

# Chapter 11

## The Digital Divide: Status Differences in Virtual Environments

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### 11.1 New Technologies: Hype and Hope

With the introduction of the Internet, many people saw the beginning of a new era; an era of democratization, of status equalization, and of freedom of speech for everyone. The accessibility of other places and people via the medium of computers, as well as the absence of many social and status cues, would make it possible for people to reach out to other people across the national and social borders that govern our face-to-face interaction. We would turn on our computers – and instantly be connected not only with our offices, our colleagues, and our families and friends, but also with people all over the world with whom we would make exciting new acquaintances.

This hype about the Internet as a world-embracing technology that will remove many barriers (national, cultural, etc.) and equalize status differences between people has a large resemblance to the widespread ideas about the telephone when it began to be widely used about a hundred years ago. At that time, the limitlessness was seen both as a positive and negative feature of the new technology. So, for example, it would bridge cultures, but it would also be like an open door and would make it possible for dishonest people from the lower class to make phone calls into honorable American homes. Claude Fischer, who has written a history of American telephony [1], has argued not only against some of these, nowadays merely amusing, fears and hopes, but also against the belief that telephone technology has significantly changed American society. The reason why it did not, Fischer argues, is because people did not change their communication behavior with the advent of the telephone and start to communicate with strangers far away, but instead used the telephone to maintain already existing, mostly local ties.

The same kind of hype, as already mentioned, has also accompanied the early days of the Internet. This has partly been negative, a warning against opening the internet door to anyone, entering in any disguise; but partly it has also been positive, suggesting that the anonymity and accessibility of the Internet will change

how we interact with other people, and that the connections with other people via computer-mediated communication (CMC) will be more informal, less conventional and less hierarchical than face-to-face interaction (e.g., [2, 3, 4]). One of those who has introduced this idea into the area of virtual environments (VEs) is the psychologist Sherry Turkle, who argues, in relation to a study of text-based online communities (a multi-user dimension or MUD), that online environments, because of their anonymous nature, allow people to take on identities other than their “real” ones, and that they go beyond the borders that govern our offline behaviour in their online interactions [5]. This freedom from identity, Turkle argues, allows people to be whoever they like online, and to interact more freely with other people beyond the constraints of the conventional social structure that silences women, discriminates against the unattractive, and excludes the introverts. However, if we look more closely (and use other, more quantitative and empirical methods) at the actual interaction in text-based as well as graphical online systems, the ‘freedom from identity theory’ seems to disappear and other, more conventional interaction patterns, emerge. Schiano [6], as well as Schroeder and Axelsson [7], has shown that users of different online systems do *not* change identity as often, or take on as many different identities simultaneously, as Turkle claims. Rather, the more time a user spends in a VE, the more stable is the user’s identity. Also, as these two studies [6, 7] as well as Becker and Mark [8] have pointed out, online behavior is not so unconventional and unconstrained as is often thought, but rather similar to offline interaction. Schiano [6] found, for example, when studying a text-based MUD, that people spend most of their time in the VE meeting people they already know and inviting them to their virtual “homes” to chat – not exactly an unconventional form of behavior!

However, I do not want to equate the idea of unconventional behavior with status equalization, or claim that the first is a prerequisite of the second. Nevertheless, I would argue that an environment which promotes alternative social behavior is something that could also support more equal interaction between people. Inequality, after all, is mostly a question of obedience towards socially constructed rules, and not a law of nature.

## 11.2 Status Differences

In recent years, together with colleagues, I have carried out a number of studies concerning social interaction in multi-user VEs. Our aim has been to arrive at a wide-ranging understanding of how social interaction in VEs relates to other kinds of interaction – both unmediated (face-to-face) interaction and other kinds of mediated interaction. To do this, we have carried out studies using different methods, different theories, but also studied different VR systems: immersive CAVE-type VR systems, and different kinds of non-immersive desktop systems. It is of course possible to argue against this all-embracing approach, and maintain that findings concerning immersive and non-immersive VR systems cannot be compared since the systems provide such different conditions for interaction. However, on a general level, the systems have much in common: they both provide the users with a virtual space within which they can interact and virtual objects and

spaces to interact with. Further, as Taylor points out in chapter 3, they provide virtual bodies which make it possible to pursue these actions. In other words, VR systems can be seen as electronic media, not unlike other media (e.g., telephone, email), that connect distributed people and enable interaction between them. Here I will only present a few examples of these interactions from a number of detailed studies which are reported in longer studies.

Before introducing the next section, where I will present the findings that relate to status differences in VEs, I would first like to consider definitions of “status”. One useful definition in this broad context, where the studied groups are of different size as well as in different situations (i.e., the group members are gathering on a different basis, spontaneously or participating in arranged meetings), is to think of high status, on the one hand, as implying a tendency to initiate ideas and activities that are taken up by the other members of the group [9, 10] and, on the other, as involving a positive evaluation or ranking by the other group members [11]. However, instead of regarding these two definitions as mutually exclusive, I agree with Brown [12] that they can be seen as two interrelated perspectives on the status evaluation process, since an observable influential behavior is also often highly ranked when it comes to status. One could also see these two aspects in relation to two methods of evaluation, objective and subjective, such that one can easily measure objectively how many ideas or conversation topics each member of a group brings up, or whose ideas and topics the group as a whole adopts.

When analyzing the data collected in our different studies, we have used both the methods mentioned in order to pin down the actual relationship between the group members. The evaluation that follows is subjective, however, in the sense that it is a result of individuals involved in an activity assessing their own and other people’s status. When it comes to the objective measures, we have not quantified the social behavior in the sense mentioned above (i.e., measuring how many ideas of a group member are taken up, etc.), but nevertheless made careful and systematic analyses of text communication logs and audio recordings. I would therefore argue that this method should be regarded as objective since it is not a question of self-reports or evaluations by individuals personally engaged in an activity, but of interpretations by researchers who are located outside it.

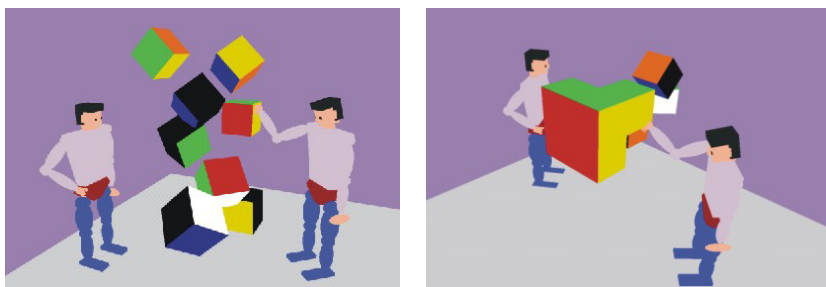
Before presenting my findings relating to status differences, I would also like to clarify some features of the data. As mentioned, I refer to studies that are carried out using different VR systems: immersive and non-immersive systems. In the non-immersive internet-based graphical systems, the participants communicated via text, while in the immersive CAVE environment the participants used voice communication. The text communication was logged, but when I use citations, I have anonymized both the user names and the names of places. Also, since online text conversations have a tendency to stretch out over a considerable space, as a result of the many conversations going on simultaneously, I have simply extracted the lines that are of no interest to this essay, and show only the relevant lines. The voice communication from the trials involved immersive VR systems and was recorded, and I have transcribed, anonymized and translated them from Swedish into English.

### 11.2.1 Technology Makes a Difference

In the area of networked multi-user VR, where people are virtually copresent in the same environment but physically distributed, people can use various types of technical systems (or, to be more precise, several cooperating technical components) to input position, movements and communication into the shared space. For example, when using a non-immersive VR system, the user generally uses a mouse and/or keyboard, that is, only the hands are used for navigation in and manipulation of the environment, whereas in an immersive system the user's body movements are tracked via sensors on head, hand and sometimes other body parts. Navigation in – and manipulation of – the VE can be easily achieved by pointing in a certain direction and by moving either the whole body or the hand while pressing a button on a joystick or the like. The output from the computer (for example, visual or audio) also varies depending on the system. While a non-immersive VR system provides the user with a 2D or 2½D image on a computer screen and often poor sound or no sound at all, an immersive system offers a 3D image and in some cases 3D sound that surrounds the user. However, when people meet in a shared virtual space, linked together via networks and with different computer input and output systems, there is nothing in the graphical environment informing the users about what system the partner or partners have. For example, the “avatar”, the graphical representation of an immersed user, looks the same as the avatar of a non-immersed user, and a user with a high-bandwidth connection has the same appearance as a user with a low-bandwidth connection. The implications of this, and what can be done about the problems related to it, will be illustrated later in this section.

For now it is enough to point out that: 1) people who use shared VEs often do so via different technical systems; and that 2) the character of these systems affects how the users interact with the VE and with other users sharing the same space. The more powerful the technology (e.g., higher transmission speed, more – or easier to handle – input modes, higher degree of immersion, etc.), the more influential the user becomes in the interaction with the VE and with other users. A study by Slater et al. [13] of a word puzzle-solving task involving three participants showed that leadership varies between a virtual setting in which the more immersed participant (using a head-mounted display) was singled out as the leader – as against the same task performed in the real setting where no one was singled out as the leader. We found the same result in a study [14] of a puzzle-solving task between two participants (one using an immersive CAVE-type system and one using a non-immersive desktop system) where the participants were asked to do a Rubik's cube-type puzzle – putting together 8 blocks with one of 6 different colors on each side to form a cube such that each side of the completed cube displayed a single color. In the CAVE-type system, participants could move the blocks by putting their hand, holding a 3D mouse, into the virtual block, pressing a button of the 3D mouse and moving their hand in the desired direction. Navigation was purely by moving around physically. On the desktop system, participants could navigate by moving the middle mouse button and to move the blocks, they had to select the blocks by clicking on the block with the left mouse button, pressing the right mouse button, and moving the mouse in the desired direction. They could

also rotate the cube by pressing the right mouse button combined with the shift key. In both systems, users were represented by identical human-like avatars and could communicate via telephones using headsets. The participants did not know what type of system the other person was using.



**Figure 11.1** Two people solving the virtual puzzle together.

As in Slater et al.'s study [13], we found that when carrying out the task in the virtual condition, the immersed person was singled out (by both participants) as being more active in solving the task, while in carrying out the same task in real, with cardboard blocks, both participants considered themselves to be equal.

As already mentioned, there is nothing in the environment that reveals what kind of system the users in a shared VE are using. However, when one studies the interaction between the users in a collaboration situation, one can see repeated examples of how different systems affect the interaction. Below is a typical example from the trial described above where one participant (person C) used the immersive and intuitive-to-use CAVE-type system whereas the other participant (person D) used the non-immersive desktop system which was much more difficult to handle. What often happened, as this example shows, was that person D failed to manipulate a virtual object and person C then offered his/her help and immediately – and with great ease – carried out the action. Since it was extremely easy for person C to manipulate the objects in comparison to person D, person D often expressed a feeling of low self-confidence, leaving person C to manipulate the objects and to decide how to go about solving the task. When person D in the example below forgets to “let go of” an object that had previously been picked up so that person C can pick it up, person D shows some slight embarrassment (laughs) when becoming aware of his/her mistake.

- D: Den här den här är blå...  
 (This one, this one is blue...)  
 C: Mm  
 (Mm)  
 D: ... som jag håller i nu, ska vi se om jag kan vrida den så...  
 (... the one I'm holding now, let's see if I can turn it so...)  
 C: Släpp den och ta ta nästa tag  
 (Let go of it and take the next grip)

- D: Ja, fast jag vill vrida den som den blå är åt samma håll som  
(Yes, but I want to turn it in the same direction as the blue one is turning)
- C: Om du släpper den så kan jag vrida den  
(If you let go of it I can turn it)
- D: Ja okej då, den blå är diagonalt uppåt...  
(Yes, okay then, the blue turns diagonally up...)
- C: Ja  
(Yes)
- D: ... också  
(... too)
- C: Ja, men du har inte släppt den än  
(Yes, but you haven't let go of it yet)
- D: Nej, det har jag inte [skratt], så  
(Right, I haven't [laughs], there you go)

Also, the fact that the systems differ from each other and that participants are not aware of this often generates misunderstandings, as we shall see in the next example from the same trial. What often happens is that one person assumes that the other person has the same system and capabilities, or, as in the example below, that the non-immersed person (person D) gets the sense that person C can do things in the VE that s/he cannot do (e.g., bending down to look at the blocks from below, pointing at objects with the hand holding the tracked 3D mouse). However, since both persons assume that they are using the same kind of system, the misunderstandings are hardly ever worked out; instead, person D very often ends up not knowing whether it is the system's or his/her own fault that things do not seem to work properly, as in the following example. And since the system should be working correctly in an experimental situation, it is likely that D blames him-/herself for the experienced difficulties.

- C: Den blåa ser jag väldigt tydligt  
(The blue one I can see very clearly)
- D: Den blåa... var?  
(The blue... where?)
- C: Den där  
(That one)
- D: Den? Oj, du kan peka – hur gör man det?  
(That one? Wow, you can point – how do you do that?)
- C: Jag pekar med handen  
(I point with my hand)
- D: Vadå, alltså mus... pilen?  
(What, you mean the mouse... cursor?)
- C: Ja  
(Yes)
- D: Om jag pe... pekar jag på samma nu eller?  
(If I poi... am I pointing at the same one now or what?)
- C: Jag ser inte dig nämligen

(I can't see you, in fact)

Another example of inequalities due to technology differences that I came across is in a study of language encounters in an online graphical multi-user VE, where people from different cultures meet and interact. People interacting with each other do not know what kind of system other users have. Instead, they take for granted, as in the situation above, that their own system is the norm and that everyone else in the VE can do, see, and hear things the same way they can. This, of course, is not the case. On the one hand there is the hardware and software that is individually purchased, and may differ between people on a micro-level. The technology can generate inequalities between people, as in the following example from the on-line graphical multi-user VE system Active Worlds (AW). AW is an internet-based system which allows interaction between users in a 3D computer-generated VE. The communication is mainly text-based but each participant is represented by an avatar, a 3D body, and users can also gesture to each other with their bodies. AW today consists of more than 600 interlinked virtual worlds that are typically used by between 100 and 300 users at any time of the day. The system has also been in continuous use since 1995 (for a sample of internet-based graphical virtual systems, see [www.ccon.org](http://www.ccon.org)).

In the following example one user plays music to a group of users, assuming that they can all hear it, but when the question arises, it is only one other user in the group that can. The other two users that are present have missed the music and thus something central in the social interaction of the group.

Lone wolf: have you heard any of the tunes?  
LaurelLee: yes  
TANYA: noooooo Lone  
LaurelLee: i play it  
LaurelLee: on my land  
TANYA: when  
Side step: i really should get this sound card working on this NT  
box

There are, on the other hand, also inequalities that depend on differences on a macro-level, such that there are countries with dense high-speed and inexpensive networks for telecommunications, and other countries where the networks are not as fast, cheap or widespread.

The example below, also from AW, shows how one user, Greenway, has serious problems taking part in the social interaction due to a slow internet connection. The other users are engaged in playing with their avatars and shifting appearances quickly to amuse themselves (which is very common in online VEs, see, for example, [15]), an activity which can be said to be not only a trivial game, but something that helps people to express and discuss identity in a playful way in a mediated situation. However, due to the slow internet connection, Greenway's computer-generated images do not update properly. Instead of seeing a colourful and detailed image of an avatar, Greenway sees only a black triangle in the position of the avatar.

Not being able to take part in a social activity like changing avatars, does of course, give the user a less enjoyable and less meaningful online experience compared to other users that are better off when it comes to technology (again, this can be seen in the example below). Also, as in previous examples, other users are quite unaware of the technical problem but see only its consequences – a hindered social performance.



**Figure 11.2** Three people engaged in a conversation in Active Worlds.

Greenway: 1kb/minute - just great  
TANYA: how r u greenway  
Greenway: u gotta excuse my 4 my slow reaction. my modem is  
.....almost dead  
Side step: rut ro greenway...what are you connected in at?  
Greenway: i have a radio modem.... it's almost free but....it  
suxxxx  
Side step: lol...radio modem..hmmm i've seen it but never really  
read specs on it...  
Greenway: in Poland (is where i live) a good internet conection is  
science-fiction  
Greenway: unless u're a millioner  
Greenway: i'm not  
Greenway: the other line i have is fast but is costs about 1\$ per 2  
hours  
Greenway: thats much here  
Greenway: can u change a avatar right now ?  
Side step: yes i can greenway i have a bunch to choose from  
Greenway: i still see black triangles , mostly  
Greenway: i'm losing all the fun  
Greenway: :-(((



jill: green why is that  
 Greenway: i hasen't loaded yet  
 Greenway: i thin it never will

### 11.2.2 Anyone Italian?

As more people connect to the Internet more cultures meet and interact. However, this does not automatically bring about a multi-lingual meeting place online, but a place where English rules and other languages exist in the periphery. In online graphical multi-user VEs like AW, users speaking languages other than English either have to establish their own places (so-called national worlds like “France”, “Italy”, etc.) and meet there, or change to the dominant English language to be able to interact with other users. In short, not knowing English in online situations is a disadvantage, while knowing English well is an advantage. One could, of course, argue that there are places in AW where non-English speaking people can meet, but these places are few and, as I mentioned before, quite peripheral, while the central places of most systems are predominantly English-speaking. So if, as an AW user, one wants to be influential in the central activity of the system, one is definitely disadvantaged, if not excluded, if one has poor English skills.

When entering a non-English conversation in AW, as in most offline social interaction, a native English-speaking person can almost always keep on speaking English, since most non-English speakers have good, or at least satisfactory, skills in speaking English.

In the following example, taken from a situation in one of the AW worlds, a conversation in Swedish is suddenly turned into English when a native English-speaker enters. The English-speaking person expresses his/her aversion against the foreign language and tells the speakers to change into English, which they do immediately.

Mikael: Hej GC...Allt väl?  
 (Hi GC, Everything's alright?)  
 GoodCake: allt är bra  
 (everything's fine)  
 GoodCake: du?  
 (and you?)  
 Kango: arrrgh speak englihs  
 Mikael: Hi Kango..\*S\*..Sorry

However, when the opposite happens, when a non-English speaker enters a conversation held in English, people hardly ever change into the introduced language and try only occasionally to find a possible way of communicating. The following example illustrates this, and points out how socially disadvantaged one is in an English-dominant setting as a non-English speaker (as several participants are in the following situation).

guardia: chi è italiano ?  
(anyone italian?)  
Rose lee: hi guardia  
guardia: I'M ITALIAN  
Rose lee: nice to meet you guardia  
guardia: CHI è ITALIANO ??  
(ANYONE ITALIAN?)  
Rose lee: <sorry speaks only english  
Siro: sorry only english i have a enough trouble with that

What one can conclude is that native English-speakers are privileged in internet-based multi-user VEs (as argued in greater detail in [16]). When an English speaker enters a non-English conversation, the conversation changes into English, and when a non-English speaker enters an English conversation, the same thing happens. As a non-English speaker you have to adapt to other people, or use a second language, to make yourself heard, while as an English speaker, you can almost always use your first language. This has implications, of course, for the social interaction. If one cannot express oneself fast or precisely enough in a conversation, one's role in the situation is definitely affected: one is less keen on engaging in discussions of complex topics, less eager to tell jokes, and less willing to represent the group in public. This applies also to offline communication, and in a sense it is even stronger there, since the social presence of other people face-to-face increases the embarrassment of the second-language speaker. At the same time, language is definitely more important and central in online interaction than in face-to-face meetings [17]. This, together with the fact that off-line social conventions like embarrassment are often brought online (e.g., [18, 13]), makes the inequalities depending on different language skills *different* from offline ones, but no less problematic.

### 11.2.3 Status and Stratification

The most frequently asked question in online graphical multi-user VEs is probably "A/S/L?" – age, sex, and location. This is a quick way of getting a sense of with whom one is interacting. In offline interaction this question would seem rather ridiculous, since parts of the answer are obvious. While one can seldom tell where people come from by what they look like, this question is not one of the first that people put when meeting others for the first time. When people begin a conversation, language and accent are quite revealing, and we can often make a good guess about people's origins after a short exchange. Online, however, people need to ask explicitly about where people come from, since the lack of social cues (e.g., language, accent, physical appearance) prevents us from quickly forming an impression of other people.

This question is also a way of deciding how to continue the contact with the person; whether to establish a relationship or to call it off at an early stage. Adults online may not want to establish a relationship with a child (and vice versa), women are not always keen on engaging in relationships with men, and people in general seem to be more willing to interact with people from the same country or a nearby country (geographically or culturally). Online, one comes across a reluctance to associate with people with certain backgrounds as well as a readiness to interact with people with other backgrounds. For example, people have not infrequently made comments about my allegedly trustworthy Swedish nationality and referred to this as a reason for interacting with me, in the following way: “I trust you...you’re a Swede...” (comment from a male avatar in Active Worlds when I asked him how, after only a short acquaintance, he could let me share his building privileges in the VE, which would mean that I would be able to build in his name and also vandalize his buildings).

Categorizations that play an important role offline in shaping the social interaction, like age, sex and ethnicity, do not cease to exist when people enter a VE and become avatars, as many had hoped, but become even more influential online due to the lack of social and status cues [19]. Since we do not get a very nuanced picture of the people we meet, we tend to rely, more than offline, on stereotypical images of people as a first approximation of who we are interacting with. When going online, we do not leave our presuppositions about people behind, but rather bring them with us and allow them to rule the social interaction more strongly.

Thus, when talking about status differences in VEs, we can, on the one hand, point to the inequalities that we bring into the system, such as the crude picture of which nationalities to trust and which nationalities are not trustworthy. On the other hand, we can identify status differences which have little or no relevance outside the system, but which are very real and important within the system. These system-dependent status differences are sometimes brought into the system by the system administrators themselves, for example, with the establishment of certain functions in the online community like “GateKeeper” and “PeaceKeeper” in the AW system or “Wizards”, “Gods” and “Magicians” [20, 21] in certain MUDs. These functions are associated with certain responsibilities and rights in the system (e.g., keeping the peace by ejecting unruly users from the system, developing the community by programming and implementing new features, etc.) and they give these users a higher status. They also give them more influence over the technology, and hence over social interaction, than ordinary users.

In AW there is another distinction between users, also implemented by the system administrators, between tourists and citizens, that is to say between users that can use the system for free with limited privileges, and users that pay an annual fee to enjoy certain privileges within the system. These include the ability to send telegrams and files to other citizens, to build and own property that cannot be deleted by other users, to maintain a contact list to keep in touch with other users, and to reserve a unique citizen name for one’s own use. (The complete list of privileges for AW citizens can be found on the Active Worlds web pages). One could argue that these privileges are of little importance – they do not give any power over other users but are only for an individual’s use. However, when one

looks at how online social interaction in AW works, one can understand that these privileges are powerful. Without having a stable identity (supported by the ability to keep one unique name), an ability to keep in touch with the people one meets (supported by the contact list) and without the means to protect one's home (supported by the building protection), one is more or less isolated from the social life of other avatars.

As has been shown in several recent studies, people in online VEs socialize in much the same way as they do offline: they get together with people they know, and often do so in their own homes [6, 7]. This is much more difficult without the social privileges of citizenship. Also, since the standard AW avatar is reserved for tourists, other users can easily tell who has these social privileges and who hasn't; or, who is keen on and able to engage socially and who isn't. As one regular user/citizen once explained to me, when she talked about who she chooses to interact with online, she does not want to engage with tourists since they are just people "passing by".

Another divide between users that is not implemented by the administrators, but which has emerged from the social interaction between users, is the difference between "insiders" and "outsiders". "Insiders" can be described as users who not only have the formal privileges of citizens, but who also enjoy the informal privileges of having a certain affiliation, belonging to a subgroup within the larger community where "they talk and behave with each other in a knowing way, building on their familiarity with the conventions of talking in and interacting with the virtual world and their adeptness at navigating through it and manipulating it" [22]. "Outsiders" can be described as users who are not members of a subgroup, but who have only a "fleeting acquaintance with the virtual world [that] does not allow or enable them to participate in the more close-knit social networks of insiders" [22]. Taylor, in chapter 3, points out that users of the graphical multi-user system "Dreamscape" sometimes signal this affiliation to a certain subgroup through their avatars (for example, color choices, bodies, accessories, or heads). This can also be seen in the AW system, where owners of certain "theme" worlds provide their users with unique avatars, and where the "insiders" themselves set up and defend certain rules and norms for behavior, such as who is allowed to use certain names containing status signs or letters, or to use particular avatars conveying messages to other "insiders", or when to speak and what kind of language style to use. An example of the latter is contained in the following exchange, where "sia" is a new user, unfamiliar with the conventions of the theme world.

Damon: welcome to [name of a theme world] little one \*smiles\*  
sia: Thank you Damon  
Damon: its Captain Damon sia.. or Master on other worlds..  
Regal Rio: then drop the "i'll"...always talk about yourself in third person..."this girl" or " a girl"...etc...

Schroeder [22] suggested already in 1997 that virtual worlds produce "stratification", that is, that different groups of users develop distinctive behaviors and roles that distinguish them from other groups with a different status or with a

different sense of cultural cohesion. The examples that I have put forward here include the same phenomenon, though I would like to put more emphasis on the technical design of the system and its relations to social interaction, since, as we have seen, it is very much the technical features that determine the social stratification.

### **11.3 Conclusions and Recommendations**

Having argued that there is a digital divide between users in VEs, and having presented a number of inequalities between users, it is appropriate to raise the question why this is an important topic. Perhaps the most important reason is because the future of the computer will be networked. In the last five years or so we have seen the computer develop from a stand-alone machine to a networked device which cooperates with others. In the future, we will no doubt use computer technology that is even more interlinked and less on its own than we do today. Another reason for shedding light on this issue is that computer networks will continue to link together different *kinds* of computer systems. Input and output devices, network speed and access, software, and combinations of components will be different on either side of the computer network. Thus we will in the future also have different capabilities when interacting with others via computer networks. Yet another reason for highlighting this issue is that more people and more nationalities will be using the Internet in the future, which will mean more languages and more cultures online, interacting with each other. This will entail a multi-lingual and multi-cultural challenge to the dominance of English, but also a risk that status differences offline will continue determining online interaction.

However, before I conclude the discussion of the “problem” of status differences, this could be a good place to raise the question whether the problem is a problem at all. That is, is inequality something negative that one should in all instances try to counteract? Or could it be the case that inequality can be something positive? In other words, is equality between group members always something we should strive for?

In certain situations involving two or more people, it can be advantageous for group members to have an asymmetrical relationship, such as different roles and status [23]. For example, in a teaching situation, a teacher and his/her students have different and rather unequal roles. The teacher has the right to speak but students usually have this right only when the teacher gives it to them. This division of roles facilitates teaching. In other situations, outside the classroom for example, this division would seem strange and unnecessary since an informal chat does not need to be directed in the same way teaching does.

However, as I mentioned in the introduction, in networked multi-user environments, the lack of social cues in VEs has made many believe that status differences have also vanished. This may be correct to some extent since we cannot, as in non-mediated situations, determine who is a child, a black person or a woman with only a quick glance. Instead, as we have seen, we have other status differences and inequalities to take into account online, such as unequal

technological capabilities and status differences due to one's social role (e.g., citizen or tourist in AW) in a particular environment.

My point in this chapter is therefore *not* to argue for an unreserved equality in all online situations, or to oppose status differences in every situation, but instead to point out that there are other, medium-dependent inequalities operating apart from those with which we may be familiar.

I would also like to suggest some potential solutions to the problem of status differences in VEs – for situations when one would like to overcome them, and to foster more equal collaboration. The problem of status differences in virtual environments that has been discussed from various vantage points in this chapter is not a single problem but several. As we have seen, we not only import offline social behavior, but we also create new forms of interaction and new inequalities online that are related to the technology. In view of the complexity of the problems of status differences, there is, moreover, no single solution to coping with them but several. In the final section of this chapter, I will suggest a few potential solutions, and also point to a few examples of how both users and developers have already made various attempts to deal with status differences themselves.

Before I do this, I would like to mention that I am far from pessimistic about the possibility of creating a more equal interaction in VEs. I am, however, a strong opponent of the view that has been held for too long and by too many, that the Internet and VEs will *automatically* – without any human intervention – lead to equal interaction. My view is that technology on the one hand, and social conventions on the other, influence social interaction, online as well as offline. I believe that in order to create and support more equal interaction, we need to be aware of this and to work *actively* towards greater equality. I do not believe that we will ever succeed in establishing fully equal online interaction, just by configuring the technology, since there are also many personal and structural factors involved in the process. Nevertheless, I think we should give it a good try since the goal is so precious.

A first step towards an equalization of the status differences in VEs is to help users become aware of the fact that technology shapes social interaction; put differently, that different technical possibilities create different capabilities for taking part in social interaction. One way of increasing the awareness of people using networked graphical multi-user VEs is to implement a shared view (one's own and the other user's) into the technology itself to provide users with the possibility of sharing others' experiences. This has been tried quite successfully in web applications [24] as well as in VEs [25], but could be developed for even better performance. One possibility would be not only to allow people to share viewpoints, to see from the perspective that others have, but also to let them share the quality of the picture or the technical conditions for a better understanding of what they actually experience and why they behave as they do. Another solution could be to attach a text box to the avatar (to be viewed on demand) where his/her technical system, language skills, and other personal characteristics important to the interaction are presented.

There are, of course, not only advantages with this kind of suggestion. One drawback could be that the feeling of presence would probably decrease because of the possibility of bringing in other views and text information into the

environment. Another problem would, of course, be that text information about system capacities is very difficult for most people to understand and interpret in a meaningful way in terms of what this actually means for the user's performance.

Another solution to inequalities between users with different language skills, especially in online graphical VEs that use text, would be to implement specific online translating programs (such as Babel Fish or Babylon Translator) into the system to help people communicate more easily. However, since English speakers are very dominant, and have been for a long time, there is perhaps little hope that they will use a software program to communicate in Spanish or Russian. It is more likely that this would become a tool for non-English speakers to try to keep up with conversations in English, or an excuse for English speakers not to learn a foreign language.

Last, but not least, apart from the technical possibilities to equalize status differences and support disadvantaged people, I would simply like to put forward the importance of increasing VE users' awareness of this problem. By talking and writing about it, I think we can create an awareness about the fact that people are often in situations different from one's own, and that these conditions often result in an experience of inequality in social interaction. The awareness of the fact that one's own situation is probably different from one's partner's, could, for example, not only lead to a more explicit presentation of one's own capabilities and inabilities (as in the first example below), but also to a more attentive attitude towards other people (as in the second example), ensuring that there is a shared understanding of the (virtual) world.

(1)

C: John du ska veta en sak att jag är färgblind så det att det kan ställa till lite problem, men jag ser gult

(John I want you to know that I am colour-blind and that can make it a little bit problematic, but I can see yellow)

och jag ser och jag förstod att det var en blå men sen kan det vara och grön tror jag också jag ser

(and I see and I understood that it was a blue one but it could also be and green I think I see too)

(2)

C: Du ser hur jag står?

(You can see how I stand, right?)

D: Ja. Du ser mig med va?

(Yes. You can see me too, can't you?)

In this chapter, by means of a few examples, I have tried to highlight and problematize the notion that VEs and other online environments could, because of their informal nature, equalize the differences among users. As I have shown, it is not quite that simple. First, the technology that generates and transmits the VEs can in some cases itself be the cause of status differences. Secondly, users tend to bring offline social conventions, behavior and inequalities into online interaction. And

third and finally, users seem not only to bring old conventions and behavior with them into this new situation, but also create new inequalities online.

However, even if there has been much hype in relation to the potential of the Internet, there is also, as I have shown, a great deal of hope for VEs, in the ability to create and maintain a context in which people can interact equally. Still, the Internet will not automatically generate equal interaction. To be able to bridge successfully the digital divide between users and support alternative, informal and less hierarchical relations, the Internet needs developers and users who are aware of these issues and who are ready to work actively and constructively towards a new technical and social order.

## References

1. Fischer, C.S. (1992). *America Calling: A Social History of the Telephone to 1940*. Berkeley: University of California Press.
2. Kiesler, S., Siegel, J., McGuire, T. W. (1984). Social-psychological aspects of computer-mediated communication. *The American Psychologist*, **39**(10): 1123-1134.
3. Dubrovsky, V.J., Kiesler, S., Sethna, B. N. (1991). The equalization phenomenon: Status effects in computer-mediated and face-to-face decision making groups. *Human-Computer Interaction*, **6**: 119-146.
4. Rheingold, H. (2000 rev. ed.). *The Virtual Community : Homesteading on the Electronic Frontier*. Cambridge, MA: MIT Press.
5. Turkle, S. (1997 2nd ed.). *Life on the Screen : Identity in the Age of the Internet*. London: Phoenix.
6. Schiano, D.J. (1999). Lessons from LambdaMOO: A Social, Text-Based Virtual Environment. *Presence: Teleoperators & Virtual Environments*, **8**(2): 127-139.
7. Schroeder, R., Axelsson, A. (2000). Trust in the Core: A Study of Long-term Users of Activeworlds in *Digital Borderlands, a Cybercultural Symposium*, Norrköping, Sweden, 12-13 May.
8. Becker, B., Mark., G. (1999). Constructing Social Systems through Computer-Mediated Communication. *Virtual Reality: Research, Development and Applications*, **4**: 60-73.
9. Bales, R.F. (1976). *Interaction Process Analysis : A Method for the Study of Small Groups*. Chicago: University of Chicago Press.
10. Sherif, M. and C.W. S.. (1964). *Reference Groups : Exploration into Conformity and Deviation of Adolescents*. New York: Harper & Row.
11. Homans, G.C. (1951). *The Human Group*. London: Routledge&Kegan Paul.
12. Brown, R. (2000 2nd ed.). *Group Processes : Dynamics within and between Groups*. Oxford: Blackwell.



13. Slater, M., Sadagic, A., Usoh, M., Schroeder, R.(2000). Small Group Behaviour in a Virtual and Real Environment: A Comparative Study. *Presence: Journal of Teleoperators and Virtual Environments*, **9**(1): 37-51.
14. Axelsson, A., Abelin, Å., Heldal, I., Schroeder, R., Wideström, J. (2001). Cubes in the Cube: A Comparison of a Puzzle-solving Task in a Virtual and a Real Environment. *CyberPsychology and Behavior*, **4**(2): 279-86.
15. Danet, B.R., Ruedenberg, L., Rosenbaum-Tamari, Y. (1998). Hmmm...Where's that Smoke Coming From? Writing, Play and Performance on Internet Relay Chat, in Sudweeks, F., McLaughlin, M., Rafaeli, S., (Eds) *Network and Netplay: Virtual Groups on the Internet*, AAAI Press/MIT Press: Menlo Park, Calif, pp.41-76.
16. Abelin, Å., Axelsson, A., Schroeder, R. (2001). Anyone speak Spanish? Language encounters in virtual environments - a study of Active Worlds,in *The Seventh International Symposium on Social Communication*. Santiago de Cuba.
17. Werry, C.C. (1996). Linguistic and Interactional Features of Internet Relay Chat, in Herring, S.C., (Ed) *Computer-mediated Communication: Linguistic, Social, and Cross-cultural Perspectives*, Philadelphia/Amsterdam: J. Benjamins, pp. 47-63.
18. Slater, M., Pertaub, D., Steed, A. (1999). Public Speaking in Virtual Reality: Facing an Audience of Avatars. *IEEE Computer Graphics and Applications*, **19**(2): 6-9.
19. O'Brien, J. (1999). Writing in the body: gender (re)production in online interaction, in Smith, M.A. and Kollock, P. (Eds) *Communities in Cyberspace*, London: Routledge, pp.76-104.
20. Curtis, P. (1992). Mudding: Social Phenomena in Text-Based Virtual Realities. in Directions and Implications of Advanced Computing, *DIAC'92*. Berkeley, California.
21. Pargman, D. (2000). *Code Begets Community : on social and technical aspects of managing a virtual community*. Linköping studies in arts and science no. 224: Linköpings Universitet.
22. Schroeder, R. (1997). Networked Worlds: Social Aspects of Multi-User Virtual Reality Technology. *Sociological Research Online*, **2**(4) (available online).
23. Allwood, J. (1980). On Power in Communication, in *ALVAR - a festschrift to Alvar Ellegård*, Allwood and Ljung, Eds. University of Stockholm, Department of English: Stockholm.
24. Farnham, S.D., Zaner, M., Cheng, L. (2000). Supporting Sociability in a Shared Browser, submitted to *Interact 2001*.
25. Curry, K.M. (1999). Supporting Collaborative Awareness in Tele-Immersion, *Proceedings from IPTW'99 3<sup>rd</sup> International Immersive Projection Technology Workshop May 11-12, Stuttgart*.