REFLECTIONS ON CULTURAL BIAS AND ADAPTATION

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Abstract

"SvenskMud" (Swedish MUD) is an Internet-accessible Multi-User Domain (MUD) system but, in contrast to 99% of all Internet-accessible MUDs, SvenskMud is not a global community. Rather, SvenskMud is the first vernacular (i.e. non-English speaking) MUD in the world, and the only Swedish-speaking MUD in Sweden today. This article addresses four questions with regards to cultural attitudes and their relationship to computer-mediated communication (CMC) technologies: (1) How have American cultural attitudes (historically) shaped the development and use of CMC technologies? (2) How do today's cultural attitudes shape the implementation and use of CMC technologies? (3) How do cultural attitudes manifest themselves in the implementation and use of MUDs? (4) How do cultural attitudes manifest themselves in the implementation and use of SvenskMud?

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How Have American Cultural Attitudes Shaped the Development and Use of CMC Technologies?

The Internet, or rather its precursor, ARPANET, was designed by, built for, and paid by Americans (Levy 1984; Quarterman 1993; Reid 1994; Rheingold 1994). More specifically, it was designed and paid for by the American Defense Department through the Advanced Research Projects Agency (ARPA) in order to connect its sponsored organisations. The first ARPANET nodes were in place in 1969, and the first services were Telnet and FTP, followed by e-mail. The original purpose was to give researchers access to remote computers. The possibility to send e-mail was originally of subordinated importance, but it was clear after a year that e-mail was the utility being used the most — not perhaps in terms of data traffic generated, but in time spent in using it.

An important characteristic of this network was that there was no single central computer that controlled the network. All information that travelled through the network could take any route between points A and B. The network would continue to work even if parts of it were destroyed; for example, in a nuclear attack. This characteristic was valued highly in a computer network that sprang from military purposes and military interests.

Bias in Computer Systems

It was, of course, at that time impossible to predict the popularity and spread of the Internet. It is therefore not surprising that aspects of the original purpose and the original design has come into conflict with subsequent usage of the Internet and that bias is built into the structure of the Internet. Bias in computer systems has been defined by Friedman and Nissenbaum (1996, 332): "We use the term bias to refer to computer systems that *systematically* and *unfairly discriminate* against certain individuals or groups of individuals in favor of others." The key terms in the definition are "systematically" and "unfairly." Both criteria have to be satisfied for bias to exist in a computer system; that is, a system can exercise systematic discrimination *or* unfair discrimination without being biased.

Avoiding Bias in the Design of Computer Systems

Certain measures can be taken to minimise bias in computer systems. The first is to acknowledge that bias in computer systems constitutes a problem of importance and that freedom from bias is an ideal in computer systems, along with other difficult-to-attain ideals such as reliability and efficiency. As with other ideals, freedom from bias may not be attainable in computer systems as the design process in itself is a series of decisions which determine how limited resources should best be used to attain mutually exclusive goals.

Friedman and Nissenbaum (1996, 343) suggest that in order to remedy bias we need to identify it and develop methods to avoid or correct it. To minimise pre-existing bias, "designers must not only scrutinize the design specifications, but must couple this scrutiny with a good understanding of relevant biases out in the world." It is difficult not to agree with Friedman and Nissenbaum, but their conclusion is both self evident and difficult to attain for a system designer. This is something they themselves acknowledge.

Let us therefore contrast the statement above with some practical advice for software designers. An important lesson from Lewis and Rieman (1994) is that if you design something for everyone, it might well turn out to work for no one. Their advice, therefore, is that astute designers should do the exact opposite. If you design something that is truly useful for a particular group of users, it might very well turn out to be useful for other groups of users or for other tasks also. In their own words, even systems that turned out to be useful in unexpected ways, like the spreadsheet, started out by being useful in some expected ways. Their example is a spreadsheet, mine below is the Internet.

As can be seen, it can be very difficult to draw a line between designing a system for a certain group of users or for certain uses, and avoiding building bias into a system. Taking into account practical problems ("at what cost?") of designing bias-free software, one suggestion of Friedman and Nissenbaum (1996, my emphasis) is that "designers should *reasonably anticipate* probable contexts of use and design for these."

Just as Friedman and Nissenbaum have addressed the specific problem of bias, others have addressed the larger problem of usability in computer systems, of which bias is only one aspect.

> *A computer system does not itself elucidate the motivations that initiated its design, the user requirements it was intended to address, the discussions, debates and negotiations that determined its organization, the reasons for its particular features, the reasons against features it does not have, the weighing of tradeoffs, and so forth* (Carroll 1997, 509-510).

Made explicit, design issues, options and arguments for and against these options, together with final decisions, constitute the design rationale of a system (Moran and Carroll 1996). A design rationale would naturally be of great use in identifying embedded values and as a basis for discussing whether design decisions were reasonable or if they contained biases built into the system.

In conclusion, Friedman and Nissenbaum have raised an important issue, but the task of developing methods to avoid bias is a difficult one where much remains to be done. In contrast, their work can be directly applied to analyse existing bias in computer systems. They have developed a framework that helps identify different types of biases that can be built into the hardware and software (including the algorithms) of computer systems. In their framework, bias is divided into three main categories: preexisting social bias, technical bias, and emergent social bias. Case studies of existing systems exemplify these categories, and the categories are further developed in a number of subcategories.

Example of Bias: The Internet

The Internet is an example of a computer system that suffers from technical and emergent social bias.

Technical Bias. At the time when the Internet was born, plain 7-bit ASCII code was used for communication. With a limited number of characters (less than 100 after control codes for "line breaks," "end-of-file," and so forth, are deducted), of all languages that use the Latin alphabet, only the complete set of 26 characters for English were fully supported. The Swedish language has 29 letters in the alphabet; and the three additional characters are not supported by 7-bit ASCII code[1]. This has created problems for Swedes ever since. Even though different extended character sets are avail-

able today, ASCII has for a long time been the prevalent code, and the only way to be really, really sure of compatibility even today is for Swedes to restrict themselves to the 26 letters that the Swedish and the English alphabet share. Up to this day, no Swedish companies or private persons have e-mail addresses or URLs that include any of the "extra" three letters in the Swedish alphabet; Í, ä and ö.

This is clearly a case of technical bias according to Friedman and Nissenbaum's categorisation of bias; "Technical bias arises from technical constraints or technical considerations" (1996, 334). Bias in computer tools "originates from a limitation of the computer technology including hardware, software, and peripherals" (p.334). With limited computer capabilities, only a limited number of characters are included in the ASCII character code. Apparently European languages that utilised variations of the Latin alphabet were not given the highest priority compared to other special characters such as "%", "(" and "$".

Emergent Bias. It comes as no surprise that technical constraints made it impossible for the 7-bit ASCII code to support all different characters of all different languages that utilises the Latin alphabet. But perhaps it makes as much sense to characterise the choice of specific characters included in the ASCII code and the choice of the ACSII character set itself to be an effect of a mismatch between the intended and the emergent usage of the Internet. The possibility of ARPANET/Internet expanding beyond the Atlantic ocean all the way to Sweden was surely not a design consideration at the time the system was designed.

Focusing on the mismatch between intended and actual range of use would instead make the Internet an example of emergent bias which "arises in a context of use with real users. This bias typically emerges some time after a design is completed, as a result of changing societal knowledge, population, or cultural values" (Friedman and Nissenbaum 1996, 335).

More specifically, the emergent bias of the Internet adheres to the subcategory of mismatches between users and system design. This type of bias "originates when the population using the system differs on some significant dimension from the population assumed as users in the design" (p. 335).

Example of Bias: English as Electronic Language

More surprising than the fact that the Internet has had built-in technical and emergent social bias is the fact that in 1996 it is still possible to imply a general equivalency between Electronic language and English language: "Electronic Language is characterized by a set of situational constraints which sets it apart from other varieties of English" (Collot and Belmore 1996, 14). In Collot and Belmore's article, electronic language is defined in such a way that it — according to Friedman and Nissenbaum's categorisation of bias — clearly embodies a strong pre-existing social bias. This bias is fortunately *not* built into a computer system, but rather "only" built into a text.

> *Pre-existing social bias has its roots in social institutions, practices, and attitudes. When computer systems embody biases that exist independently, and usually prior to the creation of the software, then the system exemplifies pre-existing social bias. Pre-existing bias can enter a system either through the explicit and conscious efforts of individuals or institutions, or implicitly and unconsciously, even in spite of the best of intentions* (Friedman and Nissenbaum 1996, 334).

It helps to mentally exchange all references to "computer systems" in the quote above to "text" in order to fit the definition of pre-existing bias onto the definition of electronic language.

It is especially surprising that a slip like this turns up in a book on computer-mediated communication with the subtitle "linguistic, social and *cross-cultural perspectives*"(my emphasis): The authors of course mean "Electronic English," when they consistently refer to "Electronic Language." But from the recurrent usage and the vocabulary of the rest of the article, it is actually possible to draw the conclusion that only one language exists on the planet Earth.

The last paragraph of the article points out the importance of the area and – for the first time in the article — at least acknowledges that there is a whole world out there. But, since Electronic language is defined as a variety of English, it still seems to take for granted that the rest of the world also speak (only) English:

> *Regardless of the direction future studies may take, telecommunications are steadily and dramatically gaining in importance the world over. Electronic Language, which gives voice to such communication, is therefore worth of further exploration* (Collot and Belmore 1996, 28).

It should be noted that I have no critique against the results presented in the article itself, my critique is only on the choice of terms and definitions.

How Do Today's Diverse Cultural Attitudes Shape the Use of CMC Technologies?

Having discussed the problems generated by the 7-bit ASCII character set, it might be easy to draw the conclusion that this has created insurmountable problems for Swedes on the Internet. But the fact that the character set doesn't support the full register of the Swedish language does not mean that Swedes have been prevented from using the Internet. It does not either mean that we have to communicate in English when we do use the Internet, it "only" means that we have to adapt ourselves and the Internet for our own purposes.

People are not "cultural dopes," but active beings with creative powers who can marshal a variety of different resources in order to attain their goals. Not only do people use these resources to adapt to existing cultural principles, to existing limitations in their current life situations, to available tools and technologies or to a "deficient" Internet. People over time also create new cultural principles, change their life situations, shape successive iterations of tools and technologies, including the Internet. "Every innovation must be grafted on to preceding tradition, as is happening as the new technologies of information and communications spread. [...] On the other hand, [...] principles do not inhabit a world apart, but are produced and reproduced moment by moment in the interaction between actor and environment" (Mantovani 1996, 60). This general cultural principle is grafted specifically on to the relationships to artefacts by the "task-artifact cycle" (Carroll et. al 1991); "A task implicitly sets requirements for the development of artifacts to support it; an artifact suggests possibilities and introduces constraints that often radically redefine the task for which the artifact was originally developed" (p. 79).

Bowers et al. (1995) describe how the smooth flow of work, i.e. "ensuring the even distribution of work across operators, machines and jobs" (p. 54), in two workplace

settings was disrupted when a so-called workflow system was introduced. The purpose of introducing the system was manifold. The primary reason had to do with accountability and it was a requirement to use a workflow system in order to gain the contract. Part of the purpose behind introducing the system was however also to support the specific tasks performed by the workers themselves, for example giving them a better overview of their work, thus enabling them to better understand and change it.

Unfortunately, instead of supporting work, the system disrupted the smooth flow of work in several ways. The paper is a vivid example of how people as active beings adapt to available tools and how they experiment with different workarounds in order to attain the goal of re-establishing the order and smooth flow of work. An example is how larger, regularly recurring jobs adhering to standard formats and standard contents were being handled. Before the workflow system was used, materials for these could be ordered in advance and part of the jobs could be completed already before they had been formally commissioned. With the system, a job was non-existent if no job number could be specified (yet). No actions could thus be taken as far as the workflow system was concerned. This created dilemmas that could be worked around in different ways, all of them having important drawbacks and all of them being worse compared to pre-workflow practices.

In the end, one of the two workplace settings had managed the problems introduced by the workflow system by working overtime every week since its introduction. The other workplace setting basically disregarded the system, but retrospectively reconstructed the work in such a way as to satisfy the requirements of the system.

Once a technology has been created, it is an open question how it will be adapted to a social setting. This is the reason why it is so difficult to predict the effects of different kinds of technology beyond the apparent effects on efficiency and cost that are often decisive when it comes to the initial decision of whether to invest in a technology or not (Sproull and Kiesler 1991, 4-5). Predictions of initial efficiency and cost effects does not have much predictive value about further effects once they have been deployed, or about social and societal effects in a longer perspective.

How Swedes Work Around the Limitations of the Internet?

At a time when few Swedes — active within the fields of computer sciences and used to English, the pseudo-English of programming languages and the English-Swedish version of computerese — used the Internet, they adapted to the linguistic constraints. Instead of using å, ä and ö, they managed with substitutions such as }, { and |, or aa, ae and oe in electronic communication. Or just "a" for å and ä as well as for the letter a, and "o" both for o and ö. People are flexible and can get used to many things. Many (including myself) probably did not think twice about how they had had to change their habits after a while.

As more people of different sorts came to use computers, electronic mail and the Internet, they met with these distractions and Swedes with less knowledge of English and computers understandably had less patience with them. At that point the situation began to swing so as to force the computer systems to change instead of forcing larger and larger numbers of people to change. One result of this is that most Swedes who send mail within Sweden can use the full register of the Swedish alphabet today.

However, if mail is sent abroad, successful transmission of the message is dependent both on the mail program that sends the message and the program that receives it.

Since the header fields ("To:", "From:", "Subject:" etc.) of the message is coded in a different way than the body[2], it can happen that the header *or* the body but not both are successfully transmitted. The result is that even today — almost 30 years after the ARPANET was first used — it is still a risky business to send e-mail letters in Swedish, at least outside of Sweden. And as mentioned before, no Swede uses the extra three letters in their e-mail addresses. A reasonable guess is that this has the effect of naming practices of new-born babies in Sweden today with many parents avoiding names with the unique Swedish letters.

This continuing language bias is not necessarily something that has been intentionally designed into the system. It is rather "just" a side-effect of the power relations between a group of (English-speaking) users who collectively wield power and influence over the development of the Internet through their numbers and initiative. And how do you find out how the Internet works? By reading documents that are accessible on the Internet. In what language are the documents written? In English of course. Anyone can translate them, but... there *is* power in number.

At this point one has to distinguish between different powers that shape the design process. Numbers and economic issues should be distinguished from how the design *ought to be* from a moral perspective (Friedman, personal communication). Freedom from cultural and other bias might be a difficult or even impossible ideal to attain, but should not be countered by arguments of costs and efforts, but requires an answer from a moral point of view.

Only the issue of language has been touched upon here, not issues of how the content on the Internet is culturally shaped. Regarding the question of how values are embedded in computers and computer networks, Thurber and Stratton (1995) — primarily addressing non-western cultures — raise the question if it is necessary to westernise in order to computerise. Their point is that importing the technology by default means importing also the values (individualism, western notions of freedom and democracy etc.). Furthermore, if the technology is to be integrated into the culture rather than the culture into the technology, conscious efforts have to be made, for example by producing as much material as possible in the local language. The basic issue of bias is the same as in this paper, but it becomes even more emphasised when one looks at non-western cultures (perhaps utilising non-Latin characters).

How Do Diverse Cultural Attitudes Manifest Themselves in the Use of MUDs?

A MUD is a synchronous CMC systems. MUD is an acronym for Multi-User Dungeon. The term gives away their origins as systems for playing games on the Internet and influences from fantasy culture. Today MUDs are used for many different purposes and are called by many different names, such as text-based collaborative virtual environments. For an introduction to MUDs, see Curtis (1992).

On the Relationship Between Culture and Technology in MUDs

One thing that sets MUDs (and subsequent systems with more advanced graphical interfaces) apart from other CMC systems is the close coupling between a social system and a technical system. Amy Bruckman was first to explicitly comment on this fact (Bruckman 1992). After having been in contact with James Aspnes who in 1998 created the first MUD that was *not* an adventure game, Bruckman (1992) concluded:

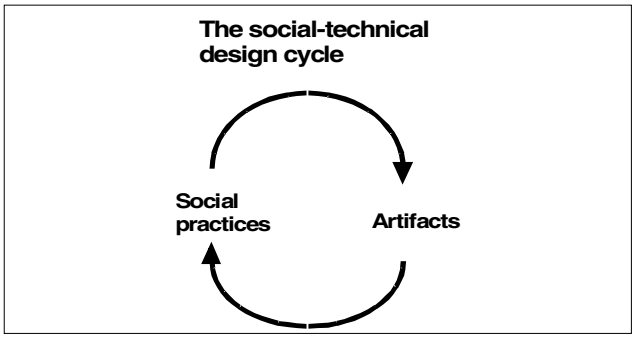
> *The change in the software encouraged different styles of interaction, and attracted a different type of person. The ethics of the community emerged. The design of the software was a strong factor in shaping what emerged. [...] In the case of TinyMUD [the MUD system that Aspnes created], the technology is a social system. It is therefore remarkable that the social changes TinyMUD caused were not intended by its founder. Aspnes writes that "this approach attracted people who liked everybody being equal." Somewhat accidental features of the artifact combined with a process of self-selection [created] a community with a strong, shared set of values.*

As apart from what Bruckman writes, it is not "remarkable" that the social changes that emerged in TinyMUD were not intended by its founder. Even with an understanding of the close coupling between the technical and the social system — which Aspnes did not necessarily have — the *unpredictability* of emergent, "chaotic" phenomena is precisely one of the characteristics that make them and mark them as emergent[3]. But that is a detail, what is interesting is Bruckman's conclusion that a MUD system in use is at the same time both a technical system *and* a social system. If one changes significantly, so will also the other in an open-ended, unpredictable dialectical dance (see Figure 1).

Some examples of the close ties between a MUD as both a social system and a technical system are described in O'Day et al. (1996, 160):

> *This paper describes the joint evolution of tools and social practices in Pueblo, a school-centered learning community supported by a MOO [a MOO is a type of MUD system] [...]. Examples illustrate how one can design and use a social practice to simplify a technical implementation, and how one can make a choice in technical implementation to work towards a desirable social goal. Social and technical practices in a network community co-evolve as social values and policies become clearer and as growth in the community pushed it toward changes in the distribution of authority and power.*

Figure 1: The Social-Technical Design Cycle



Adapted from O'Day et al. 1996. The relationship between the social system and the technical system is not causal, but dialectical and co-evolutionary in a MUD system.

The social-technical design cycle can be seen as an instance of the task-artifact cycle applied to a type of computer systems that support the on-going activities of a virtual community.

Other examples of the close ties between the social and technical system in an early (mid-1980s) multi-user graphical virtual environment has been described in Morningstar and Farmer (1991). Some of the lessons Morningstar and Farmer preach are technical and others are social, but what they have in common is that they always relate to each other. To Morningstar and Farmer (1991, 285), the purpose of the technical dimension is to facilitate the social dimension which in turn affects further technical developments. One of their lessons is that "detailed central planning is impossible; don't even try." This lesson is quite in line with the earlier observations of the emergent and open-ended nature of these systems and the same as when O'Day et. al. (1996, 161) establish that "the system is always in flux, as the implications of design and use are absorbed and proceed to transform other parts of the system." Another lesson of Morningstar and Farmer's (1991, 294) is to "work within the system:"

> *Wherever possible, things that can be done within the framework of the experiential level should be. The result will be smoother operation and greater harmony among the user community. This admonition applies to both the technical and the sociological aspects of the system.*

The dialectical relationship between human (culture) and artefacts (as part of culture) is of central importance in some psychological theories that have gained increasing attention lately, such as socio-cultural theories (Wertsch 1991; Cole 1996), activity theory (Engeström 1987; 1993) and theories of distributed cognition (Pea 1993; Hutchins 1995). Our relationship (both individual and social) to artefacts is interesting from many different aspects and it brings matters to a head when it comes to virtual artefacts and social systems such as MUDs. What makes MUDs special is the very tight coupling between technical system and social system, which is an effect of the fact that a MUD system is a social system *within* an artefact.

The answer to the question of how do diverse cultural attitudes manifest themselves in the implementation and use of MUDs is that it is not that simple. The relationship is not a causal one and O'Day et. al. (1996) give examples of no less than four different observed relationships between social (cultural) and technical design elements.

How do Diverse Cultural Attitudes Manifest Themselves in the Use of SvenskMud?

When it comes to analysing the effects of cultural attitudes on the implementation and use of SvenskMud, we cannot reduce it to a question of only *one* culture, the Swedish culture. Several different cultures are involved. In any discussion about SvenskMud, we also have to take into account youth culture in Sweden, hacker culture (both regarding the origins of MUDs in general and SvenskMud in particular), a general CMC (Internet) culture and fantasy culture as displayed through fantasy literature, role-playing games, live action role playing, and so forth.

Swedish Culture

There are differences in culture between different countries. And between different parts of the same country. And between different parts of the same city. It is easier to describe cultural variations than to explain them. Daun still makes an attempt to explain cultural variations as likely outcomes of consequences of differences in politi-

cal history, economic developments, structure of settlements and demographics.

> *Different life conditions have systematic consequences on peoples' mentalities. How people live their lives affect their values, their feelings, their perspectives on life. Nature, societal history and life conditions work together. This is how differences in mentality appear* (Daun 1992, 123).

Differences in expressivity, spontaneity and talkativeness supposedly cohere with factors such as climate, demographics, degree of homogeneity — heterogeneity and structure of settlements. There are indications that differences in personality is dependent on climate and climate also has socio-cultural effects such as how much people can be outside of the home, in public. The more time people (can) spend in public, the greater the chances of spontaneously meeting others. Spending time in public also promotes social intercourse and has positive effects of socialising in larger groups. (Daun 1992, 120-121).

But, many characteristics that supposedly describe typical Swedish characteristics (for example being shy, boring, superficially friendly, inflexible, cautious, independent, collectivist, conflict-avoiding, honest, reasonable and so on (Daun 1994; Phillips-Martinsson 1981) have to strong ties to social interaction. They are very difficult to transfer, operationalise and examine in a virtual environment.

I know of nothing that has been written that tries to relate general cultural characteristics of Swedes to attitudes towards computer-mediated communication. If cultural characteristics/stereotypes in some sense are "true" (or at least useful as concepts), then it sounds plausible that they should also affect the implementation and use of CMC technologies.

Youth culture, in itself a modern phenomena, is characterised by many different cultural tendencies. Terms such as individualisation, reflexivity, mediatisation and aestheticisation have been used to try to describe general cultural trends among young people today (Fornas 1995).

MUDs have been described as potential tools in the identity process of young people (Bruckman 1992; Turkle 1995). Sufficient to say is that these authors speculate about MUDs as arenas where young people can project and experiment with different aspects of their identity. This can range from being more competitive than is socially accepted for young women, or more sensitive and helpful than young men are "supposed to be" in modern society up to and including playing characters of the opposite sex.

Hacker Culture at a (Technical) University

Although nothing has specifically been written about how hacker ideals (Levy, 1984) have influenced early MUD developments, it is easy to see how they have influenced every aspect of the history of MUDs.

Hacker Culture. First of all, almost everything that has to do with MUDs has always been created through voluntary (unpaid) work, predominantly by university students and predominantly at engineering or computer science departments. These are the traditional bastions of hacker culture.

Almost all MUD systems can be used for free and the system software is free to download (in order to start your own MUD system), inspect and develop. The MUD systems and the MUD instances[4] have been developed over time by many, sometimes up to hundreds of different persons. To start to charge money for using a MUD

system would formally involve getting permission from each individual who has contributed towards making the final product into what it is. Some developers have gone as far as giving away the product of their efforts with the caveat that the code they have written is free to spread, but never to charge money for.

Hacker Culture at Linköping University. In Sweden, much of the MUD scene, and especially the early stages have been centred around different academic computer clubs at (technical) universities. Lysator, the academic computer club at the technical university in Linköping is SvenskMuds' home and the home of its' "older sibling," NannyMUD.

Lysator (http://www.lysator.liu.se) was founded in 1973 and it is the oldest academic computer club in Sweden. SvenskMud is formally organised as one out of many "projects" at Lysator. The former student who created SvenskMud is still formally responsible for the SvenskMud project at Lysator. As project leader, he has a responsibility to inform Lysator about the status of a project at an annual meeting.

In Lysator, money is seen as a complication and most projects involve no money at all as the computers are usually given to the computer club and all work is voluntary.

Fantasy Culture

Fantasy culture of different sorts has a strong position in contemporary Swedish (youth) culture. Some of the best-selling books in Sweden are (translated) works of fantasy fiction. Fantasy culture is based on myths, legends and literature, especially Tolkien's cult trilogy *Lord of the Rings*. Contemporary Swedish fantasy culture also has elements of medieval Swedish history mixed with the more fantastic elements.

SVEROK — the national organisation that organise clubs for role-playing games, live action role playing etc. — is one of the largest, and one of the fastest growing youth organisations in Sweden today. Both role-playing games and live action role playing[6] have elements in common with MUDs — besides the common heritage from fantasy literature. All three activities are open-ended and built on active participation.

CMC Culture

When it comes to the situated actions within a MUD, there are strong elements of playfulness and performance involved within the process, of making do with whatever resources are at hand. Danet et al. (1997) argue that playfulness is an inherent characteristic of all computer-mediated communication, but that it is especially apparent in synchronous communication.

The creative MUD player borrows aspects of Lévi-Strauss' bricoleur (1966) or tinkerer who "make do with 'whatever is at hand'" (p. 16) and who engage in "reflective manipulation of a set of resources accumulated through experience" (Orr 1990, 184). Even with a limited set of resources, combining these in new and unexpected ways can lead to new and surprising results. Danet et. al. (1997) compare the computer keyboard to a piano keyboard and the creative computer virtuoso with a jazz pianist.

Examples from SvenskMud

What makes SvenskMud Swedish is on one hand the fact that the Swedish language is used throughout the MUD and on the other hand that the content of the MUD is filled with references to Swedish culture.

The term vernacularisation is here used to refer to the process of adapting the MUD language-wise and the term localisation to the process of adapting the content of the MUD to Swedish culture.

Vernacularisation. Since English is the lingua franca of the Internet, SvenskMud differs from 99%[7] of all Internet-accessible MUDs by not being in English.

To a player in SvenskMud who can not see "behind the scenes," SvenskMud seems to be all Swedish. But in fact, only the "surface" of the technical structure has been fully translated to Swedish. Behind that surface SvenskMud still uses the same "mud driver" and the same "mud library" as other MUDs of the same type do.

The player who graduates and becomes a magician will get to look behind the scenes and see some of the same things as in other, English-speaking MUDs. In order to extend the SvenskMud world, that person will have to learn a programming language with pseudo-English terms. Some of the programming tools that are available to the aspiring programmer-magician have been fully translated to Swedish, others have been partly translated and yet others have not been translated at all.

An important milestone was taken 6 months after SvenskMud's start in 1991, when the system was converted to fully support the Swedish language and the ISO-8859-1 standard. This is an 8-bit character code that supports the characters of also western European languages other than English.

Localisation. The term localisation is used in the software industry to describe the process of adapting a piece of software to the local market:

> *Localization refers to the process of infusing a specific cultural context into a previously internationalized product [...]. It is usually limited to translating the text, date and number formats. But creating a product that speaks fluently in another culture involves more than this* (Russo and Boor 1993, 342).

A cross-cultural checklist for elements that need to be considered includes text, number, date and time formats, images, symbols, colours, flow and functionality (ibid.).

SvenskMud has — as a reaction to the dominance of the English language on Internet in general and in MUDs in particular — a somehow aggressive official policy of promoting specifically Swedish content in the MUD. The policy is however not vehemently enforced as it would then come in conflict with other parallel goals.

The general metaphor in SvenskMud is (supposed to be) one of Sweden sometime in the last century, but anything with a connection to Swedish culture in general is encouraged, be it current politicians or TV personalities, characters from Viking mythology, historical personalities and so on.

In a surveys sent out to all 149 SvenskMud magicians, one questions asked if there is anything specifically Swedish in the MUD that they especially appreciate. Another question asked about the differences between SvenskMud and other MUDs.

Among the things people appreciate the most in SvenskMud are the gods from Nordic mythology (Valhalla[8] with Oden and Tor), characters from Swedish fiction (Nils Holgersson[9], Dynamit-Harry[10], famous contemporary Swedes such as politicians, religious leaders and a famous criminal (Ian Wachtmeister and Bert Karlsson[11], Ulf Ekman, Runar and Carola[12], Clark Olofsson[13]), historical environments and characters (Carl Linné[14], Andrée's trip by air balloon[15], Polhems project[16], The Haga park at the time of Bellman[17]) and comic characters (Bamse).

Several commented that there is an atmosphere in SvenskMud that is special, that SvenskMud has a personality and a social nearness that is difficult to find in other

MUDs and that they appreciate the fact that they can use the Swedish language in SvenskMud. Some go on to hypothesise that the atmosphere and the social milieu is an effect of the fact that everything in the MUD is created by people who have written it in their native tongue — as apart from the English-speaking MUDs where English is a second language to many players.

Bias in SvenskMud

As mentioned, what makes SvenskMud Swedish is the Swedish language and all the references to Swedish culture in the MUD. Therefore SvenskMud is in itself an example of a system that systematically discriminates against (1) non-Swedish-speaking persons and (2) Swedish-speaking persons who has little knowledge of Sweden and Swedish culture (for example non-Swedish students of Swedish abroad). This does not constitute bias though, as the discrimination — systematic as it is — is not in any way unfair. The goal of crating a protected zone for the Swedish language and for Swedish cultural expressions in the form of a MUD is not in any way an unreasonable or inappropriate goal.

One of the goals of SvenskMud is to be an environment where everyone is welcome and feels at home. This goal is important enough to win out when there has been conflicts between this and other goals, for example the goal of promoting specifically Swedish content mentioned earlier. Although changes in the system has been taken to make the system more welcoming for newcomers, the fact remains: SvenskMud, as most other MUD systems, is a meritocratic system run by a benevolent but absolute dictator. The basic rule of changing the system is not by making your voice heard, but by reprogramming the system, an act which demands both formal authority and much knowledge.

Some specific hacker values are also built in to the structure of the virtual community. When SvenskMud was started, it was taken for granted that the authority to program in the MUD ("to extend the SvenskMud 'world'") was a desirable goal for all players. Nowadays, with new groups of players finding their way to SvenskMud, this is not the case any longer. Neither does everyone appreciate solving the different "quests" needed to rise in the player hierarchy to eventually graduate from player status to magician. Some for example prefer to use the system purely as a social meeting place. For these players, there is no way to rise in the formal hierarchy and for some magicians who are not interested in learning how to program, there is "nothing left to do" in SvenskMud once they have reached that position. This is an example of an emergent bias of mismatch between users and system design. As time has gone by, the SvenskMud users increasingly diverge from the assumed users of the original design.

Notes:

1. ASCII stands for *American* Standard Code for Information Interchange (emphasis added).

2. How the text in the body, i.e. the content of the message, is coded, is actually defined in the header of the message.

3. In emergent phenomena, collections of units can through their *interaction* give rise to properties that are more than the sum of their individual contributions. In "nonlinear systems [...] changes are amplified, breaking up existing structures and behaviour and creating unexpected outcomes in the generation of new structure and behavior" (Elliott and Kiel 1997, 1). An example of an emergent

phenomenon is the growth of a plant which consists of rather simple components whose combined behavior is so complex that it may not be reducible to a mathematical statement. For applications of chaos theory (Gleick 1987) to the social sciences, see Elliott and Kiel (1997) and Ferguson (1997).

4. There are many different MUD systems; Diku, LP and MUSH are the MUD systems that are most popular on the Internet. Almost 50 % of all public MUDs are built on one of these three systems. There can exist many copies, or *instances* of every system on the Internet. These instances are built on the same core of programming code, but they develop in different directions as soon as they are started up.

6. In live action role playing a group of organizers have built up a scenario and they distribute roles among the participants who then spend a weekend or up to a week or longer living their roles and generally trying to recreate the actual (often medieval) conditions in the form of a game. Many live action role players have developed interests in medieval Swedish culture, including sewing their own clothes after medieval fashion, building up (temporary) contemporary villages, cooking food with provisions and according to recipes typical of the period etc.

7. The figure comes from mid-1996, when only slightly more than half a dozen MUDs of the more than 600 known Internet-accessible MUDs were run in a language other than English.

8. Valhalla is the dwelling-place of the gods.

9. Fictional character in Nobel prize winner Selma Lagerlöfs novel *Nils Holgerssons Wonderful Trip over Sweden*.

10. Fictional character from a series of popular Swedish movies from the 1980s.

11. Political leaders in a short-lived populist political party, "New Democracy," that held positions in the Swedish parliament for three years in the beginning of the 1990s.

12. Ulf Ekman is the religious leader of a right-wing Christian church in Sweden. Carola (Häggkvist) and her husband Runar Søgaard have been members of the church. Carola is most known for representing Sweden twice in the Eurovision song contest.

13. Clark Olofsson was one of the most famous criminals in Sweden during the 1970s and the 1980s.

14. Carl Linné classified animals and plants and gave them Latin family names in the 18th century.

15. August Andrée tried to travel to the north pole in an air balloon in the beginning of the century. He failed and died on his journey.

16. Christoffer Polhem was a Swedish inventor and engineer.

17. Carl Michal Bellman was a famous Swedish composer and singer in the 18th century.

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