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Beyond use and design: the dialectics of being in virtual worlds

Anna Croon Fors and Mikael Jakobsson

Umeå University, Sweden

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

Abstract:

This paper reports on a study of a group of designers constructing a three-dimensional graphical virtual world. By focusing on the human experience of their encounter with new technology we arrive at new concepts for understanding our relationship to information technology. By conceptualising information technology as the organising structure for social interaction and regarding it as an influential mediator of human experiences, our perspective reaches beyond the traditional dichotomy of use and design.

In our analysis we attempt to show how being in virtual worlds is formed by the participants' understanding of the system and their inherent desires. Our description of the habitation of virtual worlds suggests the importance of technological inscriptions, shows a ongoing interchange between individual ideas and a mutually constructed reality, and a procedural quality of the worlds that by necessity remain unfinished.

Keywords: cyber-ethnography, cyberspace, design, designer archetypes, dialectics, personal cosmologies, social interaction, technalysis, use, virtual worlds

1. 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 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 develop further. There is of course no easy answer to this question. Instead there is a diversity of conceptions, statements and findings concerning the relationship between technology, social interaction and change.

In the middle of the 1990s 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 that was not possible without the technology. Thus, Turkle opened up the conceptualisation of information technology itself as the organising process. In contrast to the tool perspective, this view 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),

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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.

Our study is an attempt to understand virtual worlds through a phenomenological approach. When socio-technical systems take on world-like properties, we believe that it makes sense to adapt theories for conceptualising being in the world in the exploration of these systems. Guiding our approach is a theoretical and methodological framework developed by Michael Heim called technalysis (Heim 1998 46), a critical but practical approach to describing and putting words to the human encounter with specific technologies.

Heim has his philosophical roots within the phenomenological tradition beginning with Husserl and then in particular following Heidegger's branch. Phenomenology is dedicated to describing the structures of experience as they present themselves to consciousness. Heidegger particularly stressed that phenomenology should make manifest what is hidden in ordinary, everyday experience. In *Being and time* (1962) he attempted to describe what he called the structure of everydayness or being-in-the-world. For Heidegger, one is what one does in the world (Mitcham 1994).

When Heim sets out to define an appropriate method for understanding our being with technology he propagates the need for an active first-person engagement as a way to achieve this understanding. If we want to investigate the meaning of a world from a human perspective, we need to focus on the interrelations rather than the substances to understand the components of the world. It is in the acting in the world that its properties are revealed (Heim 1998 90).

The first-person study of new technologies also brings to words the way our reality is transformed. Heim uses the term 'technalysis' to denote our descriptions of encounters with new technology. It is important to make these encounters explicit before the technology blends into "the invisible furniture of everyday life" (Heim 1998 47) in order to make critical judgements about specific technologies rather than wholesale praise or rejection. At the root of technalysis lies a desire to understand the values of technology based on experience.

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' experiences of both being in and creating the world varied in significant ways. We have chosen to emphasise, rather than reduce, the diversity of our findings. 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 40)*

We will use several conceptual pairs in our attempts to express the dialectics of virtual worlds. One of the dyadic dichotomies, subject-object, fills a special function in our paper by also structuring the presentation. The section called 'Inhabiting virtual worlds …' focuses on the subjective and individual 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.

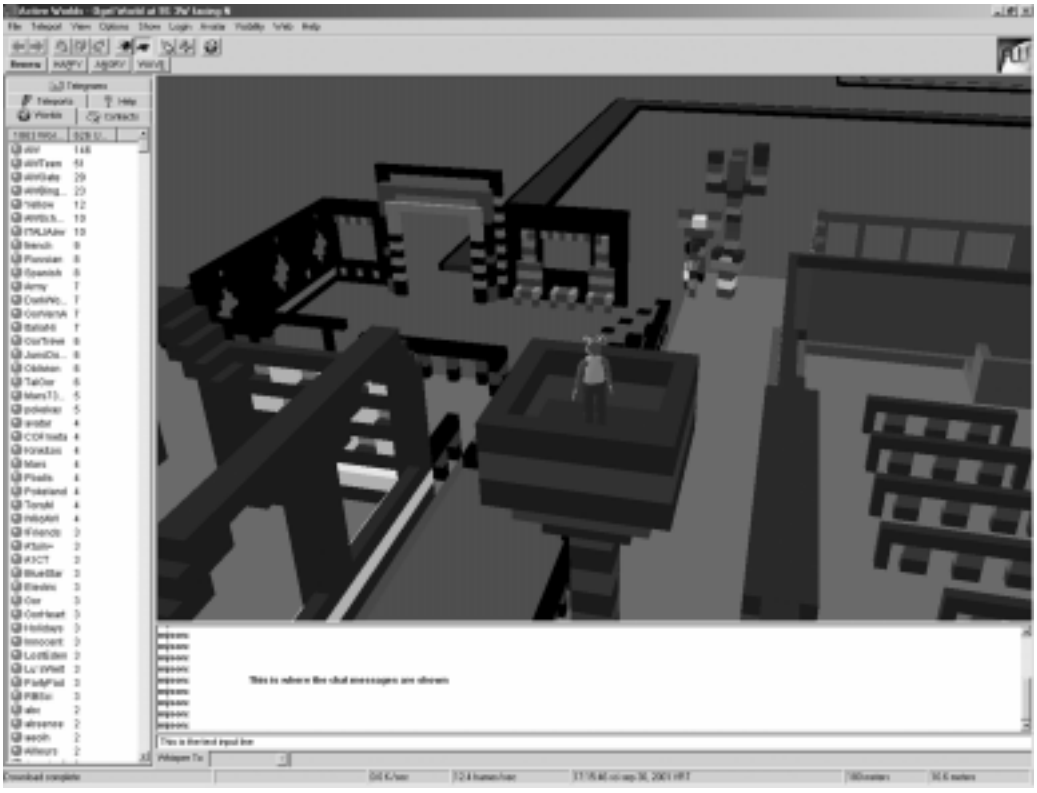

Figure 1. The user interface of the Active Worlds browser.

The purpose of this paper is to explore some important tensions characterising the dialectics of being in virtual worlds that reaches beyond the notion of use and design. We begin our exploration through discerning the participants' understanding of virtual worlds — as tools or place — initially sketched above. Through the elaboration of their personal cosmologies we ascribe significance to their 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. Through the notion of inscribed behaviour we try to grasp some of the significant struggles within this process such as the tension between *Confuse* as completed or unfinished. Before we dig into the analysis of the empirical material, however, we would like to ease the reader into the subject by saying a few words about the context of our study.

2. 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 distributed 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 broad range of different implementations from text-based MUD worlds, to virtual malls with three-dimensional (3D) graphics and surround sound. It does, however, exclude systems for visualisation of graphical information, for example, 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 emphasising the social interaction aspect. The choice to not distinguish between, for example, 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.

…our relations to virtual worlds can be characterised as modes of being rather than using

Our study is based on the authors' active collaboration in a design project in a 3D graphical world based on the *Active Worlds* system. A local server sustains the world and each participant uses a client application to get access to it. This gives the participant a window view of the world. All the participants have their own avatars, i.e. graphical representations of the participants. The avatar is manoeuvred 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 (Figure 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 the project we collected empirical data in the form of documents, pictures and chat logs. We also conducted interviews with all the design group participants, including each other, both in physical and virtual settings. In our treatment of the empirical material we have substituted the names of the participants with fictitious names. The same fictitious name is used for a participant both on and off line although they actually used separate nicknames online. The project was accompanied by several research initiatives. One concerns the design and development process, including the use of *Lego*™ for physical prototype modelling (Holmström and Jakobsson 2001). Another concerns different approaches to virtual world design (Jakobsson and Skog 2001).

3. Inhabiting virtual worlds…

Virtual space is for many people closely connected to 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 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 results may vary depending on the specific technology studied. But given this particular setting, we will try to show how the virtual worlds are transformed from conceptual spaces (the not-there) to actual places through the process of being-there.

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.

Benny: can you come here Anne-Frid?
Anne-Frid: am a little confused about where I am
Benny: but you're here
Benny: wherever that is?
(Interview 1)

The first question asked is often: "Where am I?" This can be interpreted geographically, as we normally do, but in this situation it can also mean: "Where and what is my 'I'?" The question then becomes an attempt to establish what 'I' constitutes. Do participants 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 one's own body and through the unfolding of the possibilities inscribed in the technology, the participant slowly eases into the ontology of the virtual world.

Benny: look in the same direction as me
Benny: a big white thing sprawls out in front of me
Agneta: How do I know in which direction you're looking
Benny: well, you'll have to check which direction my head is facing
Agneta: Ahaaa
(Interview 1)

But just as we can never fully grasp the ontology of the physical world, so the virtual worlds are also 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 virtual reality 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)

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, men-

tioned 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 an automatic movement script. The actual reason for this behaviour was that Benny's avatar used a script for automatic movements that originally was created for another avatar. When it was applied to Benny's (rather chubby) avatar body it sometimes looked like he was waving his fist.

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)

> *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. (Encyclopædia Britannica Online 2000)*

As we can see, the personal cosmologies sometimes bear a close resemblance to traditional cosmologies. One reason for this match is that the designers of the system 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. Their behaviour cannot be described as users using tools. 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)

The participants made insights into the possibilities of virtual worlds, not only based on their understanding of the worlds but also on desires harboured 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.

The notion of technology as a mode of revealing (Heidegger 1977 12–13) brings new light to these encounters with technology. Participants coming in contact with virtual worlds can see something previously hidden, which can have a strong impact on them. The experience can be seen as something sublime, thus described by Heim.

> *It is the spine-tingling chill that comes from the realisation of how small our finite perceptions are in the face of the infinity of possible, virtual worlds we may settle into and inhabit. (Heim 1993 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. 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.

3.1 The engineer

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 algorithmic 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)*

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 94) points out, the logic of Gottfried Leibniz and George Boole is inherent in the very idea of the computer.

3.2 The interactor

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 22). In her book she emphasises the testing of different aspects of one's identity. Most people who participate in virtual worlds do, however, not experiment extensively with their identities (Schiano and 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 2002, 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.

> *These 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 20)*

This attitude is also evident in our interview material. Björn expresses it as a form of protection.

> *In some way, one feels (I feel) more protected. (Interview 5)*

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.

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3.3 The artist

While the graphical user interfaces (GUI) made their entrance in the 1980s, it was not until the 1990s 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 interactors to enter the scene, the computer graphics also 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 aesthetic considerations typically left to the end of the design process, it was the other way around in this project.

The attraction of virtual worlds to the artist 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 object, another is that the design object 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 that can reveal possibilities that are unique to the medium. Benny made this observation contrasting building with virtual *Lego* to ordinary *Lego*.

Benny: I have realised 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 realise 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)

The desires of both the engineer and the interactor are connected to control. The engineer wants to straighten out reality and the interactor wants control over the presentation of self. But despite seeing collaboration as a core feature of the new medium, the artist also wants control over the look and feel of the design. The artist 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 artist ultimately longs for the unexpected, something beyond his or her control, we believe that this is true also for the engineer and the interactor. The engineer 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 interactor might enjoy the apparent detachment of virtual interaction, but it is not before a crack is revealed in her shield and unconditional contact is made that her desires are consummated.

4. …and making them habitable

Above we have discussed personal cosmologies informing participants’ experiences in and of virtual worlds. In our relationship with our environment we are always both changing and affecting it at the same time as we are affected and influenced by it. 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.

Inspired by the work of de Certeau (1984 117) *Confuse* is grasped through the participants’ experiences of their everyday practice within the project. Such a conception

of *Confuse* gives us the possibility to portray the design process not mainly as a process of adding things to a world, but rather as one of making a new space habitable. As we will show, the members of the project gradually came to understand *Confuse* as constantly changing and as allowing — sometimes even encouraging — a use that is more design like.

This part of our analysis will follow two 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) 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 characterised by activities of building and design.

Although all members' attitude towards the creation and design of a virtual meeting place was positive, not everyone embraced all the aspects of the project 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)*

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)*

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)*

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 produce a product, a virtual conference centre that researchers and students would be using. Björn pointed out:

> *At least from my point of view, the purpose was that we should create and build [the world] and then others could use it to talk about whatever they liked.*
> *(Interview 3)*

As such the project was conceived as the production of an artifact for a particular kind of use or being — characterised 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, to some project members' surprise, we never tested the world for its intended use. That is, we never used *Confuse* as a place to meet. 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 each other. We have always met in the world with the specific purpose of building.*
> *(Interview 3)*

By the end of the project it was more or less 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:

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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)

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 behaviour of technology (Callon 1987, Holmström 2000, Latour 1993, Stolterman 1999). According to Stolterman:

The idea of inscriptive behaviour is that all technological artifacts create a space of possible actions. … The technology restricts and enables certain behaviour. (Stolterman 1999 7)

By taking a closer look at *Confuse* through the concept of inscriptive behaviour it becomes evident how the behaviour 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 experienced with 3D modelling. (Interview 2)

We think that one of the first and major inscriptions within *Confuse* were made through the choice of *Lego*. (Figure 2) It became not only the material of the models, but also the inherent structure of *Confuse*. Anyone who has played with *Lego* knows that the main reason to play with *Lego*, although not the only possible action, is to build something with it. Thus, the *Lego* suggested both the behaviour of playing and a continuous development of the world. 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 of shapes that could be realised in Lego. (Interview 1)*

We will now return to the French philosopher Pierre Levy to conclude this section. He suggests that:

The process of virtualisation is only completed with the construction of the object, an object that

Figure 2. Early Lego model with Simpsons™ figurines as stand-ins for avatars.

is independent of the perception and acts of individual subject, an object that can be shared by other subjects.
(Levy 1998 164)

In this elaboration of virtualisation Levy extracts one significant element of all virtualisation processes, the objectification of a shared context. All the participants ascribed such objectification 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 the opportunity to see how we all are trying to solve the task in different ways.
(Interview 3)

Although more individualistic, Anne-Frid described something similar:

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)

Also Agneta captures this significance in her discussion of her visible experiences in *Confuse*.

That I actually were represented by a graphical character, that I could feel that I was there, played a significant role in amplifying that feeling [of being in the world]. … And also that it was clear that there also were others there at the same time … both when you are there and when you are not, it shows, … it is an existence that is visible and tangible.
(Interview 4)

Thus *Confuse* was in one way or another appreciated for revealing and bringing to existence 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 in vain if *Confuse* did not exists as evidence of our project. (Interview 2)

5. The dialectics of virtual worlds revisited

This technalysis 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 generalisations based on the 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 we have developed. We also see our study as a source for understanding virtual worlds in particular and believe that it harbours 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 — conceptualise 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 our relations to virtual worlds can be characterised as modes of being rather than using. By analysing 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.

Through this particular case — the creation of *Confuse* — we have also tried to show how design and use can blend together. That is, that the use of technology becomes more like an exploration and a shaping of a

world, than utilisation of various functions. In contrast to tools which can be seen as the objectification of functionality, virtual worlds seem to become a place where the dialectics between 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 utilise 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. At the same time the designs never seems to reach the state of completion. Through its inscriptions, 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 centre 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 world-wide 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 *Confuse* comes to life through an ongoing objectification of a shared context. The discreet states of use and design blend together into being with technology, a particular mode of living. The kind of life characterising 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.

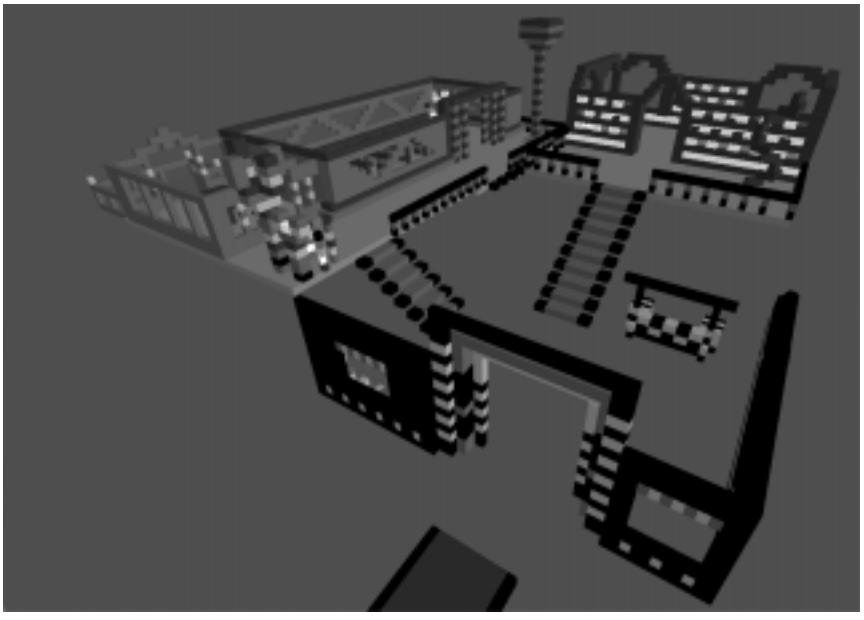

Figure 3. A shared context objectified.

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