific technology that we have been using.

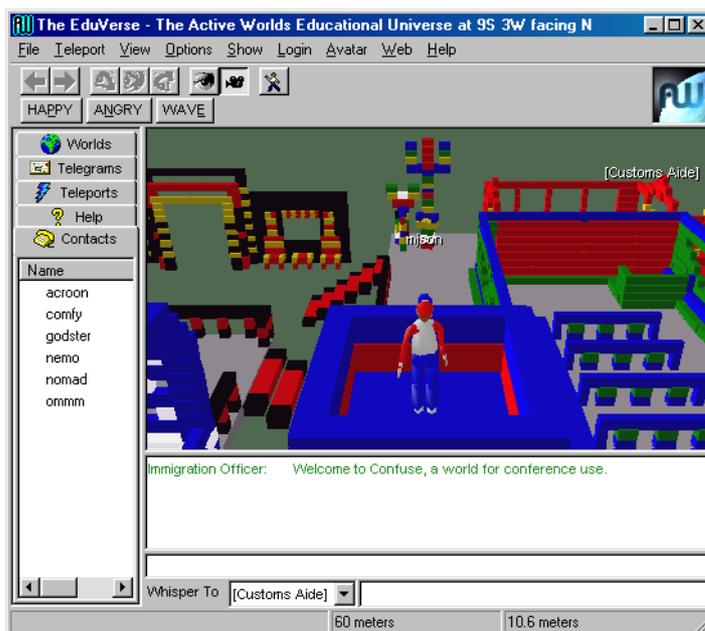


Figure 1. The user interface of the *Active Worlds* browser.

Our study is based on the authors' active participation in a world based on the *Active Worlds*

system. It is a three-dimensional graphical world. A local server sustains the world and participants use a client application to get access to it. This gives the participant a window view of the world. All the participants have their own so-called avatars, i.e. graphical representations of the participants. The avatar is maneuvered through the environment by using the keyboard and the mouse. Participants communicate by typing and reading dialogue in a text window located below the view-of-the-world window. (See fig. 1.)

During the spring of 1999 we, the authors, participated in a design project aimed at creating *Confuse* – a virtual world for conferences and meetings for researchers and students using the *Active Worlds* system. The project was commissioned by the *Department of Informatics at Umeå University*. The design group – *The Swedish Polygon Company* – consisted of the two authors of this paper and two more IT designers/researchers. During this process we collected empirical data in the form of documents, pictures and chat logs. We also conducted interviews with the design group participants both in physical and virtual settings. In our treatment of the empirical material we have substituted the names of the participants' with fictitious names. Please note that the same fictitious name is used for a participant both on- and offline although they actually used separate nicknames online. The project was accompanied by several research initiatives. One concerned the use of Lego™ for physical prototype modeling. This is explored by Holmström & Jakobsson (2001) and will not be further discussed here.

Our method of studying an activity that we ourselves have been engaged in is based on a firm belief in the importance of conducting research within social informatics guided by an inside view (Jakobsson, 1999) of the technology studied. This means that the researcher should acquire an understanding of the particular technology and have first hand experience of the culture and context within which the technology exists.

By studying a single case we hope to uncover details in the particular rather than distilling features of the universal. Our results show how things can be, rather than how they most often are. With this approach we hope to find conditions that otherwise would remain latent or obscured. In this sense our study is explorative rather than exhausting, and perhaps we will pose more questions than we will answer. Our aim, however, is to present a reasonably rich and clear picture of the subject of our study.

Inhabiting Virtual Worlds...

Virtual space is for many people closely connected to non-spatial concepts like imagination, dreams, memory, religion etc. The virtual is seen as something “not-there” rather than something that is there. This leads the French philosopher Pierre Lévy (1998, p. 28) to wonder what happens to Heidegger's *being-there (dasein)* as the primary signifier of existence. We will limit ourselves to discussing being in graphical virtual worlds and will try to show how the virtual worlds are transformed from conceptual spaces (the not-there) to actual places through the being-there. In fact, the physical world must have been just as ephemeral as any virtual world before there was someone there to concretize it through experiences. By being in the world we construct narratives about ourselves that are contextual and fluid. Applied to cyberspace, Coyne (1998, p. 340) advocates a substitution of the language of changed identities with that of narrative construction. So let us start this narrative from the beginning.

When entering a virtual world for the first time, people normally feel disorientated and constricted, not to say lost and helpless. This can be seen as a vague reverberation of what it felt like to enter the physical world as a newborn child. The child does not know

how to see, move, or even that it has a body of its own. To enter a virtual world is to experience some of the same challenges but on a different scale. Since we all have experience from being in the physical world, the process of understanding a virtual world is more about trying to map our understanding of the physical world onto the virtual world. But at the same time we are always being on the look-out for new opportunities in the form of aspects of being that are unlike rather than like the physical world.

The first question asked is often "Where am I?". This can mean that the person entering the world is realizing that she is "not in Kansas anymore." (*Wizard of Oz*, 1939.) But it could also be interpreted as: "Where and what is my 'I'?" The question then becomes an attempt to establish what 'I' constitutes. Do each participant have their own point of view and do they have separate bodies? This uncertainty is normally resolved by seeing other bodies moving around. The next issue then becomes to move ones own body and through the unfolding of the possibilities inscribed in the technology, the participant slowly eases into the ontology of the virtual world.

But just as we can never fully grasp the ontology of the physical world, so are also the virtual worlds eluding a clean and clear-cut understanding. As a consequence of this we have found that the participants tend to construct what we would like to call personal cosmologies. These cosmologies do not exist as all-encompassing systems of belief, but surface in fragments when participants are questioned about their conceptual view of the world. They are constantly redefined as the participants make new experiences and vary substantially between different individuals. Even in our fairly homogenous group of IT researchers there were no two cosmologies that matched.

To understand the place the personal cosmologies have, one must understand the importance of the act of interpretation in virtual worlds. Laurel (1993) and Matsuba (1999) both point out that our experiences with VR are not limited to sensory or visual aspects. Being in virtual worlds is not mainly about perception but about cognition since everything is designed and has a potential for conveying meaning. In the following extract Agneta tries to link her virtual existence to different components of the system.

Agneta: if my client [software] crashes, I will disappear

Agneta: if the server crashes, the world will disappear

Benny: sometimes you are looking at your watch, is that something that you can control from the client?

Agneta: to some extent, I can't control that particular thing right now...

(Interview 6, p. 1.)

Agneta is right in assuming that there is a connection between client–avatar and server–world. But she is not sure where the limits for her control over the personal avatar lies. This influences her in several ways. It affects her perceived possibilities of acting in the world. It also has an impact on her perceived possibilities of designing her self-representation. Finally, it can also influence her perception of others. Another participant, Anne-Frid, mentioned that she felt uncomfortable when Benny waved his fist at her when she was unable to answer a question. She was unsure if the action was the result of Benny pushing his angry button or if it was part of a standardized movement script.

Except for having an impact on being in virtual worlds, the personal cosmologies also show how much this activity actually is about *being*, and how far it is from a traditional view of *using* a piece of software. Compare Agneta's multi-layered and subjective picture of the system with the cosmology of the Mayas.

Benny: If you change your name, where do you think that registers?

Agneta: in the world, the server computer

Benny: then, maybe I (who control the server) can change your name?

Agneta: No, there is a meta-server that controls the universe. In this case Eduverse
Benny: Are we in Eduverse now?
Agneta: oops, that's right, no we aren't
Agneta: There are several universes...
(Interview 6, p. 1.)

The Maya believed that 13 heavens were arranged in layers above the earth, which itself rested on the back of a huge crocodile or reptilian monster floating on the ocean. (*Encyclopedia Britannica Online*, 2000.)

As we can see, the personal cosmologies sometimes bear a close resemblance to traditional cosmologies. For another example compare the two following quotes. The first is from the log; the second is from the Holy Bible.

Björn: The sun always shines from northwest according to Benny's instructions
(Chat log 4, p. 1.)

God made the two great lights: the greater light to govern the day, the smaller light to govern the night, and the stars. God set them in the vault of heaven to shine on the earth, to govern the day and the night and to divide light from darkness. (*New Jerusalem Bible*, 1985.)

Björn does not, of course, consider Benny to be a deity but the natural way of thinking and talking about world owners and system designers *is* in this form. One reason for the close match between traditional cosmologies and the personal cosmologies of virtual worlds is that the designers have decided to use worlds and universes as their guiding metaphor. The match does, however, stretch beyond structure to also incorporate function. The virtual worlds have no specific function or specific meaning or goal. In this way they resemble the physical world. It is open to the participants to bring meaning to these places through whatever practices they choose to conduct. Consequently the participants are not users. This becomes most obvious in our logs when Anne-Frid suddenly gets unsure if the world might not be a tool after all. The being breaks down to using through a gap in the personal cosmology, but she is assured by Agneta that she can rely on the world really behaving like a world rather than like a tool.

Anne-Frid: I get a little nervous
Anne-Frid: can we just shut down?
Agneta: yes
Anne-Frid: will it get saved?
Agneta: let's hope so!
Anne-Frid: yes, I'm such a slow builder...
Agneta: I hope it's here when we meet here again
Anne-Frid: Me too!!!
(Chat log 4, p. 4.)

The participants made insights into the possibilities of virtual worlds, not only based on their understanding of the worlds but also on desires harbored within. Desires that surfaced fused by new possibilities offered by the technology. The virtual world technology is very potent and multi-faceted and people coming in contact with the technology perceive different possibilities depending on their own pre-dispositions.

We subscribe to the Heideggerian notion of technology as a mode of revealing¹. Participants coming in contact with virtual worlds can see something previously hidden, the technology reveals something to them. Sometimes this can have a strong impact on a partici-

¹ Without further exploring the intricacies of this concept.

pant. The experience can be seen as something sublime, thus described by Heim. “[It] is the spine-tingling chill that comes from the realization of how small our finite perceptions are in the face of the infinity of possible, virtual worlds we may settle into and inhabit.” (1993, p. 137.)

We do not have the empirical or theoretical scope needed to paint a complete chart of all possible ways of perceiving virtual worlds based on the participants’ conceptions of them, and desires for them. We especially lack insight into the negative side of the picture. This is important to point out since we do know that it is not just the case that some people are not feeling drawn to the technology, some actually feel repelled by it. But the nature of the case we have studied here does not give us the possibility to explore that side properly. What we did find in our group was that we saw some aspects of being with the technology that we believe to be in some sense archetypal. Please note that no participant can be labeled as fully belonging to only one of these categories. Among the set of desires expressed by the participants, the most frequently occurring can be sorted into the following categories, but all participants expressed sides belonging to more than one of the categories.

The Technician

One aspect that appealed to some of the participants in the group was that objects in the world could be positioned with mathematical precision. The building process had for them a kinship to solving mathematical problems and they tended to take on algorithmical lines of thought and ways to talk about it.

You could figure out certain shortcuts, especially concerning the movement of objects ... you didn’t have to only look and try to find the right position, but you could calculate how many times to push the arrow key etc., and thus you could in a way do it a bit automatically. (Interview 3, p. 5)

We connect this desire for mathematical precision to a view of technology as a way to “straighten out” our messy reality by getting rid of fuzziness and inconsistencies and imposing control over it. This view of information technology is echoed in the theoretical foundations of information technology. As Heim (1993, p. 94.) points out, the logic of Gottfried Leibniz and George Boole is inherent in the very idea of the computer.

The Humanist

In *Life on the Screen* (1995), Turkle describes a shift away from the conception of the computer as a computational tool, only available to people with an interest in, and understanding of, the underlying technology. During the eighties when computing power reached a level where it was possible to devote some of that power to hide the inner intricacies of the computer behind a more easily controlled interface, the computer was hijacked for a new agenda. Turkle calls it “a culture of simulation” (1995, p. 22). In her book she emphasizes the testing of different aspects of ones identity. Most people who participate in virtual worlds do, however, not experiment extensively with their identities (Schiano & White, 1998). They see their interaction as real interaction with real people rather than a simulation. But this does not mean that people are behaving the same way in virtual worlds as they do in physical encounters (Jakobsson, 1999; Markham, 1998).

What the technology reveals here is the ability to look at the self from a distance, not in a mirror, but through a window. It reveals a distance between one’s presented identity and – as it somewhat unromantically sometimes is referred to – the meat. Markham describes the distance as an opportunity for control.

[T]hese participants go online, or remain there, in part because in cyberspace the self has a high degree

of perceived control. Some users enjoy the capacity to control the presentation and performance of self in online contexts. Others talk about their increased ability to control the conditions of interaction and to control the extent to which people online have access to the self. (Markham, 1998, p. 20.)

This attitude is also evident in our interview material. One participant expresses it as a form of protection. “In some way, one feels (I feel) more protected.” (Interview 5, p. 3.) The technology gives the participants the opportunity to, to a greater degree than in the physical world, design the self, presented to others, and control the access others have to the physical self.

The Aesthete

While the graphical user interfaces (GUI) made their entrance in the eighties, it was not until the nineties that computer graphics made a substantial impact on virtual worlds. Again, the shift was a result of technological advances, but while the GUIs paved way for the humanists to enter the scene, the computer graphics sparked the interest of aesthetically inclined people like graphic designers and artists.

Looking to our group of designers, it is striking to see how strong the emphasis has been on aesthetic considerations during the design process. While the main issue in the development of a computer application normally is functionality with esthetical considerations typically left to the end of the design process, it was the other way around in this project.

The attraction of the virtual worlds on the aesthete is probably initially that of discovering a new medium to work in. In our interviews, the participants have pointed to three aspects of this medium that they found engaging. One is that the participants are immersed in the design, another is that the design can be seen as a part of the interaction within the world, that you can communicate not only by talking to each other, but also by building together. Finally, working in this new medium leads to working with a new material. This material can also reveal possibilities that are unique to this medium. One participant made this observation contrasting building with virtual Lego to ordinary Lego and mentioning the rich possibilities for collaboration.

Benny: I have realized that it can be about small shifts from how the physical world works that gives me that tingling sensation

Benny: like to build with lego and suddenly realize that there is no “box”

Benny: that there are as many pieces as you like

Benny: and that you can build something infinitely large and be an infinite number of people building it together

(Interview 6, p. 2.)

The desires of both the technician and the humanist are connected to control. The technician wants to straighten out reality and the humanist wants control over the presentation of self. But despite seeing collaboration as a core feature of the new medium, the aesthete also wants control over the look and feel of the design. The aesthete feels a constant tension between the urge for artistic control and the desire for collaboration that invariably leads to unexpected results. To collaborate on a design is not only a dialogue in appearance and functionality. Design can convey much more of a person and collaboration in design can potentially be a dialogue about ideas and convictions.

Just as the aesthete ultimately longs for the unexpected, something beyond control. We believe that this is true also for the technician and the humanist. The technician longs for the moment when the system that he has created suddenly does something outside the scope he has envisioned, something outside his plan. He secretly wishes for his system to

come alive. And the humanist might enjoy the apparent detachment of virtual interaction, but it is not before a crack is revealed in her shield and contact is made in ways just as intense as any contact imaginable that her desires are consummated.

...and Making Them Habitable

Above we have discussed personal cosmologies informing participant's experiences in and of virtual worlds. Contrasting each individual experience is the ongoing practice of creating virtual worlds – in our story the creation of *Confuse*. In our relationships with various environments we are always in a tension between our ability to change and affect our environment and being affected and being influenced by it. This tension becomes even more striking within virtual worlds as the participants' personal cosmologies and conceptions to a large extent influence what will become of *Confuse*. In this section we want to illustrate and make present this dialectic play between the possibilities of *Confuse* and the participant's conceptions and experiences during its creation. Although it is never made explicit in this section, we would like the reader to bear in mind the discussion from the previous section as *Confuse* is presented below.

Inspired by the work of de Certeau (1984, p. 117) *Confuse* is grasped through the participant's experiences of their everyday practice within the project. Such a conception of *Confuse* gives us the possibility to portray the design process not just as a process of adding things to a world, but rather as one of making a new space possible to inhabit. As we will show, the members of the project did not see this particular inhabitation process as a prescriptive functional existence. Instead they signify *Confuse* as constantly changing and for allowing – sometimes even encouraging – a use that is more design like.

This part of our analysis will follow three main ideas formulated in the beginning of the project that we feel has had a major impact on *Confuse*. The first idea relates to the initial purpose of the project and concerns the dialectics of use and design. This is how Björn recalled the purpose of the project. “The main idea of the project was that we together should build ... I think the concept used was ‘a conference world’.” (Interview 3, p. 1.) The purpose was thus to teach the members of the project group the necessary skills for creating virtual objects and then create a virtual world. As such *Confuse* became to a large degree characterized by activities of building and design.

Although all members conceived of the project as the creation and design of a virtual meeting place, not everyone embraced this activity wholeheartedly. As Agneta expressed it, “I felt some resistance towards acquiring the necessary skills to build in virtual worlds. In order to do so you must spend a significant amount of time on it and I am a bit reluctant towards that.” (Interview 4, p. 5.) But for other members the sole reason to become part of the project was to be able to build and change within the structure. Or as Benny framed it: “To be a designer and to build is very central. To have accomplished something that will last and that is made by me, that is, it has my identity within it...” (Interview 2, p. 6.) Benny also distinguished between different worlds depending on whether or not there is a possibility to change them: “There are building-worlds and being-worlds in a sense. I am not so attracted to being-worlds. Being-worlds are worlds where you are not allowed to build, you can only do things that are made by someone else and/or meet other people.” (Interview 2, p. 7.)

Agneta and Benny can thus be regarded as representing two poles with respect to *Confuse* – the poles of use and design. In spite of this tension all members shared an understanding that they were part of a design process that in the end would deliver a

product, a virtual conference center, that researchers and students would use through the *Active Worlds* system. Björn pointed out, “At least from my point of view, the purpose was that we should create and build [the world] and then other could use it to talk about whatever they liked.” (Interview 3, pp. 11-12.) As such the project was conceived as the production of an artifact for a particular kind of use or being – characterized by meetings, group discussions, and informal gatherings in the same way as physical conference environments. Using Benny’s distinction, the final product was conceived to become a ‘being-world’ for researchers and students, a complete conference environment where visitors could meet and have conferences.

But as *Confuse* started to emerge, project members expressed their surprise because we never explored and tried the world for its intended use. That is, we never used *Confuse* as a place to meet, have conferences or smaller group discussions. Or as Björn put it: “We have not as much as I thought, been there with the purpose of just walking around and experienced the world or be with one another. We have always met in the world with the specific purpose of building.” (Interview 3, p. 8.) By the end of the project it was almost agreed upon that the structure of *Confuse* not only allowed participants to build and change but also needed participants to build in order for the world to come alive. As Björn put it: “Although the original idea with the world was to offer people a meeting place where they would do something other than build ... I think they or someone else should continue to change the world...” (Interview 3, p. 11.)

The focus on building and design within *Confuse* is not so surprising since the principal purpose of the project was to *create* a virtual world. But at the same time it reveals an interesting phenomenon – by some scholars described as the *inscriptive behavior of technology* (Callon, 1987; Holmström, 2000; Latour, 1993; and Stolterman 1999). According to Stolterman: “The idea of inscriptive behavior is that all technological artifacts create a space of possible actions ... The technology restricts and enables certain behavior.” (1999, p. 7.) By taking a closer look at *Confuse* through the concept of inscriptive behavior it becomes evident how the behavior and activity of building and design became inscribed in to *Confuse* in such a way that the world depends on design activities to exist.

This leads us to the second influential idea of the project, the idea to use some kind of model in order for the unskilled participants to relatively fast be able to create a virtual world. Using a model was Benny’s idea: “You can stand around it and make changes to it easily ... and the only material that I could think of really, that we could use, was Lego ... It has some rather forgiving characteristics for people not so involved with 3D-modeling.” (Interview 2, p. 2.) We think that one of the first and major inscriptions within *Confuse* were made through this choice of Lego as the basis for the models. As such, Lego became not only part of the models, but also the inherent structure of *Confuse*. Everyone who has played with Lego knows that the possible actions and the reason to play with Lego is to build something with it. Thus, the Lego models realized within *Confuse* not only suggested the behavior of playing with Lego but encouraged a use that is more like design. Anne-Frid, for instance, expressed the significance Lego had during the project. “During the whole time ... I saw and thought of buildings and forms as Lego. That is, I thought about *Confuse*, about how to do, how to fix ... and started to conceive shapes that could be realized in Lego.” (Interview 1, p. 8.)

Some other inscriptions within *Confuse* also emphasized a use more like design. For instance, the participants registered usernames. Within *Confuse* all project members was assigned the name ‘Builder’ distinguished by a number (Builder1, Builder2, etc.). As such the project members were all within this context recognized as builders. Needless to say builders create and make things, which thus contributed to suggest the behavior of building.

Also of significance for this behavior was one of the earliest buildings made within *Confuse*, the *Object Yard*, a place exhibiting all the available building objects not only to the design team but also to all other visitors. Thus if you visit the *Object Yard* you will find all parts that makes *Confuse* come true, and be reminded that this world is about building and design through the use of virtual Lego blocks.

The third influential idea within *Confuse* relates to the dialectics between function and structure. Benny had prior to the *Confuse* project been to a large virtual conference and that experience had led him to reflect on what works and what is problematic in virtual architecture. “I thought that their architectonic solutions did not support the task they were supposed to ... the structure was too open ... For instance there were no racks or tables letting you know where to place yourself or suggested a place to stand.” (Interview 2, p. 1, 4.) To Benny it seemed that many of their problems were connected to a design that was stuck in thinking that the architecture should mimic that of a physical conference. Instead he wanted to extract the functions of a conference arena and recreate those functions in the virtual world based on the unique characteristics of that medium. Within *Confuse* he wanted to “... find solutions that were suitable for the medium at the same time as enough realism was saved in order for people to be able to intuitively deal with the world.” (Interview 2, p. 4.)



Figure 2. The Balcony.

Benny’s ambition with the project was to explore a virtual architecture that questioned all assumptions based on the structure of traditional architecture. If someone said, “we need a house” he would reply: “Why do we need a house, to establish a consensual reference point or somewhere to meet? Then what we really need is just a pole in the ground.” To this someone else would reply “but we need walls” and Benny would retort: “Why? We need to create a sense of togetherness through excluding others. Ok then let’s put up some walls.” The tension between function and structure became confusing for several of the participants, as this statement from Anne-Frid shows. “For me the task was to design a virtual classroom ... Now it does not really look that way ... It became quite different ... but there is really nothing that says that a virtual classroom must be like a physical ... I have realized that the best and most fun designs aren’t depictions. It’s almost the opposite.” (Interview 1, pp. 1-2, 6.) *Confuse* was at first conceived by Anne-Frid as something that should be as similar as possible to the structures of a physical classroom, but during the process she learned to appreciate it for something quite different. For instance, one of the most appreciated

creations within *Confuse* does not carry any essential functionality. Anne-Frid decided to add a balcony to the small meeting room that she designed and that balcony is always mentioned with appreciation when we show our environment to visiting designers, despite the fact that it breaks a cardinal rule of the project; it imports a physical structure instead of functionality. (See fig. 2.)

As an attempt to summarize our story of *Confuse* we will return to the French philosopher Pierre Levy. He suggests that: “The process of virtualization is only completed with the construction of the object, an object that is independent of the perception and acts of individual subject, an object that can be shared by other subjects” (1998, p. 164). In this elaboration of virtualization Levy extract one significant element of all virtualization processes, the *objectivation of a shared context*. All the participants ascribed such objectivation to *Confuse*. For instance Björn regarded the visibility of the collaborative aspect of the process to be a significant experience of *Confuse*. “To be several people that all are doing the same thing and have to opportunity to see how we all are trying to solve the task in different ways.” (Interview 3, p. 7.)

Although more individualistic Anne-Frid described something similar when stating: “I did not contribute that much, but the little I made was very tangible. I mean, it became something that we all could see.” (Interview 1, p. 5.) Also Agneta captures this significance in her discussion of her visible experiences in *Confuse*. “That which is visible is, while building ... is that you are actually represented by an avatar... This helped me conceive of me being in the world.... But also that others were visible as well and at the same time. But most importantly both when you are there and when you are not, it shows, ... it is an existence that is visible and tangible.” (Interview 4, p. 2.) Thus *Confuse* was in one way or another appreciated for its ability to reveal and give existence to an objective world that simultaneously connects people with one another through the process of building. For instance, Benny clearly stated that the importance of the whole project was to create an independent object or some kind of evidence that we had established something within the world. For Benny the whole project of learning to build virtual worlds would have been worthless if *Confuse* did not exist as evidence of our project (interview 2, pp. 6-7).

In this section we have interpreted the members of the project group’s experiences in the creation of *Confuse*. The case illustrates that the inhabitants of *Confuse* created an environment where they – as well as other inhabitants – are part of a constant design process. As such, the use of this world becomes an exploration and further shaping of the world.

The Dialectics of Virtual Worlds Revisited

The *technanalysis* of *Confuse* has given us an opportunity to describe virtual worlds through the specifics of our encounters. While we are hesitant to make far-reaching generalizations based on this study we hope that our work will allow others to see and understand a wide range of phenomena connected to the encounter with technology through the concepts developed within our study. We also see our study as a source for understanding virtual worlds in particular and believe that it harbors some implications for how to design technology supporting the development of virtual worlds. Although virtual worlds have not yet spread to the masses and the technology still is in its infancy, both virtual worlds and other environments in cyberspace provide large and geographically dispersed groups with unprecedented possibilities of constructing shared contexts for interaction. The findings of our case suggest that more research should be done into the specifics of people’s encounters with this type of technology.

Through the notion of personal cosmologies we have tried to show how people – from their initiation as virtual beings and onwards – conceptualize the virtual worlds in unique and individual ways that are of importance for their interaction with each other and *Confuse*. We have also shown how their relations to the virtual worlds can be characterized as a mode of being rather than a mode of use. By analyzing the participants in the design project we found certain traits in their relation to the technology that we believe can be applied more generally than just within our group. We have collected these traits in categories that we try to understand as based on inherent human desires released by technology. If these assumptions are correct, they imply that we in time will see new categories unfold when the technology reaches new levels potent enough to release still latent desires.

We have also through this particular case – the creation of *Confuse* – tried to show how design and use blend together. That is, that the use of technology becomes more like an exploration and a shaping of the world, than the utilization of various functions. In contrast to tools which can be seen as the objectivation of functionality, virtual worlds seem to become a place where the dialectics between function – structure, design – use, subject – object, completed – unfinished and control – life, becomes important.

Traditionally, the creation of information technology has been conceived as a design practice with a clear development phase leading to a finished product. This product has then been handed to the users who try to utilize the product for its intended purpose. The particular design of *Confuse*, however, differs from other design practices with respect to what is designed and who the designers are. Entering virtual worlds and becoming part of the environment through building and design seems to be what attracts many people to take part in the first place. In this respect their use becomes more design-like, as in the case of *Confuse*. At the same time the designs never seems to reach the state of completion. Through inscriptions into the software structure it seems as if *Confuse* is better understood through the notion of the unfinished than of completion.

Instead of a complete and finished virtual conference center in which researchers and students will visit and meet, *Confuse* has become a place to further explore and interact with the possibilities of the world. The unfinished is used by Lunenfeld (1999) to describe a natural state of a wide variety of what he calls electronic environments such as the worldwide web. This indicates that what we have seen in *Confuse* is applicable to a wider range of technology and can be seen as a characteristic of *the virtual*. In the exploration of the virtual world the participants' personal cosmologies and desires influence the design and mix with the inscriptions of the technology. Thus the users or inhabitants become designers and *Confuse* comes to life through the ongoing objectivation of the shared context. The discreet states of use and design blend together into being with technology, a particular mode of living. The kind of life characterizing the dialectics of being in virtual worlds can only be grasped when use and design are regarded as two sides of the same coin – as virtual existence.

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