Nonverbal communication in text based virtual realities

John T. Masterson
The University of Montana

Follow this and additional works at: https://scholarworks.umt.edu/etd

Let us know how access to this document benefits you.

Recommended Citation
https://scholarworks.umt.edu/etd/5466

This Thesis is brought to you for free and open access by the Graduate School at ScholarWorks at University of Montana. It has been accepted for inclusion in Graduate Student Theses, Dissertations, & Professional Papers by an authorized administrator of ScholarWorks at University of Montana. For more information, please contact scholarworks@mso.umt.edu.
The University of MONTANA

Permission is granted by the author to reproduce this material in its entirety, provided that this material is used for scholarly purposes and is properly cited in published works and reports.

** Please check "Yes" or "No" and provide signature **

Yes, I grant permission  
No, I do not grant permission

Author's Signature  

Date 5-20-96

Any copying for commercial purposes or financial gain may be undertaken only with the author's explicit consent.
NONVERBAL COMMUNICATION IN TEXT BASED
VIRTUAL REALITIES

by

John T. Masterson, III
B.A. University of Miami 1991
presented in partial fulfillment of the requirements
for the degree of
Master of Arts
The University of Montana
1996

Approved by:

[Signature]
Chair

[Signature]
Dean, Graduate School

5-21-96
Date
MUDs, or multi-user dimensions, are virtual spaces on the Internet that support a spatial metaphor which restricts the synchronous communication that takes place among users. Having been developed in their most rudimentary form nearly two decades ago, MUDs have become the sites of complex human cultures. The goal of this study was to determine how it is that nonverbal communication is expressed in these text-based environments, and whether or not the existing categories of nonverbal communication could be applied to the phenomena therein.

Communication was observed on three MUDs for a period just short of three years. Notes, transcripts, and logs of interviews with informants were compiled, and compared to the traditional categories of nonverbal forms and functions. Consistent with an ethnographic framework, no efforts were made to force data into preexisting categories. Rather, the categories of form (appearance, kinesics, occulesics, vocalics, proxemics, haptics, environment, olfactics, chronemics) and function (providing information, regulating interaction, expressing intimacy, social control, presenting identities and images, affect management, facilitating service and task goals) were subjected to as careful scrutiny as the data themselves.

Due to the nature of the environment, the application of the categories of nonverbal forms met with limited success when applied to MUD phenomena. The nonverbal functions were generally discernable, and the author hypothesized that regardless of the environment in which humans find themselves, they will find it necessary to communicate through those functions, even though the forms available to them may be different or restricted.

Graphical MUDs are rapidly gaining popularity. As various technological barriers topple, they may become the norm for online chat, opening up a wealth of opportunities for further nonverbal research.
## TABLE OF CONTENTS

Chapter 1 Rationale and Literature Review  

Introduction  
Purpose  
Background  
History of Networked Computing  
Previous Studies of Text Based Virtual Realities  
Recent Innovations  
Adventure MUDs  
The Issue at Hand  
Forms of Nonverbal Communication  
Functions of Nonverbal Communication  

Chapter 2 Theoretical Tradition and Method  
Justification for Qualitative Inquiry  
Features of the Tradition  
Reliability and Validity of This Study  
Reliability  
Validity  
Data Collection  
Participants  

iii
Data Collection 39
Data Analysis 44

Chapter 3 Nonverbal Forms in Text Based Adventure MUDs 45
  Preface 45
  Appearance 46
  Occulesics and Facial Expressions 55
  Haptics 57
  Vocalics 61
  Chronemics 68
  Kinesics 75
  Olfactics, Proxemics, and Environmental cues 79

Chapter 4 Nonverbal Functions in Text Based Adventure MUDs 83
  Providing Information 83
  Regulating Interaction 87
  Expressing Intimacy 90
  Social Control and Presenting Identities and Images 95
  Affect Management and Facilitating Service and Task Goals 98

Chapter 5 Discussion 101
  Success of the Form/Function Framework 101
    Framework Supported 103
    Framework Restricted, Extended, or Altered 105
    Framework Rejected 106
CHAPTER 1 RATIONALE AND LITERATURE REVIEW

Magnafix says, "Have you figured out the secret entrance to Kahn Draxen's castle?"
Newtrik sighs deeply.
Newtrik says, "I think so, but I haven't found the stone key yet!"
Magnafix grins mischievously.
Magnafix gives a stone key to Newtrik.
Newtrik smiles happily.
Newtrik shakes hands with Magnafix.
Newtrik says, "Thanks!"
Magnafix grins broadly and says, "No problem..."
Newtrik leaves west.

Introduction

Purpose

The purpose of this thesis is to investigate the communicative phenomena to be found in those environments known as Internet MUDs, or Multi-User Dimensions. These text-based virtual realities are presently available to students and faculty at most learning institutions, as well as anyone with a computer and a modem. Though the term "virtual reality" has become connected for many with visions of fancy headgear and million dollar gloves, MUDs require none such hardware. They are, however, a form of virtual reality, "because they construct enduring places, objects, and user identities. These objects have characteristics that define and constrain how
users can interact with them," (Holmes & Dishman, 1994, p. 6). Having been created in their most rudimentary form nearly two decades ago, the technology that supports MUD interaction is well developed and has spawned a new variety of communicative environment, one that thousands if not millions of users have found fiercely compelling.

Since MUDs are generally restricted to text-based interaction (some support ANSI codes, and the graphical MUDs are gaining popularity), one might expect that the interactions therein are characterized by a lack of regulating feedback, dramaturgical weakness, few status cues, and social anonymity, as Kiesler and her colleagues have suggested (Kiesler, Siegal, & McGuire, 1984). While these characteristics may be readily attributable to the majority of interactions within experiments on computer conferencing and electronic mail, such is not the case for MUDs, as each (there are hundreds) is a rich culture unto itself, as will be shown. This thesis is meant to explore the modalities by which MUD users avoid the drawbacks mentioned above, specifically, how nonverbal communication takes place in a virtual world composed solely of words.

Background

**History of network computing**

The first computer network was created in the late 1960s in an effort by the Department of Defense to link multiple command sites to one another,
thus ensuring that central command could be carried on remotely, if one or several were disabled or destroyed. Once the hardware was installed, the military allowed educational institutions to take advantage of the research resources inherent in multiple site networking. This interlaced network of computer connections spread quickly, and in the early 1980's, the network was divided into MILNET, for strictly military uses, and ARPANET, which, with the advent of satellite communications and global networking, became the Internet (Reid, 1993).

On a smaller scale, throughout the 1970's, various corporations developed their own computer networks for intra-organizational interaction. E-mail and computer conferencing were created, useful for information exchange, but asynchronous (i.e., messages are stored for later retrieval by other users, rather than the synchronous co-authoring of messages) and thus less interpersonal than MUDs would later become.

At the same time as this conferencing research was being done, another group of programmers was involved in the creation of text-based adventure games in which a user would wander through a textually-depicted maze, occasionally encountering programmed foes with whom to do battle. These first single user adventure games, developed in the early 1970's, expanded the world's notion of computers from mere super-cooled punch-card-munching behemoths to a more user-friendly conception of computers as toys and even friends.
Inevitably, the networking technology and the game technology crossed paths. In 1979, Richard Bartle and Roy Trubshaw developed the first MUD (called "MUD", for Multi-User Dungeon; now, the term MUD is commonly accepted as a generic term for Multi-User Dimensions of many varieties) at Essex University. This original game became enormously popular with the students at Essex, to whom its use was restricted at first. As various technological barriers were toppled, access to "MUD" was granted to a widening circle of users in the United Kingdom, which eventually prompted two results. First, several of the "MUD" players wrote their own variations of the game. Second, the computer games magazines took note and produced a flurry of articles about "MUD" in the early 1980's (Reid, 1993, Bartle, 1990).

These two results are related in that they brought about an exponential growth in the Multi-User Dimension community. By 1989, there were quite a few families of MUD programming technology, each designed with different goals in mind. Many of these technologies sought to distinguish themselves from their brethren by adopting new acronyms (as well as new programming approaches), such as MUSH (Multi-User Shared Hallucination), MUSE (Multi-User Simulated Environment), MOO (MUD, Object-Oriented), DUM (Depend Upon Mud (forever)), MAGE(Multi-Actor Gaming Environment), and MUCK (Multi User C Kernel).

At the time of this writing, there are an estimated five hundred
publicly accessible MUDs (Turkle, 1995, p. 11). There also exist an unknown number of private MUDs, and commercial "pay-for-play" MUDs. These numbers change from week to week, as MUDs die out for various reasons quite frequently (e.g., a MUD running on a university computer may suddenly lose the right to do so -- especially if the university was not informed of such use). Indeed, "large MUDs can be opened from scratch by spending a few hours with FTP," (Koster, 1996), and hence can expire shortly thereafter due to lack of interest. However, many MUDs survive for years, as evidenced by such hugely popular MUDs as Ancient Anguish, DragonMUD, and LambdaMOO, each of which boasts over seven thousand participants.

It must be noted, however, that even though the rate at which people come on and stay on the Net is increasing, and shows no signs of slowing (Sellers, 1996), MUDs have remained as one of the least-frequented portions of the Internet. Even with articles published in such mainstream publications as Time (September 13, 1993), The Atlantic (September 1993), The Wall Street Journal (September 15, 1995), MacUser (November 1995), Technology Review (July 1994), and The Village Voice (December 21, 1993), even the most cyber-savvy of citizens has likely not experienced a MUD. There are several reasons for this. First of all, MUDs have been rather insular, almost underground, in their marketing; there is a single USENET newsgroup dedicated to the announcement of new MUDs (rec.games.mud.announce). For the uninitiated, this sole advertising space is
quite obscure, if not invisible. As such, it is common for people to be introduced to MUDs simply by word of mouth, a diffusion method that has met with limited success. Among people who have heard of MUDs, many assume that they are simply wastes of time (indeed, MUDs can devour time like few other activities). Another factor for new users is the fact that the graphical interface is the Internet industry standard now; if there's not a multi-colored icon to click on, many recent Internet users will pass it by. As such, it may turn out that the graphical MUDs currently under development will become the dominant paradigm for real time chat and adventure games in the years to come. Finally, there is a steep learning curve involved in becoming acquainted with one's first MUD, including such hurdles as Unix, telnet, the initial login screen, the hundreds of available MUD commands, the local MUD culture, etc.

Previous studies of text based virtual realities:

The current body of communication research on MUDs is scarce, though growing steadily. Carlstrom's (1992) sociolinguistic study examines the popular MUD LambdaMOO, and points out several notable differences between MUD communication and real life communication, including issues of proxemics, turn-taking, and the uses of silence. Lynn Cherny at Stanford University has produced a wealth of important linguistic studies, such as her (1994) analysis of gender-based language differences as evidenced on one
MUD, and a (1995c) study of the objectification of users' virtual bodies on MUDs. Another article (Cherny, 1995d) points out the details involved in MUD communication backchannels, implicitly satisfying Kiesler's query, "Consider the consequences if one cannot look quizzically to indicate if the message is confusing or ... nod one's head or murmur 'hmm' to indicate that one understands the other person," (Kiesler, Zubrow, & Moses, 1985, p.82). Finally, Cherny's (1995b) effort examines the modal complexity of speech events on one MUD, and suggests a possible classification system for MUD nonverbal communication, including conventional actions, backchannels, byplay, narration, and exposition, which will be discussed in Chapter 5.

Michael Holmes is another scholar who has recently contributed to the literature on MUDs. His (1994) study of MUD environments as compared to Internet Relay Chat (and other similar "chat" utilities) concluded that the chat services "supply a stark context for conversation", while MUDs furnish "a richer context intended to model aspects of the physical world," (Holmes, 1994). Similarly, his (1995) examination of deictic conversational modalities in online interactions sheds light on such curious observed utterances as "Anyone here near Chicago?", (Holmes, 1995). Owen (1994) worked with identity constructions spawned by the chat utilities of the world's largest commercial Internet provider, America Online (AOL) and posits the frequent appearance of self-effacing attribution invitations in online conversations.

As the number and extent of the uses of computer mediated
communication (CMC) have grown exponentially in the last two decades, the communication discipline has produced a body of literature examining the interpersonal effects of such interaction. Some such studies purport that CMC is necessarily task-oriented, impersonal, and inappropriate for interpersonal uses (see Dubrovsky, Kiesler, & Sethna, 1991, Dubrovsky, 1985, Siegel, Dubrovsky, Kiesler, & McGuire, 1986). This effect is brought about by a lack of media richness, and is sometimes called the "cues-filtered-out" perspective (Culnan & Markus, 1987). In other words, restricting interlocutors to the verbal channel strips their messages of warmth, status, and individuality, (Rice & Love, 1987). However, as Walther, Anderson, and Park point out in their excellent (1994a) meta-analysis of published CMC studies, when provided with unlimited time, CMC users gain familiarity with the tools at hand, and communication becomes much more sociable, indicating that "the medium alone is not an adequate predictor of interpersonal tone," (Walther, 1995, p. 11). Walther even posits the existence of what he calls "hyperpersonal" communication, "CMC which is more socially desirable than we can achieve in normal Ftf [face to face] interaction," (Walther, 1995, p.18). This phenomenon stems from three sources. First, CMC interlocutors engage in an over-attribution process, attributing idealized attributes on the basis of minimal (solely textual) cues. In fact, Chilcoat and Dewine (1985) report that conversants are more likely to rate their partner as attractive as more cues are filtered out. (Their study
compared face to face, video conferencing, and audio conferencing, and the results were exactly the opposite of their hypotheses.) Second, CMC provides users with an opportunity for "selective self-presentation" (Walther & Burgoon, 1992), since the verbal channel is the easiest to control. Finally, certain aspects of message formation in CMC create hyperpersonal communication in that one has time to formulate replies and analyze responses to one's queries, a luxury denied, or at least restricted, in face to face dyads.

A considerable number of papers and projects concerning MUDs has been produced within other disciplines. For instance, sociologist Reid (1994) examines a MUD as a cultural construct, rather than a technical one, and addresses issues such as power, social cohesion, and sexuality. Serpentelli (1992) examines conversational structure and personality correlates in her psychological study of MUD behavior. Likewise, NagaSiva (1992) treats the MUD as a psychological model, but draws on Eastern philosophy, and discusses MUD experiences as mystical experiences. Young (1994) embraces the textuality of MUD experience as postmodern hyperreality, a rich new hybrid of spoken and written communication. Numerous articles have been produced within the Computer Science discipline, many of which are of a non-technical nature, most notably Bartle (1990), whose experience as the co-creator of the first MUD makes him uniquely qualified as a commentator, Curtis (1992), another noted innovator in the field (and perhaps the original
author of the phrase "text-based virtual reality"), and Bruckman (1993), whose extensive work on socio-psychological phenomena in MUDs at MIT has earned her deserved respect. Finally, Turkle's (1995) important new book examines numerous MUD-relevant topics, including artificial intelligence and "bots" (MUD robots), multiple selves and the fluidity of identity ("parallel lives"), and the effects of anonymity. She points out the psychological significance of role (game) playing, and reminds the reader that the word "persona" comes from the Latin word referring to "That through which sound comes", i.e., the actor's mask. Through MUDs and other forms of CMC, she believes that people can learn more about all the various masks people wear, including the one worn "in real life".

Recent innovations:

While the original "MUD" began a tradition of games with monster-slaying and treasure acquisition as their primary goals, the advent of the MOOs, MUSHes, MUSEs, and perhaps most notably, Jim Aspne's TinyMUD in 1989, brought about a new thinking in the purpose of Multi-User Dimensions. Rather than utilizing commands such as "wield sword" and "kill dragon", participants in these "social MUDs" use the virtual environment as a forum for interpersonal interaction and cooperative world creation.

At the same time as these text-based virtual environments were rapidly multiplying, an arguably more ambitious project was well underway
in Japan. Known as "Habitat", it was (and is) a "graphical many-user virtual
online environment, a make-believe world that people enter using home
computers..." (Farmer, Morningstar, & Crockford, 1994, p. 3). The creators of
Habitat soon discovered that a virtual society had been spontaneously
generated as a result of their efforts. One of the creators claims,

This is not speculation! During Habitat's beta test, several social
institutions sprang up spontaneously: There were marriages and
divorces, a church (complete with a real-world Greek Orthodox
minister), a loose guild of thieves, and elected sheriff (to combat
the thieves), a newspaper (with a rather eccentric editor), and
before long two lawyers hung up their shingle to sort out claims.
(Farmer, 1989, p. 2)

As these various MUD environments have developed, each with their
own particularities of culture, a number of categories have emerged. Social
MUDs have become virtual gathering places for people to meet new friends,
converse with old ones, get help on their trigonometry homework, play
"virtual scrabble", and assist in the continuing creation of the virtual
environment. Some MUDs are known for their risque activities. On
FurryMUCK, players assume the identity of various animals and have
"mudsex" with one another, a rapid exchange of sexually explicit messages.

Professio nal and educational MUDs have begun to appear recently
with more "serious" uses in mind -- their aim is to provide a virtual spatial
context (e.g., conference rooms, lecture halls, and private offices) for the
participants therein, and even the creation of various pedagogical devices
within the environment. A few MUDs have been set up as havens for virtual support groups for people with common misfortunes or interests. The most popular variety of MUD, though, harkens back to the philosophy of the original "MUD", involving puzzle-solving, dragon slaying, and treasure accumulation.

It is these "adventure-style" MUDs which shall be the topic of inquiry for the remainder of this thesis. While it may be argued that the social MUDs, with interpersonal interaction as their participants' sole goal, would be more suitable, it is precisely because of this goal that adventure MUDs have been selected. It stands to reason that the communicative phenomena to be found on purely social MUDs may be even more firmly entrenched than on adventure MUDs due to the wealth of additional cultural cues which such environments spawn. Therefore, it is important to demonstrate that 1) virtual cultures develop on adventure-style MUDs, 2) that these cultures are quite real to the participants therein, and 3) that nonverbal communication occurs in these worlds designed with point accumulation in mind, and created solely by words.

Adventure MUDs

While a few "pay MUDs", i.e., MUDs which charge for access, do exist (and claim to be more dynamic and carefully programmed), the vast majority of adventure MUDs are created and maintained by volunteers. These
volunteers are often computer science majors at major universities who have access to the hardware needed to run a MUD and make it accessible to multiple users at once. Once the hardware is in place, a "mudlib" must be decided upon. A "mudlib" is the most basic code that makes the MUD run, i.e., the code that defines the mechanisms by which the spatial metaphor is created, defines the difference between living and non-living objects, and calculates the formulae involved in combat.

Beyond the technical distinction of which mudlib a MUD runs on, the next most distinctive feature is probably the theme which guides the builders (i.e., the people who actually program the objects in the MUD - every room, monster, weapon, etc) in their creation of the MUD. The first MUDs were most commonly based on a Tolkienesque world of hobbits and giants, swords and sorcery.

Now that the MUD community has expanded, however, diverse themes can be found, such as MUDs based on Star Trek, Star Wars, and other popular fantasy genres. Some MUDs (mostly social MUDs) are simply set in American cities, such as BayMOO (San Francisco) and Club Miami (Miami, FL). Other MUDs are not themed in setting, but in purpose; they exist as meeting places for people with common interests, such as support groups for zoophiles, or discussion groups for astronomers. Still other MUDs are set simply in a virtual representation of the administrator's home. (The WWW site http://www.interplay.com/mudlist/ contains an extensive list of current
publicly available MUDs).

By far, however, the fantastical swords and sorcery adventure-style MUDs are the most popular among MUD players. As such, they have been developed perhaps more than any other, with a rich tapestry of literature from which to draw, and perhaps even attracting especially imaginative builders and players. It may be speculated that an additional reason that adventure-style MUDs are so popular is that the treasure and point gathering that takes place therein appeals to many computer enthusiasts' desire for mastery of technique and knowledge.

Each adventure-style MUD (referred to as simply MUDs from now on, unless otherwise noted) has a primary dichotomy, often referred to as the "mortal/immortal" dichotomy. Simply put, the "immortals" are those participants who have access to the programming which makes the MUD run. "Mortals" do not. Though the colorful terminology may change from MUD to MUD, this split is sure to exist. It should be noted that this is a significant difference between adventure-style MUDs and purely social MUDs (most often based on MOO code), in which all members enjoy some access to the programming, and therefore the ability to create their own objects.

Every MUD participant starts out as a "mortal". This entails no access to the programming language at all. That is, they receive all the textual descriptions of the virtual environment, but none of the underlying code that
makes the MUD run. For the mortals, the spatial metaphor is reified through this limited access. They have no choice but to exist within the spatial metaphor, limited by its rules of simulated space.

Most adventure MUDs offer their participants a range of classes, or professions, (such as fighter, thief, or necromancer), and races (fantastical things like ogres and elves). Besides being a colorful addition to the participant's virtual persona, these designations have various effects on the player's experience with the MUD. Ogres may be quite strong, but poor at spell casting. Mages may have an arsenal of spells at their disposal, but may be struck down easily when hit. These details become pertinent when one understands the "goal" of an adventure MUD.

In the maze of rooms that makes up a typical adventure MUD, there reside various programmed monsters to be slain and puzzles to be unraveled. Players will typically spend much of their time dashing from room to room engaging in computer-moderated verbally described combat with these creatures. When successful in vanquishing these foes (success is determined in a large part by programmed attributes of the combatants, though player strategy plays a part), players may reap their bounty. Rewards such as equipment (which may aid the character in future battles or sold at the shop), or money (which may be used to purchase equipment), and other treasures may be found. Above all, though, the player of the adventure MUD seeks "experience points", which determine how powerful the character can
become. When a sufficient quantity of experience points have been collected, the character may "advance a level", thereby increasing his or her mastery of combat, spell casting, or other skills.

There are risks, of course, in such valorous activity. Every time a character enters into combat with a foe, there exists a chance of death. The severity of players' deaths varies from MUD to MUD. On some MUDs, characters may simply lose the treasures they have amassed during their session. On others, significant reductions in a character's quantified skill levels may occur, while on a few MUDs, death is quite realistic and harsh - the character is simply erased.

Death is not a random occurrence on well-tuned adventure MUDs. Each character is a quantifiable distance from death at any given moment, often referred to as "hit points". Every time s/he is struck in combat (which proceeds quite rapidly, text scrolling across the player's screen), that number of hit points is reduced. When it reaches zero, the character dies.

Since characters engage in combat often, and combat reduces hit points, there exists a need for healing, so that characters do not simply get weaker with each successive battle. On adventure MUDs, these biological needs are taken care of through the presence of pubs and restaurants from which one may buy various cocktails and foodstuffs, all of which contribute to a character's health. This virtual biology is extended in that characters can only eat and drink a certain amount before becoming satiated, after which
they need to wait a short time before consuming again. Some MUDs even require that each character eat from time to time even if they do not require healing - they get hungry.

Besides food and drink (which cost gold coins), there exist healing spells which certain classes of character may cast. This is just one of the ways that interaction between characters is spawned on MUDs. If one character is injured and knows that a healer is connected to the MUD at the time, s/he may seek the healer out and ask for help, perhaps even offering something in exchange. Some MUDs, for instance, require material components for spell casting (eyes of newt, and so forth), thus providing non-spell casters with some bargaining power.

An additional source of interaction between players is the guild system. While each character has a "class", or profession, which determines what proficiencies they have, guilds are more like social organizations. A guild could be based upon traditional notions of chivalry, or black magic, or the love of chocolate, or anything else that the creators decide. Guilds generally have a private location for guild members to congregate and interact, and perhaps a few specialized signs or signals that they use to recognize one another. Guilds often provide an additional reason for interaction, even to those players most interested in accumulating experience points.

Many MUDs allow characters of sufficient experience the opportunity
to ascend into the ranks of the "immortals", or those individuals with some
degree of access to the actual programming that makes the MUD run and the
power to create and manipulate objects therein. For the immortals, combat
skills are completely irrelevant; they can simply erase any (non-player) foe in
their path. As such, the very nature of the environment is completely
different for them.

Within the Immortal group, there are several levels of access to the
programming, each with its own colorful moniker. The hierarchy outlined
below is based roughly on the author's acquaintance with two popular MUDs,
Ancient Anguish (described at length in Masterson, 1995a) and Paradox II
(development of this hierarchy described in part in Masterson, 1995b). The
lowest level of Immortals includes the Builders, Wizards, or Creators. This
group of individuals consists generally of those players who have reached a
certain level of expertise and experience, and have been granted limited
access to MUD code. They are generally given a directory (MUD syntax is
much like the Unix operating system) in which they can write and edit files
which may create objects in the MUD. It is this group of immortals whose
responsibility it is to continue the creation and expansion of the virtual
geography of the MUD. It is also generally the largest group of immortals.

Various other groups of immortals are responsible for overseeing the
activities of the wizards and the players. A common division involves one
person (often called an "arch") to determine if the areas (this term includes
both the rooms and objects therein) that the wizards are making are of sufficient quality (imaginatively described and comprehensively coded) to install in the game for players to enjoy (the "Quality Control" or "Approval Arch"). Another arch might be responsible for ensuring that the areas all are smoothly integrated into the milieu of the MUD, and that there are neither areas in which players will suffer grave misfortune for little reward nor areas from which players stagger home with loads of treasure with little risk (the "Balance Arch", or "World Arch"). Another Arch may be responsible for ensuring that the underlying code that governs combat, character death, and interaction of objects runs smoothly (the "Mudlib Arch"). Finally, there is usually an arch whose responsibility it is to ensure a fair and equitable environment for the wizards to code in and the players to adventure in; in other words, and individual responsible for the upkeep of the rules of the MUD (the "Law Arch"). Though this scheme is by no means the only way that adventure MUDs govern themselves, it is quite common. All of the arches will have greater access to the programming than do the wizards.

The individuals who occupy the top tier of the adventure MUD immortal hierarchy are known as the Admins (administrators). This group of individuals is endowed with the ultimate responsibility for maintenance and the upkeep of the MUD. They have access to every file that comprises the MUD. Mortal concerns are outside the scope of their responsibilities.
The issue at hand

A common descriptive metaphor in the literature of nonverbal communication states that "We don't need to be told we are at a wedding." In other words, our nonverbal communication provides essential contextual cues, moment by moment, which help us and others to make sense of our interpersonal situation. Just as a picture may take the place of a thousand words, so too may a gesture.

It can be seen from the preceding section that there are numerous attributes of MUDs that give rise to interaction between participants. This interaction brings about a sense of community among participants on a given MUD. Indeed, some people get quite passionate about their membership in the "MUD-family", and connect to the MUD for as many as 80 hours a week, which is testimony to MUD conversations' compelling interactivity. Given that this is the case, though, how is it that in virtual communities like MUDs, which are created solely by words on users' computer screens, "real" communication can take place, including nonverbal communication? In other words, how is it that the multitude of nonverbal communicative functions, upon which we rely in face to face interaction for person perception, regulating interaction, and making sense of our interactions in general, can be represented verbally, i.e., textually?

In describing and categorizing nonverbal communication, scholars
differ in their approach along the classic delineation of form versus function. To examine form is to ask "what are the parts?", while an interest in function entails the query "how is it used?". What follows is a brief discussion of several nonverbal scholars' analysis of nonverbal communicative forms, succeeded by Patterson's (1990) framework of nonverbal communication functions. This strategy was chosen because while there are numerous respected scholars who have discussed nonverbal forms, Patterson's (1990) seminal article is recognized as the most complete and concise explication of the functions of nonverbal communication.

Forms of nonverbal communication

By their own admission, many nonverbal scholars seek to "[break] down the forest of nonverbal behavior into its constituent trees" (Richmond and McCroskey, 1995, p. 11). To that end, they posit the following nonverbal communication forms, each of which will be explained below: physical appearance, kinesics, occulesics, vocalics, proxemics, haptics, environmental features, olfactics, and chronemics.

Physical appearance. This category refers to all those attributes of image, such as attractiveness, race, height, weight, body shape, hairstyle, dress and artifacts. Such physical appearance cues are not always encoded to be communicative, and their effects are often unpredictable. Clearly, every individual makes distinctions and attributions on the basis of such
data; for better or worse, we quite often "judge a book by its cover."

**Kinesics.** The word "kinesics" derives from the Greek word for movement, and refers to all bodily movements except for those which involve the touching of another person (which is referred to as haptics, described below). Commonly referred to as "body language", this form of nonverbal communication encompasses such things as posture, movement styles (dramatic, reserved, etc.), and specific gesture categories such as emblems (gestures with direct verbal translations), regulators (which help to maintain conversational coherence), adaptors (unintentional nonverbal displays, often in response to some source of emotional discomfort), and others. Some classifications of kinesic phenomena include Birdwhistell’s (1980) linguistic analogy (kines, kinemes and kinemorphs), and McNeil’s (1987) psycholinguistic approach, which breaks the form "kinesics", into the proposed functions iconic, beats, cohesives, diactics, metamorphics, and emblems.

**Occulesics.** Many nonverbal scholars (e.g., Richmond & McCroskey, 1995) are convinced that this category is probably the most significant in terms of communicating and interpreting nonverbal messages. Such essential functions as intensification, masking, and neutralization all occur in the facial area, and the eyes, as "windows to the soul" have produced a wealth of literature on gaze behavior (see Argyle & Ingram, 1972, Exline, Ellyson, & Long, 1975, Hess, 1965, et al.).
Vocalics. Vocalics refers to all those non-verbal cues to be found in a speaker's voice. Some notable efforts at classifying this nonverbal form include Trager's (1958) system of paralanguage qualifiers, characterizers, and segregates and Mulac's (1976) dimensions of vocal socio-intellectual status, aesthetic quality, and dynamism. The way an utterance is made can have as much or more meaning to listeners as the actual content of the message. Vocal behavior can lead to personality attributions based on pitch, breathiness, volume, rate, and variety. It is also largely responsible for the success of sarcasm and the regulation of interactions through turn-requesting and turn-yielding vocal cues.

Proxemics. Proxemics refers to the study of the use of personal space. Hall (1968) classified space on the basis of how that space is used in interactions; he posited the categories public, social, personal, and intimate. As animals, humans exhibit a need for personal territory, just as our wilder relatives do. One's "personal space", which one expects not to be invaded (except by those with whom one shares an intimate relationship) is an example, as is a fence around one's yard. Staking a claim to space, as well as assaulting someone else's, is certainly nonverbally communicative. Indeed, a perceived invasion of space can lead to physiological responses, anxiety cues, withdrawal, decreased task performance, perceived discomfort, and verbal aggressiveness (Burgoon, Buller, & Woodall, 1989).

Haptics. Haptics refers to the study of touching behavior. Whether it
be a physician's touch in the examination room, a lover's soft caress, or the
town bully's malevolent battery, touch intimates certain details about the
nature of the relationship. Such touches can be broken down into their
structural elements, tacs and tacemorphs (or haptoms and haptemes)
(Harrison, 1974), or their functions (from Jones & Yarborough, 1985):
positive affect touches, playful touches, control touches, ritualistic touches,
hybrid touches, and task-related touches.

Environmental details. The appearance of one's surroundings
provides contextual cues for the interactions therein as well as the potential
for personality attributions of one sort or another on the person or persons
responsible for that appearance. Details of spatial organization, size and
volume of space, arrangement and selection of objects, lighting, color,
temperature, and noise all have discernible effects on nonverbal behavior
(Burgoon, et al., 1989).

Olfactics. Olfactics refers to the study of the nonverbal communicative
effect of one's scents and odors. Though this varies significantly across
cultures, one's personal scents and odors can lead to attributions by people in
our presence regarding our dental and bodily hygiene, and the personality
and cultural correlates attributable thereto.

Chronemics. Chronemics, or the study of the use and perception of
time, is another nonverbal communicative phenomena that varies widely
across cultures. Being punctual is held in high regard in many cultures, and
to keep someone waiting can be seen as a personal insult. Reinert (1971) posits four basic time orientations, past, time-line, future, and present, which can affect the structure, content, and urgency of communication (Burgoon, et al., 1989).

Functions of nonverbal communication

Patterson's (1990) important synopsis of the functions of nonverbal communication proceeds from a different theoretical perspective than the account of forms above. Rather than endeavor to distill nonverbal communication down to its component parts; he sought to identify the various ways in which nonverbal communication functions. What follows is a brief summary of these functions.

Providing information. Clearly, much nonverbal communication serves to provide information about the internal state of people in one's presence (and even one's own internal state), as well as status and immediacy cues. This information may be gleaned from any or all of the nonverbal forms, such as facial expression, tone of voice, personal appearance, etc.. Facial expression is especially salient in this regard, as it has been proposed by Eckman and associates (1987) as being universally encode/decodable across cultures.

Regulating interaction. Through changes in vocal pitch and rate, as well as gestures and facial behavior, communicators use nonverbal behavior
to aid in the orderly transition of conversational turn-taking. Capella (1985) provides an excellent review of turn-taking research.

**Expressing intimacy.** As relationships become more intimate, observable changes include an increase in mutual gaze, a decrease in interpersonal distancing, and an increase in touch frequency. Clearly, expressing intimacy nonverbally can be accomplished through many nonverbal channels. A formidable body of research shows that, as relationships become closer, interpersonal distances shrink, touch increases, and mutual gaze increases (see Patterson, 1990).

**Social control.** This function can be enacted nonverbally through purposeful gestures or facial expressions (or the lack thereof) in order to achieve a desired result. Likewise, through certain touch and eye behaviors, conversants may be trying to show their dominance (or submission), or any other form of impression management. In face to face interactions, persons who initiate greater levels of involvement are perceived as having more power and status (Zimmerman, 1977). When attempting to be persuasive, it has been found that such behaviors as head nodding, facial expressions, and gesturing increase measurably (Mehrabian & Williams, 1969).

**Presenting identities and images.** While the previous function seeks to influence one's partner in a dyad, presenting identities refers to cases in which a dyad displays certain nonverbal behaviors in order to communicate something about their relationship to any third party who may be observing.
The most obvious example is one in which a couple displays certain behaviors designed to let others know that they both are "taken" (see Patterson, 1990).

**Affect management.** The onset of powerful emotion can lead to strong affect, whether it be embarrassment, joy, or sorrow. It is common to subsequently reduce negative affect and bolster positive affect. For example, when someone is embarrassed, their affect management may include a decrease in gaze and an increase in gestures and smiling (Edelman & Iwawaki, 1987).

**Facilitating service and task goals.** Professional settings can sometimes give rise to interpersonal relations which are quite different from other "normal" interactions. For instance, the societal norms regarding touch between strangers are clearly altered if one member of the dyad is a doctor, and the environment is that of a hospital examination room.

As has been shown, the study of nonverbal communication has been effectively described and explained by scholars for decades. The primary paradigmatic split is between those who break nonverbal communication into its various forms, and those who choose nonverbal functions as their object of scrutiny. What remains to be seen is whether these well established categories are useful in a new kind of communicative environment, that of MUDs.

With the preceding discussion of nonverbal forms and functions in mind, the remainder of this thesis shall turn to an examination of nonverbal
Page 28 omitted in numbering.
behavior on MUDs. Armed with this analytical template, the following questions will be investigated:

- In a text-based virtual environment, where all actions are verbal, i.e., written, how is nonverbal communication achieved?
- As a new kind of communicative environment, are existing descriptive categories of nonverbal communication adequate?
CHAPTER 2 THEORETICAL TRADITION AND METHODS

Justification for qualitative inquiry

This is a qualitative study of the nonverbal communication that takes place in adventure MUDs. The reasons for employing qualitative methods are manifold, and are discussed below.

The difficulties in producing a reputable quantitative study of MUD phenomena are formidable, unless one resigns oneself to convenience samples based on replies to surveys posted to various MUD-related Usenet newsgroups. One might improve this sampling technique by getting a list of all known MUDs, randomly sample from this list a set of all MUDs to study, and get a player list of each of the chosen MUDs. Then, one might randomly sample from the list of chosen players and conduct a previously pilot-tested survey (Schwartz, 1995).

Though the aforementioned quantitative method may seem airtight on its face, there are onerous difficulties at nearly every stage of such a procedure. To name a few, there is the problem of defining what is meant by "all known MUDs"; if one narrowed the definition to "all publicly advertised MUDs", this still fails to address the fact that MUDs come and go, week to week. In fact, public MUD lists may waver from 350 to 650 MUDs listed, over the course of a few weeks. Another difficulty arises when asked to make a list of all players on a single MUD. For instance, should every person who ever logged in to the MUD be included, even if they only spent a few scant
minutes in the environment? Also, since it is possible that numerous characters are played by the same person, how many times will such a person be counted?

Given the statistical hazards of such a research scheme, the present research has been guided by the methods of participant observation and informed by Philipsen's tradition of ethnographic research on speech communities.

Features of the tradition

Philipsen's tradition of qualitative case studies involves several key attributes. First, a phenomenon or class of phenomena within a group, or speech community, must be selected as the object of scrutiny. A speech community is characterized by a system of commonly accessible and mutually understood shared meanings. Then, a theoretical framework must be chosen, "a descriptive model which guides inquiry into various communities," (Philipsen, 1977, p. 44). This theoretical framework is not meant to provide ready-made categories into which qualitative data will simply be poured without thought, but rather as a mental template against which to compare data, in a way such that "...findings have some implication for [the] descriptive framework; therefore...begin with something the adequacy of which can be tested in light of field work," (Philipsen, 1977, p.45). For the purposes of this thesis, while the established categorizations of nonverbal
communication were used as a tool for comparison, no efforts were made to force MUD phenomena into said categories.

[The researcher should] specify a phenomenon of interest, link that phenomenon conceptually to the process of communication, and specify a framework for describing that phenomenon in its particularity in any given social field, and that the descriptive framework itself will be subject to revision contingent upon the results of the field work.

(Philipsen, 1977, p. 48)

Indeed, the researcher's fieldwork and experiences with MUD communication, coupled with numerous informal interviews and a review of both popular and technical literature, provided a rich tapestry of communicative data upon which to reflect and evaluate in light of previous work on nonverbal communication.

Reliability and validity of this study

Ethnographers and other qualitative researchers must take special care to establish the credibility of their work, lest they be accused of authoring a mere descriptive account, lacking in academic rigor. In this section, threats to the reliability and validity of this study will be explained and addressed.

Reliability

Reliability, or the degree to which a study can be replicated with
similar results, is constrained profoundly in ethnographic studies. In laboratory studies, every effort is made to restrict the potential for varying effects; i.e., a single aspect of the experiment is manipulated, and the results are measured. In ethnographic work, the fact that human behavior is not static, and that the interaction of a multitude of variables is a part of every naturalistic setting leads to inherent unreplicability. The value of such studies, of course, lies not in their replicability, but in their power to generate hypotheses, test the soundness of extant claims, qualify the scope of extant claims, and construct and test descriptive frameworks (Philipsen, 1982).

LeCompte and Goetz (1982) posit several hindrances to the reliability (the degree to which another researcher would make similar discoveries in a speech community) of an ethnographic study. The most important of these are researcher status position, choice of informants, social conditions, and analytic constructs and methods. Each of these potential snags will be addressed below.

If a researcher spends more time within certain subgroups of a speech community than others, s/he may gain a less than complete understanding of the interrelations of those various subgroups. Likewise, if a researcher belongs to a certain class of humanity (e.g., black female academic), she may be received by the speech community in a different way than were she to be some other class. In short, a researcher's role in the speech community has an effect on the phenomena to be studied.
One source of concern for reliability in this study was the fact that the researcher attained a position of authority and recognition on one of the three MUDs being observed, Law Arch of Paradox II. As such, there was some consideration of the possibility that the researcher's words and deeds might be altering or even creating the phenomena being observed. However, part of the position attained was the ability to make oneself completely invisible to all other participants. While invisible, no significant differences in the behavior of the other participants were noted. In addition, while this position was noteworthy on one of the three MUDs studied, the researcher held no such position on the other two; again, no significant differences in the behaviors of the other participants was noted. The ease with which the author could define his own social status while assuming multiple identities was an affordance perhaps peculiar to MUDs and their ilk.

An additional reliability concern for researchers is whether one's informants are appropriate spokespersons for the community under scrutiny. Clearly, if the chosen spokesperson is merely a peripheral member of the research group, their reports are less than likely to be indicative of the thoughts and feelings of the group's core members. However, the researcher's ample time spent in the field effectively nullifies the possibility of such a poor choice of informants.

LeCompte and Goetz also state that the social conditions in which a researcher collects qualitative data can have effects upon that data. Whether
the information is collected in formal individual interviews or as part of a casual conversation in a bar (Stout, 1995) can have important effects upon what sorts of information the informant is willing to part with. In this study, the primary mode of data collection was simply observation of public behavior, but occasionally E-mail (or intra-MUD mail) would be exchanged (which tended to be more verbose and specific), and sometimes directed MUD conversations or interviews would be utilized. This variety of communicative contexts ensured that the phenomena observed were not simply spawned of the particular context from which the data were culled.

A final means by which qualitative researchers may benefit their research design, thus ensuring that future researchers are able to make meaningful comparisons with their own work, is to be careful to explicitly state and define their analytical constructs and make clear their descriptive framework. In so doing, the researcher irons out any ambiguities which future ethnographers might have perceived in making comparisons, hence, improving reliability. In this thesis, care has been taken to explicate each of the nonverbal forms and functions which shall be examined as applied to MUD interactions. In addition, a section below shall make clear the specific methods whereby the research was carried out.

Notably, one of the means which LeCompte and Goetz suggest as an excellent reliability improving tactic in ethnographic research is to mechanically record as much data as possible (LeCompte & Goetz, 1982, p.
43). For this thesis, through screen copying and various logging mechanisms, this strategy was inherent in every step of the research.

Validity

Freed by virtual anonymity, the researcher enjoyed a rather brief apparent enculturation process. In other words, the relative lack of unintentional nonverbal cues to be detected in MUD environments allows a researcher to seem quite natural and proficient after mastering just a handful of simple commands. Hence, relatively little time passed during which the researcher was treated as an outsider on any of the three virtual environments studied. As such, it is reasonable to suspect that the researcher had very little negative effect on the communicative environments in question.

Validity was further assured in this study through several other means. First, as it purports to examine nonverbal communication on that class of text-based virtual realities referred to as adventure MUDs, a variety of such MUDs were studied; the three MUDs in question were different in theme, size of participant group, history, and conventions of syntax and programming. As LeCompte and Goetz (1982) state, "[external validity] is addressed to an extent by multisite ethnographic designs," (p. 51).

The fact that the 2000 hours of observations took place over more than two full years was an additional validity-ensuring detail. This study is by no
means a depiction of a moment frozen in time, but rather a continued effort at analytic observation of a specific genre of communicative environment.

LeCompte and Goertz (1982) caution against "research exhaustion", in which the researcher "goes native", and loses the ability to discern peculiarities of the culture being studied. Given the thousands of hours the author spent in the field, this was a concern at times, and it was only through regular meetings with his thesis director (who maintained a careful naivete with regards to the modalities of MUD interaction) that these pitfalls were avoided.

Validity was further bolstered by the long term observations of the MUDs examined. Over the course of nearly three years, the populations of the three MUDs was "recycled" every five to seven months. In other words, the group of participants who frequented each MUD, while retaining some core members, changed periodically, as players lost Internet access, stopped MUDding altogether, or simply moved on to explore new MUDs. This mortality effect, while noted, had no significant effect on the observed behaviors on any of the three MUDs studied.

Finally, notes were kept throughout the research process. This was often easily effected, as an intra-MUD E-mail system existed on all three MUDs being studied, and afforded the researcher a convenient method of information storage and retrieval. In addition, the multi-tasking facilities of modern personal computers made it especially simple to record examples,
Data collection

Participants

Specifying exactly who the participants are in this research is problematic, given the veil of anonymity that MUDs provide users. Though it would be possible to state the total number of registered characters on the three MUDs (approximately 15,000), it is unclear how many human beings this represents, as single users can have more than one registered character. Others have conjectured that the majority of MUD players are young, middle class, and predominantly male; anywhere from 70% to 95% has been estimated (Curtis, 1992; Bruckman, 1994), though these percentages may vary widely from MUD to MUD. Turkle (1995) states that most MUD players are in their late teens or early twenties, while noting that it is becoming more common to find nine-year-olds teaching programming to forty-year-olds on some educational MUDs (e.g., MicroMUSE).

Though the majority of MUDders reside in the United States, the broad spanning arms of the Internet assure that MUD participants come from all over the world. Rosenberg (1992) lists the countries that the players on his favorite MUD, WolfMOO, hail from: Canada, Ireland, England, Germany, Netherlands, Italy, Switzerland, Denmark, Russia, Iraq, Finland, Hong Kong, Indonesia, Malaysia, Singapore, New Zealand, Israel, Australia,
Sweden, Brazil, and the United States. Informants from Ancient Anguish, one of the MUDs studied, live in such places as British Columbia, Holland, Mexico, Nova Scotia, Australia, Spain, Italy, Argentina, and the United States.

So, while it is possible to generalize about the make up of the MUDding population (and more importantly, the make up of the participants in this study), it is not possible to put forth definitive figures. Nevertheless, one common thread that certainly runs through all of the participants on the MUDs studied is that they have Internet access and they have voluntarily connected to an adventure MUD.

Data Collection

Data for this study were collected from numerous sources. First and foremost, the researcher's logged hours on various MUDs (over 2000 hours during a span of nearly three years) provided a wealth of experiences and an acute familiarity with the communicative modalities of such environments. This intensive knowledge proved invaluable to the research design as well as subsequent analysis. Indeed, after only twenty hours or so, one becomes familiar enough with the communicative modalities of MUD interaction that the actual content of those interactions can be focused upon.

Others' analyses were gleaned from both popular literature as well as scholarly sources (within disciplines such as communication, computer
science, English, psychology, and cultural studies; these sources are reviewed in Chapter 1). Most sources were found in non-print media, i.e., they were downloaded from various personal and informational FTP (File Transfer Protocol) and WWW (World Wide Web) sites on the Internet.

Four Usenet newsgroups on the Internet were monitored closely: rec.games.mud.admin, rec.games.mud.lp, rec.games.mud.announce, and rec.games.mud.misc. Given the subject of this inquiry, it was fortunate that these newsgroups existed, and that they were so active. Surveys regarding MUDders' attitudes about the reality of their virtual experiences, MUD romance, and MUD communication were posted from time to time by other researchers, and MUDders would often make their replies public, which became an additional source of qualitative data. When particularly interesting material appeared, the researcher E-mailed the individual directly. In such an E-mail, the purpose of the study was revealed, and a few questions about the content of the individual's posting would be asked. Some responses were surprisingly candid and detailed, and provided an invaluable window on MUD relationships. Other material found among Usenet postings included songs about MUDding, poems about MUDding, and debates on how seriously one should take MUD interaction (see appendices). Needless to say, these artifacts found among Usenet newsgroups became an important source of qualitative data, above and beyond the actual fieldwork.

Clearly, though, with over 2000 hours of time spent in MUD
environments, it was the field work that the researcher was most able to
draw upon in his investigations. Entry was first gained in September of
1993, which began a learning process that would continue to develop for two
and a half years. This first MUD experience, on the public adventure MUD
called Ancient Anguish, is described at length in Masterson's (1995a)
etnographic work. A more succinct depiction shall be provided here.

One benefit of beginning field work in MUD environments is the ease
of entry. While it may take quite a while for a reporter on culture to gain the
trust of a group of Neo-Nazi Skinheads (to such an extent as they engage in
all their typical behaviors in the presence of the researcher), such hindrances
do not molest the MUD researcher. Indeed, all that is required to become an
active member of a MUD culture is a computer with a modem, time, and
modest typing skills.

It is true that MUD environments are baffling at first to the
completely uninitiated, but this bewilderment soon gives way to compelling
fascination and curiosity. One of the first realizations that one makes, as one
becomes enculturated in a MUD, is that the stream of messages on one's
screen is being produced by real people all over the world. A common
reaction to this realization is to wander around the MUD asking people
where they are, who they are, how they found out about MUDs, etc.. Such
social activity brings about the rapid enculturation of newcomers to the
virtual environment, for friendly, curious, unprompted communication
among participants is generally encouraged and even expected.

The researcher spent time on three separate adventure-style MUDs throughout the two years of the study, one strictly medieval in theme (Ancient Anguish), one with a multitude of acceptable themes (Paradox II), and one based on a popular science fiction theme (TrekMUSE). At least 200 hours were spent in each environment, during which the researcher familiarized himself with the conventions of the environments and effectively became a part of each culture.

As a participant observer, the researcher was careful to maintain some distance from the phenomena being observed, especially during the second year of the study, as the project's direction solidified. In other words, care was taken not to be completely engaged by the events that transpired in the virtual environment. In so doing, it became possible to have first hand experience with the phenomena in question, without abandoning the primary jobs of the researcher, those of observation and analysis.

Besides extensive covert participation in the three adventure MUDs, the researcher also engaged in numerous (at least 100) informal conversations about the project with other participants. In addition, when time warranted, interviews (approximately 15) were conducted and recorded with the consent of the interviewee (sample questions can be found in appendix 7). Occasionally, people would state that they didn't mind speaking as long as their name (their character's name; the player's pseudonym) was
left out of this paper, and their wishes have been respected. These recorded
interviews were subsequently studied for commonalities as well as variations
of theme, tone, and context.

The researcher's position on Paradox II also afforded the opportunity
to use a command artlessly called "snoop" to collect data. While snooping
another participant, one sees everything that appears on that person's
screen. Clearly, the potential for unethical abuse of this command exists,
and there are strict rules within the MUD for when it may be used: for bug
detection, programming assistance, and MUD security. It was only in these
capacities that the researcher made use of the snoop command; data collected
were peripheral to the reason for the snoop.

One luxury afforded the researcher in the completion of this project is
the innate recordability of MUD interaction. This can be accomplished in at
least three ways: Some client programs that enable an individual to connect
to MUDs also have a logging feature which writes to a file in one's local
directory. Alternately, one may simply screen copy to a word processor file.
Also, some MUDs provide a simple command which begins logging one's
session; this command is ordinarily used to record MUD special events, or
evidence of wrongdoing, but its utility as a research tool is undeniable. This
recordability feature eliminated the task of "transcription", so time-
consuming in most studies of this kind.
**Data Analysis**

This variety of data collection techniques resulted in a wide array of examples, extended conversations, interviews, and brief excerpts being recorded. These multitudinous bits of text (over 100 pages of transcripted conversation) were subsequently studied, compared to one another, and grouped, using Glaser and Strauss' (1967) constant comparison methodology. Each utterance, emote, action, or comment was compared to others, and subsequently placed in categories as they emerged. This categorization process, while informed by traditional categories of nonverbal forms and functions, proceeded openly, and no efforts were made to force data into inappropriate categories. It was by these means that nonverbal communication in text based virtual realities was examined and compared to analogous behavior in face-to-face interactions.
CHAPTER 3: NONVERBAL FORMS IN TEXT-BASED ADVENTURE MUDS

Preface to Chapter 3

"Think for a moment what it would be like to interact daily with others and not be able to see them," (McCroskey and Richmond, 1995, p 51).

The sense of displacement and wonder inherent in McCroskey and Richmond's statement would seem quite hollow to the dedicated MUDder, who spends in the neighborhood of one hundred hours a week doing exactly what the quote suggests that the reader merely contemplate. This lack of physical copresence is compensated for by certain features of MUD environments. Before launching into an account of how MUDders make use of these features to mimic forms of nonverbal communication on MUDs, it is helpful to note the very means by which such mimicry is effected.

The conventions (the programming) of nonverbal behavior on MUDs are provided as commands that the player may or may not choose to enact. Such commands as "smile", "bow", "drool", and "smirk" (such commands are referred to as "feelings") provide invaluable nonverbal cues that serve to enrich the communication between players. When someone types 'smile', everyone in the same room sees: "[yourname] smiles." See Appendix 5 for a complete list of feelings on the MUDs studied.
In addition to these atmospheric "feeling" commands, there also exists the "emote" command. Rheingold (1993) refers to emoting as a "a useful kind of disembodied body language." This allows a user to attach any string of words to their name, whether it be an action, attitude, or attribute. For example, if the character Vail were to type:

>emote grinz like a madman.

Then everyone in the room would see the message,

Vail grinz like a madman.

While Vail would get the output:

You emote: Vail grinz like a madman.

The combination of the various atmospheric "feelings", as well as the infinity of behaviors representable via the emote command provide MUD users with a rich textual tapestry from which to portray their nonverbal behaviors. In this chapter, ways in which these and other means are used to create nonverbal behavior in text-based adventure MUDs are examined in light of the traditional categories of nonverbal forms.

Physical Appearance

Personal physical appearance usually provides the first available data about a stranger. Right or wrong, people make inferences based on this
"superficial" data daily. Inferences are made based on others' height, weight, skin color, hair style, clothing, and any other of a host of physical attributes and artifacts.

In MUDs, however, "physical appearance" needs to be reconceptualized, given that all MUD data are textual. While it may seem at first that the entire notion of "physical appearance" is nonsensical in such an environment, it actually is the case that the realm of the physical is represented creatively and, of course, textually.

Perhaps the most apt parallel for "physical appearance" is a MUD persona's name. Just as one can walk into a room and quickly gather appearance data (which tells you, among other things, whether there is anyone present whom you recognize), one can enter a MUD room and know which others are present. Even if no acquaintances are present, the names themselves present certain data.

Names on MUDs are fundamentally different from "real life" names in the following way: they are visual. That is, the marks on one's computer screen are a part of that persona's appearance. Especially long names may make others reluctant to talk to the person, for the sole reason that the name is difficult to type. Names with numerous jagged edges (e.g., Vermithrax, which also reminds one of "vermin") may seem less friendly than those with a more rounded appearance (e.g., Qdog, which also may seem to be unique or quirky due to the use of the letter 'Q'). Indeed, the appearance and sound of
a name can often function as the necessary impetus to initiate contact with a stranger, as evidenced by this user’s report:

Well, sometimes I would be meeting someone I already know, and we talk about what’s new, or what interests us. Sometimes, I would get to know new people....I usually look at the list of names, pick an original name that sounds cool, and try to get a conversation going.

He goes on to say that he usually tries to pick a feminine sounding name, which of course is another appearance implication of a MUD-persona’s name. Just as a young man might choose to initiate a conversation with a woman on the basis of her appearance in a crowded bar, so too might he do so in a MUD room.

The name is not the only thing that sends nonverbal messages of appearance. On adventure style MUDs, characters will often have a title, which is dependent upon their (character’s) gender and class (fighter, mage, rogue, et al.). For instance, on one MUD, an eighth level mage is called a Sagacious Soothsayer (or a Sensuous Soothsayer, if the character is female). In addition to the name, this title is also displayed when one enters a room and assesses who is present. For example:

>east
You enter a room with high ceilings and yellow curtains. A table and chair sit in the middle of the room.

Obvious exits are: south and west
Newtrik the Sagacious Soothsayer

A character’s title says certain things about them. Besides whatever
attributions might be made about the name "Newtrik", an experienced player would recognize his title as being that of a mage. He or she might even know that this particular title designated Newtrik as being of the eighth level of experience. As such, he might be a good person to ask about the surrounding area. If Newtrik's title had been "Newtrik, the Monomaniac Myrmidon", one might ascertain that he was an eighteenth level fighter, and probably a good person to ask for help in dragon slaying.

Besides the data that can be gathered by simply walking into a room with people in it, there is the information to be gathered via the <look at> command. This will provided details about the character (or whatever is looked at) like their physical description, artifacts carried, and their relative health.

In the realms that are MUDs, one’s virtual physical appearance is self-selected. While people "in real life" have little choice about their physical attributes (i.e., we are a certain height, a certain build, a certain skin tone), characters on MUDs have all sorts of choices. On Ancient Anguish, there is a room in which it is possible to (for a number of gold coins, which are collected from slain monsters) "buy a description". This involves going through several menus (of things like "hair color", "build", "height", et al.), and choosing from a host of attributes listed on each menu. Most players buy their descriptions fairly early in their adventuring career. When asked why, the most common answer is that the description gives a dose of reality to their character; they
become "fleshed out", so to speak. On Ancient Anguish, there is a limited range of physical attributes one has to choose from. However, there are millions of possible combinations. A couple of examples are provided below:

Taylor is a female elf and is in good shape.
Taylor is petite and curvaceous, with lily-white skin, and emerald eyes.
Taylor has a scar on her right arm.
She is soaking wet. Taylor has wavy, dark red hair reaching to the middle of her back. Taylor is wearing a wedding ring on one of her fingers. The wedding ring emits a soft glow.

[The scar means that her character has been killed by a monster at some time. The "soaking wet" means that the MUD-weather must be rainy. She will dry out in a few minutes. The wedding ring, of course, means that she has a MUD-husband, who is currently logged in (the ring is glowing).]

Dagoretth is a male human and is in good shape.
Dagoretth is tall and muscular, with tanned skin, blue eyes, and short, straight black hair.
Dagoretth is wearing a wedding ring on one of his fingers.

[Descriptions similar to Dagoretth's are common. It seems like the natural course that players would want their male characters to be "tall and muscular". However, not everyone takes that course, as can be seen below.]

Kaldor is a male half-elf and is in good shape.
Kaldor is gangling and wiry, with coppery skin, icy blue eyes, and extremely short, bristly silver hair.
Kaldor has a scar on his left knee, his right hand, his forehead, and his right cheek.

MUD players find that having a description (which in no way benefits game mechanics) is preferable to not having one. Interestingly, Taylor's description was bought for her by her MUD-husband, which is explained
below. She chose the attributes, but he paid the gold pieces. Clearly, the husband wanted something more in his MUD-wife than a mere "Taylor is a female elf and is in good shape."

It should be noted that on Paradox II, TrekMUSE, and many other MUDs, textual personal descriptions are not restricted on any way. Some people will choose to have a description paragraphs long, with either great visual detail included (text only, of course), or perhaps the loves and fears, desires and motivations of the person at the keyboard. Owen (1994) refers to this sort of description on America Online as a "profile", in which people might choose to include their hobbies, professions, or e-mail address. Personal information is much more likely to be given on the "social" variety of MUD, as players of adventure style MUDs may want to adopt a fictional persona rather than portray their real life appearance.

Another array of data that is revealed via the <look at> command is the list of artifacts that the person is carrying. Besides the wedding ring that was evident in Taylor's physical description, one would also see that she was carrying chain mail armor (worn), a longsword (wielded), and a backpack (the contents of which would remain a mystery unless she were to relinquish the pack, and one were to type <look in backpack>). While those items might not attribute anything to Taylor other than that she was equipped for adventuring, such is not the case for certain other items. If one were to notice that Taylor was wielding a "unique" item, it could be assumed that she
was either rich or powerful or both. Unique items are singularities; programming exists such that no two of them can exist on the MUD at the same time. As such, they are very difficult to obtain, requiring great deeds of might or craftiness to acquire.

Even as singular as "unique" items are, they are still common solely in that they are part of the official game itself. Those items that exist only in Wizard's directories, but have not been approved by Quality Control, are unofficial items. For instance, a Wizard might create an object which does nothing more than make flowers rain from the heavens where ever s/he is standing. Quality Control might not approve this item for insertion into the approved realm for players, and so it would remain an unofficial item. As such, anyone carrying such an item would presumably be a Wizard, an additional attribution made on the basis of the character's appearance.

Characters on MUDs also have a physical condition, based upon their "hit points". In the example descriptions above, the first line is always "[name] is a [gender] [race] and is in good shape". This last part, the "good shape", does not refer to the cardiovascular fitness of the virtual persona, but to the percentage of total hit points the character currently has. Clearly, the characters chosen as examples were uninjured. Had any of them just returned from battle, their description might have shown them to be "slightly injured", or "hurt", or even "near death". All of these details say something about the recent activities of the character in question, in addition to
contributing to the virtual embodiment of the participants.

Clearly, though most MUDs provide no graphical interface and the participants must rely on textual data exclusively, the concept of personal appearance is not nonsensical in the least. Names, titles, personal descriptions, artifacts carried, and physical condition are all sources of potential nonverbal communication analogous to the "personal appearance" category.

Occulesics and Facial Expressions

The eyes, the "windows to the soul", have been characterized as "the most significant area of the body for communicating messages," (Richmond & McCroskey, 1995, p.67). While characters on MUDs may seem to have no bodies, no faces, and certainly no eyes, there are several aspects of MUD communication which are analogous to that most significant of nonverbal behaviors.

As has been noted, "feelings" can either be atmospheric such as in the following:

>smile
You smile happily.

Or, the feeling can be directed:

>smile baldoren
You smile happily at Baldoren.
In the second example, the character named Baldoren would get the message: "[yourname] smiles happily at you." There is a dramatic psychological difference between someone just smiling and someone directing a smile at an individual. When someone "smiles at you", it suggests not private amusement or ambient pleasure, but intentionally directed appreciation, affection, or happiness.

Naturally, this phenomenon applies with other "feelings"; to merely "scowl" could be meant as a signal to others in the room that one is not in a great mood. A directed scowl is a much more powerful action, implying displeasure focused at an individual. In both cases, eye behavior is implicitly involved at the level of intentional, directed communication.

On Paradox II, when players type "look at [object]", the environmental message is "Magnafix looks over the [object]". This environmental message caused some concern when players would look at each other, because the message to the person being looked at was "Magnafix looks you over." One user referred to this message as being "a bit off-putting", and that it made her "feel like a piece of meat". Several other players confirmed this sentiment, and so the Immortals changed the code so that when a player was looked at, they would receive the message "Magnafix looks at you.". This alternative output was met with approval from all those concerned.

That fact that this issue of semantics could provoke displeasure warranting an actual programming change speaks to the power of language,
the importance of sensitive coding in MUD creation, and the communicative implications of eye behavior, even virtual eye behavior.

On certain MUDs, "rogues", or "thieves" have a special ability that could be categorized as an aspect of eye behavior. This skill allows the rogue or thief to take inventory of another character's possessions without the player knowing it. Often called "peek", or "judge", the skill is not always successful, and when the target notices the rogue's activities, they get the message: "[rogue's-name] glances at you slyly." Naturally, this would arouse the target's suspicions, and the rogue would probably flee before being attacked or reprimanded.

This "sly glance" is an additional example of how a MUD's programming can provide for most nonverbal eye behaviors. While merely text, the force of the words themselves can move a MUDder to drastic action if s/he suspects that s/he has been robbed. This is also one of the few examples of unintentional nonverbal communication on MUDs, as the rogue has no control over how successful his/her "peek" will be.

One mud supplies numerous feelings (emotes that are programmed into the environment) which simulate eye behavior. Among these are roll (your eyes), blink, glare, leer, lower (your eyebrows), ogle, peer, raise (an eyebrow), and stare. All of these feelings can be atmospheric, or they can be directed at another player. In addition, most have an array of possible adverbs that can be attached, all of which are accessible via the "ehelp"
(emote help) command, which works in the following manner:

> ehelp stare
***stare (happily, sadly, worriedly, lazily, rudely, dazedly, hungrily, absent-mindedly, sternly, longingly)

> stare h
You stare happily into space.
> stare l graveweed
You stare lazily at Graveweed.

As can be seen, <stare> can either be an atmospheric command, or can be directed at another player, in this example, Graveweed.

Another mode by which eye and facial behavior is represented by users is the use of "smilies", or emoticons. These creative textual icons modify the emotional impact of statements, such as evidenced in the following:

1. [Gossip] Beaker: Spring break starts 1pm tomorrow for me. :)
2. [Arch] Magnafix: do that for me? if ya dont mind ;)
3. [Arch] Aarchon: that's a tough one :
4. [Arch] Aarchon: oops, that was a frowny- uh oh ;)
5. [Arch] Aarchon: at least Ender had a motive O:)

In the first example, Beaker lets listeners know how he feels about the onset of his spring break by including a smiling face :). In example 2, Magnafix softens a request with a winking smiley. Example 3 shows Aarchon's frustration with a task. In example 4, Aarchon shows his sarcasm with a winking smiley. Finally, Aarchon makes reference to his other character, Ender, who was constantly doing good deeds, and hence wore a halo.

It is in these ways that eye behavior is represented on MUDs.
Naturally, an infinity of emotes can be constructed as well, to further enrich the virtual eye behavior of MUD participants. The fact, though, that several modes of eye behavior are actually coded into the MUD, as well as the effects of that coding (as demonstrated in the "looks you over" example above) speaks to the "real-ness" of these virtual environments. Eye behavior happens on MUDs, and is perhaps no less important there than in real life.

Haptics

Haptics, or the way in which we use touch to communicate, is a fundamental nonverbal code which has a significant impact on how we perceive our relationships with those around us. Touch can be used to stress a point (as evidenced in such examples as "Aarchon punches you in the face to get his point across"), lighten interactions, control interactions, greet new friends and old enemies, and provide pleasure and pain. While the uninitiated may suspect that as mere detached avatars of immaterial consciousness, the notion of touching and being touched within MUD environments seems fanciful or even absurd. On the contrary, MUD enthusiasts' sense of embodiment extends into those realms that make haptics quite meaningful, as can be seen in the following example of haptic banter:
Medea says: Anyone want the pleasure of pulling it off....
Medea grins mischievously.
Jordan says: ouch
Jordan hands Flint a lot of painkillers
Suze says: i'll pass
Medea grabs a bit of the wax and gently begins to remove it.
SLOWLY!
Kaldor watches with interest.
Medea grins mischievously.
Suze says: slowly just increases the pain. do it fast.
Medea says: I know Suze..but...
Medea grins mischievously.
Medea waits just a moment and then yanks all the wax off the left leg.
> Medea rubs her hands across the smooth surface...
Medea says: soft and smooth as a babies butt

The preceding transcript, edited for clarity, was observed on Ancient Anguish in February of 1996. A popular immortal had been in the room previously, and then had become invisible, so that the players (mortals) in the room could not be sure whether he had subsequently left the room, or remained invisible. In an attempt to get a rise out the invisible, possibly present wizard, Suze, Medea, and Jordan decided to wax his legs. Though the entire charade was a fantasy (perhaps doubly so), being constructed creatively with the emote command, the fact that such a strategy occurred to these virtual ne'er-do-wells is indicative of the importance MUDders attach to haptic phenomena.

Haptic phenomena on MUDs do not consist solely of playful exchanges such as shown above. Besides such antisocial feeling commands as bite, kick, slap, punch, spit, and bonk, a much more alarming variety of MUD haptics
has been known to occur: rape. Constructed by the same means as the hot waxing already described, people have been known to return to their computers after a break (or after an extended period of net lag) only to find that their character has been defiled and abused in unspeakable ways.

While the author did not hear of a single case of MUD rape from informants on any of the three MUDs studied, it was a topic with which users were acquainted, and the subject of an extended thread of USENET discussions.

On the other hand, when two (or more) MUDders get together and collaboratively author present-tense erotica, it is known as MUDsex (also called Tinysex, cybersex, and MUDscrupting). MUDsex can be quite meaningful and/or exciting for participants. One MUDder reports that he "found mud sex enjoyable. It was partially exciting, but it had a lot of the intimacy that rl [real life] sex has at times." MUDsex, and with whom one has it, can be a source of considerable jealousy and intrigue. Another informant told the author that since he "was MUD-married, I couldn't actually have MUD *sex* with anyone else. I could fool around and stuff, but couldn't actually have sex." His statement could just as easily have come from a "real life" source.

Ancient Anguish provides a wealth of rather provocative haptic actions via their "Pink Elephant", a weightless object that was created solely for that purpose. The author endeavored to acquire a transcript of some of these actions, but when users were asked, "Do you mind if I enact a few pink
elephant commands on you for my thesis data?", he was repeatedly denied (a fact indicative of the weight attributed to haptic phenomena). Hence, the following examples were enacted upon Drudge, a programmed personality, or "bot", who runs one of the local bars on Ancient Anguish.

```
dkiss drudge
You give Drudge a deep kiss, leaving him gasping for air.
> Drudge bustles about the bar, cleaning and tidying.
> ltouch drudge
You touch Drudge with loving hands.
> jeans drudge
You sneak your hands into the back pockets of Drudge's jeans, pull him close and give him a deep, lingering kiss.
Drudge says: Can I get you something to drink?
> nclimb drudge
You climb in Drudge's lap and nestle against him.
> Drudge looks at you with twinkling eyes.
button drudge
You stick your tongue into Drudge's belly button and place hot kisses around it. He shivers with delight.
```

Through feelings and emotes, the haptic code is richly represented on MUDs. Experienced users will generally touch and react to touches in much the same way as they might in real life; they'll slap a stranger groping them and hug a friend. Even restricted to a strictly textual means of communication, haptic phenomena can be creatively and meaningfully portrayed in MUD environments.
Vocalics

Vocalics, or the communicative phenomena arising from one's voice, provide a vast quantity of nonverbal cues in ordinary face-to-face communication. Nuances of pitch, tone, rate, loudness and pauses can supply a wealth of communicative meaning beyond, or even in contradiction to, the actual words that are spoken. While at the time of this writing, no known MUDs support a real time audio interface, certain mechanisms of the MUDs, as well as the creative contrivances of MUDders, make for phenomena clearly analogous to this important nonverbal form.

Among the three adventure MUDs observed, there were several mechanisms for producing what might be called utterances. The terminology varied slightly (TrekMUSE was most dissimilar, being based-on a different programming language), but these mechanisms can be broken down into the terms channels, shout, yell, tell, speak, say, mutter, mumble, and whisper. Each of these mechanisms will be described below.

The most reasonable real life corollary for the chat channels on MUDs is probably citizens' band (CB) radio. Depending on their guild, class, level, and other affiliations, MUDders may have access to one or more chat channels, upon which they can communicate with others, unconstrained by the virtual distance between them. Each channel has a name, such as "[Gossip]" (for general chat), or "[Fighter]" (for fighters). While violating the
spatial metaphor, this is an example of making use of MUD environments in a way that would be much more complicated to effect in the "real world".

The shout command could be called the "loudest" of the mechanisms provided for producing utterances. When a MUDder shouts, s/he sends a message to every other user. The potential for abuse ("spamming", filling up others' screens with superfluous text) exists, and the Immortals monitor use of the command as a result. Given that the message sent goes to every other user, the use of shouts is generally limited to announcements and exclamations, as evidenced in the following examples:

Kathy shouts: When anyone sees QDOG tell him I hate him, that ass.
Thor shouts: does anyone know the ftp address to Georgetown University?

Unless restricted by a convention creatively referred to as "earmuffs", the above messages would have gone to every user on the MUD. On Ancient Anguish, users can set their earmuffs to various levels, thus creating a filter for messages of varying levels of importance, measured by the level of the person shouting (wizards being the highest level).

In order to dissuade users from shouting excessively, Ancient Anguish's shout command costs a significant amount of "spell points", which are required for spell casting and other activities. As the "loudest" and most invasive of the mechanisms for producing utterances, shouting may also be the least common.
Yelling is not nearly as functional as shouting, though it enhances realism and reinforces users' experience of the spatial metaphor more effectively. It is not as functional as shout, in that the message yelled does not appear on the screens of all users. It reinforces the spatial metaphor in a way made evident by the following example from Paradox II:

Phlabgst yells: RESCUE ME!
[ Everyone in the same room as Phlabgst sees the above, while users in adjacent rooms get the message below: ]
You hear a male human yell: RESCUE ME!
[ While people in the room adjacent to the second room get the message below: ]
You hear a voice yelling nearby.

In the second message, which goes to everyone in the rooms adjacent to the room in which the person yelling resides, note the phrase "male human". Had Phlabgst been a female ogre, that fact would have been indicated.

Possible uses of the yell command include simple atmospheric intensification of the spatial metaphor; a player may simply find it interesting, or humorous, that their muffled voice is being heard in the adjacent rooms. Another possible use may be for when two players are exploring a maze, or perhaps a darkened labyrinth (in which case, each room is merely described as "It is too dark."), just as two lost adventurers might call to each other in real life.

The tell command (called 'page' on TrekMUSE) simply sends a message to another user, without any output for other users. As this violates the spatial metaphor by allowing long distance communication, it costs the
user a few spell points (needed for casting spells) or stamina points (needed
for effective combat). A shortcut command has been created on Paradox II: reply. The reply command sends a message to the last person from whom a
tell was received. This shortcut can create confusion, however, when
someone is sent a tell while composing a reply, as the reply goes to latest
(intended) recipient.

The say command is the most commonly used mode of producing
utterances. It simply sends a message to everyone else in the room, preceded
by the character's name and "says: ". In the following examples, the "->
character represents the MUD command prompt.

Aarchon says: Hiya, Mag.
->say hello
You say: hello

On Ancient Anguish, the say command has been customized to recognize the
'!' and '?' characters at the end of a sentence, hence producing the output
"Aarchon asks: Howya doin?'', or "Aarchon exclaims: That absolutely rocks!''.

On Paradox II, the say command has been customized in such a way
that if a user simply types "say" (thus saying nothing), then other people in
the room see that they "mutter something to themselves". On Ancient
Anguish, a similar function is served by the "mumble" command. For
example,

->mumble pesky administrators
->You mumble something about pesky administrators.
Magnafix mumbles something about pesky administrators.

These conventions serve solely to add color and interest to a mode of communication that might seem dull to the uninitiated.

A colorful convention of language has been created on both Ancient Anguish and Paradox II: players may speak in different languages. These are not languages like Spanish and Zulu, but languages consistent with the fantastical milieu of the MUDs; languages such as Orcish (spoken by orcs), Elvish (spoken by elves), and Wulinaxin (spoken by satyrs). Depending on one's fluency (which is determined on Ancient Anguish by one's race, intelligence, and wisdom, and on Paradox II by one's race, and the amount of time spent training with a programmed personality called The Sage), one may or may not be able to speak fluently in the various languages. A brief example from Paradox II follows:

> Magnafix says something in Terrakarn.
  speak in terrakarn can I speak this language?
  You don't know how to speak Terrakarn.
  > Magnafix says in Kendrall: can you understand this?
  speak in kendrall yep!
  You say in Kendrall: yep!

Of course, if one is not sufficiently proficient in a language, one's words end up rather jumbled, as this user experienced:

> speak in terrakarn hi there, I'm headed for the store. You need anything?
  You say in Terrakarn: hamster blarg duh burrito womble something lait jello. You something driznit?
As one's proficiency increases, the messages become less and less jumbled until finally, one is completely proficient.

One final mode of MUD communication that could be said to produce "utterances" is the whisper command. This is another attempt to recreate "real life" within the boundaries of the MUD. One may only whisper to someone in the same room, and an example is provided below:

> whisper vandal what do you think about this?
You whisper to Vandal: what do you think about this?
Vandal whispers to you: Seems fine to me.
[ Meanwhile, others in the room would have seen: ]
Magnafix whispers something to Vandal.
Vandal whispers something to Magnafix.

The whisper command's utility lies in its ability to entice others in the room with the knowledge that a conversation is being held which is purposefully being made known, but in which they are not included.

Besides the commands which produce utterances on MUDs, there exist conventions which have been gradually developed by users over time. These social phenomena have been created to mimic certain aspects of vocalics which are unavailable in text-based worlds.

Emphasis can be added to a word or string of words by capitalizing, prepending and appending the desired phrase with an asterisk or underscore, as demonstrated in the following examples from Paradox II:

Aarchon says: if I didn't have to butt heads with you EVERY time!
Ender says: Gosh, I *love* this place!
Wraith says: _I_ never took your equipment.

An impressive array of terms, acronyms, and ASCII depictions has also been invented, such as afk ("away from keyboard"), brb ("be right back"), lol ("laughing out loud"), bbl ("be back later"), irl ("in real life"), and imho ("in my humble opinion"). The single character "?" is often used to mean "Excuse me, I didn't catch that?", or "I don't understand." On Paradox II, players use the expression "[]" to refer to the village square, the center of the MUD's geography. Immortals may speak in "codespeak", or use the logical symbols of MUD-programming in the course of conversation. In the first example that follows (both are taken from Paradox II), use is made of the logical symbol "!=", used in coding to mean "not equal". In the second example, the "add_limb()" function is parodied, ordinarily used to add a non-standard limb to a creature an Immortal is building, such as a horn to a horse to create a unicorn.

Aarchon says: kin bugged me about it, and I said "Had it occurred to you that Giant king != Giant elder?"
Aarchon says: call kinslayer;add_limb;ego :)

Accents can be represented textually through word choices and spellings, though sometimes this can result in interpretations other than the speaker had intended; as evidenced in the following log:

You say: you reckon it _cannot_ support initiation and retirement?
> '?'
Likewise, it is sometimes clear that a participant does not have a complete grasp of the English language. While it is true that a few MUDs cater to those who speak other languages (such as German, Dutch, and Spanish), the vast majority have been created with English speakers in mind.

Pauses and their uses are important phenomena in the study of vocalics, however pauses on MUDs are quite a different object of scrutiny. As such, they will be treated in the Chronemics section below.

Chronemics

The use of time as a communicative channel can be a powerful, if subtle, force in face to face interactions. While it can evoke strong emotional reactions (e.g., when someone is late for an important or symbolic event), it can be difficult for a group or dyad to recognize shared perceptions of time, hence it can be of ambiguous meaning. In addition, cultural conceptions of the importance of time vary widely, which can lead to further confusion and
ambiguity.

Though some MUD phenomena are clearly analogous to the concerns of those who study chronemics, others are brought about by, and specific to, these environments. In addition, certain phenomena which ordinarily would be considered the domain of vocalics fit more comfortably within the purview of MUD chronemics, namely, pauses in conversation.

MUD commands are parsed only upon carriage returns, unlike the UNIX talk utility, in which two users see each other's text at the very moment it is being produced, complete with backspaces and typos. As such, utterances (produced by any of the means detailed previously) are only broadcasted when the user presses the enter key. This has significant implications for the uses and meanings of silence in MUD conversations.

For instance, even though a user may be rapidly typing a long "say" command, her actions will be indistinguishable from idleness for anyone else in the room. MUDders occasionally attempt to make up for this idiosyncracy by keeping their utterances relatively short (a sentence or two), and sometimes warning of a long burst of text, as shown in this example:

Phlabgst says: what should we do now?
Tanya says: well,
Phlabgst nods.
Tanya says: I really think that it's important that we run back to the shop before we even attempt the bank guard. I mean, we couldn't carry all the bank guard's stuff anyway, right?
Phlabgst shows his understanding of this MUD-communication technique by nodding after Tanya begins with "Well,". The time between the appearance of Tanya's two utterances on Phlabgst's screen may have been a minute or more depending on Tanya's typing skills and whatever net or system lag was in effect (net lag being a delay caused by Internet traffic, and system lag by an overworked MUD server).

The combination of the lack of feedback between users' carriage returns and the possibility of system delays results in a curious reversal of turn-taking behaviors, pointed out by Marvin (1995). In face to face communication, when one person is indulging another with an extended utterance, the listener may be listening for pause or other appropriate juncture at which to step in with her own comment; in short, she may be wondering, "When is this person going to stop?" In contrast, when someone on a MUD is typing a long utterance (during which others see no output), a listener may be wondering "When is this person going to start?" Indeed, long pauses may lead listeners to wonder if the speaker is still participating, or has gone "afk" (away from the keyboard), or if the speaker has succumbed to lag, only to suddenly have several lines of text appear on their screen as the speaker hits the enter key.

To make up for this idiosyncracy, MUDders may warn others of an impending extended utterance (as evidenced in the example above), but more often, utterances are kept short, and users become adept at maintaining
more than one conversational thread at a time, which can sometimes lead to
ambiguity, as evidenced in the following transcript.

1 [Elder] Magnafix: I see how you make channels unspeakable
2 [Elder] Battalis: and change the help if you wish... will
   move the test object to it
3 [Elder] Battalis: where? How?
4 [Elder] Magnafix: in a define at top of channel_d
5 [Elder] Battalis: that was, the test object_c to Object.c
6 [Elder] Magnafix: ANNOUNCE_CHANNELS
7 [Elder] Magnafix: and then later if (member_array(verb,
   ANNOUNCE_CHANNELS)!=-1) return 0;
8 [Elder] Magnafix: should say, "you cannot speak on that
   channel"
9 [Elder] Battalis: ok... the new Object_c file is in, with a
   backup of the old file
11 [Elder] Battalis: I don't get that when I try to speak on
   announce
12 [Elder] Magnafix: I'll look at _read
13 [Elder] Magnafix: I know,
14 [Elder] Magnafix: that's a wish
15 [Elder] Battalis: just get "what?"
16 [Elder] Battalis: shouldn't be too hard to do...
17 [Elder] Magnafix: eh?
18 [Elder] Battalis: the "You can not speak on that channel"
   bit
19 [Elder] Magnafix: righto, needs a notify_fail
20 [Elder] Battalis: but, go ahead and cp it in...:
21 [Elder] Battalis: yep
22 [Elder] Battalis: the _read.c file that is
23 [Elder] Magnafix: arrg, two convos at once ;)

In this conversation, two Immortals on Paradox II, Magnafix (the
author) and Battalis are discussing (on the chat line called "Elder", which is
restricted to certain Immortals) two separate coding conundrums, one
regarding the interaction of the read command and the basic inheritable
object, the other regarding the daemon which determines which chat
channels can be spoken on by whom. So, lines 1, 3, 4, 6, 7, 8, 11, 13, 14, 15,
16, 18, 19, and 21 discuss the channel daemon, while lines 2, 5, 9, 10, 12, 20,
and 22 refer to the object/read issue, and lines 17 and 23 reflect one
participant's frustration with the multi-layered conversation. Note that this
could have been even more complex for Magnafix had he also been
maintaining a conversation via "tells", "says", or on another chat channel(s).
Experienced MUDders grow quite adept at this multi-level conversational
technique, sometimes maintaining upwards of five separate conversations
through various independent channels.

This is a chronemic phenomenon for which there is no clear analogy in
face to face communication. While it is perhaps possible, in theory, for an
individual to maintain separate conversations with more than one person in
a (real life) room, it is difficult to imagine that one would be able to absorb
anything of what one's partners were saying. On MUDs, one has the luxury
of utterances being preserved on the screen, and many operating systems
support screen buffers hundreds of lines long, giving conversants the
opportunity to refer back to previous stages of their conversation(s).

Another chronemic MUD phenomenon which has no comfortable
parallel in real life is typing skill. While it is true that speech impediments
and rate of speaking have an impact in face to face relations, it is less of a
chronemic issue than it is a vocalic issue. On MUDs, a user with a fast link
(i.e., they are experiencing little lag) who types ninety words per minute will produce the vast majority of utterances in a conversation with a user who is just learning to type. Also, it may prove difficult for the slower typist to keep up with such a conversation, for as soon as they've typed a response, they may discover that their faster counterpart has already made their remark irrelevant.

A character's age has communicative import as well. Age is calculated by simply adding up all the time that a character has spent logged into the MUD. Some players will weigh someone's age against their level to ascertain skill level. This information is provided via the "finger" command (which is also borrowed from UNIX), so that one would see:

> finger cael
High mortal Cael is the Immortal Bound
Male arterr monk of the Serpents. Level: Level 20
In real life: Tony
Birthday: Capella 10, -2 BC Single
Age: 1 day 8 hours 48 minutes
E-mail: *****@mail.oit.osshe.edu
Last on: Thu Feb 29 01:49:25 1996 from *****
Cael has read all of his 3 messages.

From the information given above, one could ascertain that Cael advanced 20 levels in a mere 32 hours, indicating either consummate skill or significant assistance from others. Likewise, if one saw the following,

> finger death
Death the Serpentine Initiate
Male elf mage of the Serpents. Level: Level 11
In real life: lord of the dead
Birthday: Sirius 15, -3 BC Single
Age: 5 days 19 hours 18 minutes
E-mail: *****@midwest.net
Last on: Fri Mar 8 22:02:50 1996 from marion12.midwest.net
Death has no mail.

one could ascertain that the character named Death has advanced a mere 11
levels in over 139 hours, a rate that indicates either painfully slow MUDding
skills, or (more likely) that Death has spent much of his time socializing, or
puzzle-solving, or other activities that do not contribute to the advancement
of one's character.

One implication of the various causes for silence (being "afk", lag,
typing long utterances) is that users can claim any of them as an excuse for
silence. For example, someone could sit idle at the keyboard for several
minutes, so that people would think she was no longer participating in the
conversation, when in fact she was watching the conversation taking place
with great interest, but not contributing. Likewise, one could not answer a
difficult question by claiming that they were "afk", or that lag had descended
upon them.

A chronemic phenomenon with a clear counterpart in real life (and
especially other studies of CMC) is that of response time to MUD-mail. Just
as a prompt reply to an e-mail can show involvement and courtesy, so too is
the case with MUD-mail, the intra-MUD mail system.

While the term "chronemics" in the context of MUD communication is
not nonsensical, it refers to whole different class of phenomena than it does in face to face situations. As Carlstrom (1992) reminds, "[MUDs are] a new kind of communicative environment," and as such, not all nonverbal communication forms will be readily translatable.

Kinesics

Kinesics, as "one of the richest nonverbal codes" (Burgoon et al., 1989, p. 36), provides communicators with a wealth of nonverbal information in face to face interactions. This statement holds partially true when applied to MUDs. It breaks down only in that, in face to face interactions, it is impossible for able-bodied humans to not display any kinesic cues, for even as one tries to remain absolutely motionless, others will quickly discern that goal.

One of the most notable schemes for classifying the structural elements of the nonverbal code of kinesics is Eckman and Friesen's (1969) outline of emblems, illustrators, affect displays, regulators, and adaptors. In the this section, the representation of MUD kinesics will be examined in light of this reknowned categorical schemata.

Emblems are those kinesics behaviors which have a direct verbal translation and are most often used with the conscious intent to transmit a message, such as lifted shoulders and upturned palms to indicate "I don't
know". While this category may prove to be superfluous in a world created entirely by words, a few examples will show that some commonly accepted emblems are represented on MUDs. For instance, Paradox II supports numerous varieties of the emblem described above; the output of the "ehelp" command is shown below.

\[
> \text{ehelp shrug} \\
**shrug (helplessly, pathetically, dejectedly, carelessly)\]
\]

Any one of the adverbs provided may be attached to an enacted feeling command, thereby altering the tone of the shrug. Paradox II also supports a command arguably categorizable as emblematic: the "brb" command sends a message to other users present, "[Your-name] will be right back". Ancient Anguish supports one of the most celebrated (and reviled) emblems in their "ffinger" command, which returns the output "You give [player] the finger.", (the double f being required to delineate it from the Unix "finger" command).

So, while emblems may prove to be a problematic kinesic code (given the textuality of MUD environments), they are representable.

Illustrators are those kinesic acts which aid in the description of what is being said. While in "real life", such behaviors would generally be concurrent with the speech being produced, this isn't possible on MUDs, except insofar as the following example shows:

Phlabgst says: Maybe we could get in there *points to the locked door*.
Affect displays are those kinesic behaviors which display emotion. A couple of the more colorful affect display feelings available on Paradox II are "dance" and "bounce".

> dance h mag
You dance happily with Magnafix.
> bounce a mag
You bounce around the room with Magnafix.

Clearly, the enacter of the examples above is quite pleased, and this fact is made clear via affect display kinesic actions. Another affect display command available is the "puzzle" command, which sends the message to others present, "[Your-name] has a puzzled look on her face".

Regulators are those kinesic behaviors which aid in the turn-taking of conversations. Given the fact that turn-taking is quite a different phenomenon on MUDs than it is in face to face interactions, the regulator code becomes problematic. For instance, interruptions may occur on MUDs (insofar as someone may change the topic while one is still typing an utterance related to the previous topic), but they are not the same phenomenon as they are in face to face interactions at all. While face to face conversations can (and often do) involve simultaneous speech, the sequential parsing of MUD commands effects a kind of automatic turn-taking enforcement. Hence, the regulator kinesic code is less meaningful on MUDs.

Adaptors are similarly problematic when applied to MUD interactions. Adaptors are those behaviors which are essentially private reactions to
stimuli, such as fidgeting when nervous. Ordinarily, adaptors are thought of as being involuntary, which is from whence the problem for MUDs derives. In other words, for a MUD persona to fidget when nervous, they would need to voluntarily type something like "emote fidgets fitfully". This is not to say that such actions do not occur. On the contrary, while observing a MUD wedding on TrekMUSE, the author was intrigued to note that the bride-to-be "checked herself in the mirror", "bit her lip nervously", and "wrung her hands" when the groom was late to the ceremony (See Appendix 6). Such adaptors are probably more common on MUDs on which role-playing is encouraged.

Besides Eckman and Friesen's categories, there exists a class of phenomena on MUDs which seem to be kinesic in nature, but may be unique to MUDs, having no comfortable analogy in face to face interactions. Whenever a MUD persona enters or exits a room, a message is transmitted to the room being entered and the room being vacated. The vast majority of the time, these messages take the simple form "Vail leaves east." and "Vail enters." However, there are exceptions to this generality. Immortals can set their enter and exit messages to anything they prefer. A couple of examples follow:

A globe of blue light floats in and resolves into Aarchon. Aarchon trips, misses the ground, and drifts off into the clouds.

A mass of inky green smoke appears, and Magnafix steps out! Smiling, Magnafix dissolves into a maelstrom of jagged shadows.
Mortal enter and exit messages are only changed under certain circumstances. For instance, Paradox II supports limb-based combat (meaning that attacks don't merely "hit", but that they hit an arm or a leg or a hand), and limbs are occasionally severed in the course of adventuring. When a foot is severed, the mortal's enter message becomes "Vail crawls in.", while the exit message would change to "Vail crawls east." On Ancient Anguish, a character's intoxication level (as measured by the amount of "firebreathers", or other healing beverages, have been consumed) can affect their enter messages, by changing "leaves" and "enters" to "stumbles".

Through these means, stimuli analogous to real life gestures and movements are simulated on adventure MUDs. As noted, the analogy is not always perfect, and these difficulties will be examined more closely in Chapter 5. However, such things as enter and exit messages and numerous feelings work to reinforce users' sense of how important "body language" is, hence contributing to their feeling of embodiment and reality on the MUD.

Olfactics, Proxemics, and Environmental cues

The three nonverbal codes regarding smell, space, and environmental cues have been grouped together in this section because of their limited utility as applied to MUD interactions. This discovery prompted the author
to examine whether these three codes had some commonality, some linking attribute which would explain why certain other codes are well represented on MUDs, while these three are less so.

One possibility is that these three codes truly require mutual physical copresence to be meaningful. It is difficult to imagine notions of personal space or smell being of any particular concern in video conferencing, for example. In a strictly text-based environment, they may be even less so.

However, this is not to say that no attempt has been made to represent smell, space, and environmental cues on adventure MUDs. Nor is it the case that MUD users have no sense of these three codes within the MUD environments. The ways in which olfactics, proxemics, and environmental cues are created and compensated for on adventure MUDs is testimony to the ingenuity of those who have helped create MUDs and the zeal with which MUDders reify MUDs as meaningful, legitimate spaces for interaction.

Olfactic phenomena are represented in a limited sense on two of the MUDs studied. On Ancient Anguish, there exist "bottles of perfume". When applied (by typing "apply perfume"), the character begins leaving a scent of lilacs behind as s/he travels about the MUD. In other words, as others enter a room the perfumed character left recently, they get the message "The scent of lilacs hangs in the air here."

The use of space, or proxemics, can be meaningful on MUDs as well. For instance, just as the mortal/immortal dichotomy is quite distinct, wizard-
space and player-space are distinct. Wizards make efforts to stay out of player-space, and the players have no means to get to wizards' rooms (because they cannot teleport, in general). In addition, the cartographic features of the MUD environment can make distances quite pertinent to users. For instance, mortals must often type hundreds of commands (e.g., "east", "west", "cross bridge", et al.) to get from one end of the MUD to the other. This is especially true of Ancient Anguish, with its 5000+ rooms.

Rooms can also become crowded, even though space is not specifically depicted within rooms (i.e., a room is as large as its description asserts). While there is no limit to how many users can actually "fit" in a room (unlike real life), there is most certainly a limit on how many users can comfortably and effectively interact in a room. Cherny (1995a) describes how users on a social MUD (the events which transpired could just as easily have occurred on an adventure MUD) recognized and then dealt with this fact. A meeting was held, attended by a relatively large group of users. Everyone had something to say, and suddenly everyone's computer screens were scrolling wildly as various threads of conversation and debate were produced by the multitudinous attendants. In short, chaos reigned. Quickly, the organizers recognized the problem, and first tried to solve it by asking everyone to raise their hands (via the emote command). This, of course, simply produced a flurry of hand raising, hardly solving the problem. In the end, programming a special object was the solution: a microphone. Only the person with the
microphone was able to speak, and it was passed around with some semblance of order.

Environmental cues can be of some import on MUDs as well. On TrekMUSE, great care was taken to choose an appropriate location for a wedding (an observation lounge on a space station was the final choice). Also on TrekMUSE, there are strict interplanetary laws which govern when individuals of various rank and class are allowed to visit the home worlds of the various organizations. On Paradox II and Ancient Anguish, the various guilds and classes all have rooms to which non-members are not allowed visitation (this also being an issue of proxemics -- the guild halls are the guilds' personal spaces). The guild and class halls act as conference rooms and help to reinforce group identity, much as they do in the "real world".

So, while the codes of olfactics, proxemics, and environmental cues may be of limited utility when applied to MUDs, they are not meaningless, as has been shown. Essentially, the degree to which any nonverbal code is made important on a MUD is limited in part by the creativity and ingenuity of the programmers.
While dividing nonverbal communication into its component parts is one way to describe and explain the phenomena, many scholars choose to examine it in terms of how it is used by interactants. This chapter, guided by Patterson's (1990) framework, contains numerous examples and explanations of how it is that MUDders use nonverbal communication to accomplish various goals, beginning with that most basic of functions, "providing information".

Providing Information

Obviously, nonverbal behavior has informational content for those observing it. From nods to blushes to where one sits at the dinner table, potential communication springs from plentiful non-speech sources. In a text-based world, however, the modes by which such communication is accomplished are completely different, which has some implications for how such information is delivered and received.

For instance, scholars who examine this phenomenon in face to face interactions make reference to the encoding and decoding process. That is, the manner in which internal states and volitions are represented
nonverbally, and the means by which observers make sense of such behavior. On a practical level, MUDs simplify these processes drastically. Encoding is accomplished by typing, decoding by reading. While slightly downturnturning the corners of the mouth may be interpreted alternately as a frown, a smirk, or nausea in physically copresent situations, MUD conversants must choose to either type "frown", "smirk", or "emote feels nauseous".

One might suspect that this leads to relationships in which nonverbal behavior is never accidentally displayed or misinterpreted, a socially utopian scenario bereft of misunderstandings and hurt feelings. Unfortunately, this is not so. In the first place, a simple textual "frown" certainly has a less complex meaning than the frown that we see in person, the subtle frown which is accompanied by the slightly raised eyebrows, the welling tears, the closed posture, and the lowered head.

There is another source of ambiguous information portrayal on MUDs, that which stems from idiosyncracies of the preprogrammed "feelings". For example, on Paradox II, there exist numerous optional adverbs that one may attach to an enacted feeling command. As described elsewhere (chapter 3, "Occulesics and facial expressions"), the "ehelp" command accesses the entire array of adverbs for a given feeling, which may then be abbreviated to the first distinct letter(s) of the desired adverb. A brief transcript illustrates:

```
> ehelp wave
**wave (frantically, byebye, hello, goodnight, farewell)
> wave g
```
You wave goodnight.

The idiosyncracy mentioned above occurs when one isn't careful to use the distinct letter(s) of the desired adverb. For example, one may type "wave f", assuming that this will produce "[your name] waves farewell.". However, a closer look at the array of available adverbs reveals that "wave f" will actually insert the adverb "frantically", a potentially undesirable result. (The solution, of course, is to type "wave fa" when one wishes to wave farewell.) Other examples of this idiosyncracy abound, especially with feeling commands which have a longer list of available adverbs (such as "smile", with its eleven available adverbs), or those which were simply programmed carelessly. For example, a frequently enacted feeling command is "raise", which, when directed at another user, produces the output, "You raise an eyebrow at John." A related command is "lower", which, when directed at another user, produces "You lower John's eyebrows.", while the intention was clearly to produce "You lower your eyebrows at John."; this error has since been repaired.

Patterson (1990) makes reference to three types of information provided by nonverbal behavior: emotional reactions, interpersonal affect, and personality characteristics. Each of these types will be briefly reviewed in light of MUDs below.

Emotional reactions are difficult to conceal in face to face interactions.
On MUDs, however, the primarily intentional nature of nonverbal behavior makes the concealment (or deceptive portrayal) of emotional reactions a few mere keystrokes away. In the words of one user, "There's nothing easier than to simply type "smile" [to feign interest] when someone blathers on about nothing for a while."

Nonverbal behavior can also indicate certain personality attributes to observers. Frequent, animated gestures can indicate a dramatic personality, while a closed posture and soft voice may signify a more reserved nature. While the means by which such information is provided and interpreted are different on MUDs, the personality characteristics are still discernible. For instance, some users attach a "smiley" (q.v.) after all or nearly all of their utterances, portraying a congenial, jovial personality (which, incidentally, also makes it easier to make harsh statements, as the smiley softens the blow). Naturally, these perceived characteristics may not correspond to the characteristics of the person as they interact in face to face relationships, and may be more appropriately discussed in the section, "Presenting identities and social control".

Interpersonal affect refers to that information which people endeavor to use to answer personal ponderings such as "How much does she like me?". Many of the correlates of face to face behaviors that people use to resolve such questions can be used in MUD environments as well. For instance, mutual gaze (see chapter 4, "Expressing intimacy"), and touch frequency and
type (see chapter 3, "Haptics") are used by MUDders in the same ways as one might use such information in a face to face interaction to ascertain how much one is liked (or despised).

Patterson (1990) makes note of one final way in which nonverbal behavior may provide information, which is encapsulated by facial feedback theory. Under this theory, one's nonverbal behaviors prove to be self-informative about one's internal states. In other words, when John realizes that he is smiling as he speaks with Mary, he may then conclude that he feels positively towards her (to use Patterson's example). If true at all when applied to MUDs, it is only so in a limited sense. That is, one may be smiling while sitting at the keyboard, and then decide to type "smile".

While the forms that nonverbal communication must take in text based MUDs are different (as described in chapter 3), information is still provided, as evidenced by the examples above. Though less information is actually available, this function is nevertheless effectively and meaningfully enacted in MUD environments.

Regulating Interaction

Regulating interaction is a term that refers to speakers' efforts to construct a reasonably orderly flow of conversation. This is accomplished through an elaborate system of turn taking and yielding behaviors,
conveniently consolidated by Patterson (1990). For instance, when a listener
is about to attempt to take a turn as speaker, s/he may exhibit some or all of
the following behaviors:

1) a shift of the head away from the speaker
2) an audible inhalation
3) the initiation of gesture
4) overloudness in the first segments of speech
   (Patterson, 1990, p. 108)

As the speaker nears a point in her turn at which she is prepared to
relinquish the floor, the following behaviors are common:

1) a change in pitch in the last word of a phonemic clause;
2) a drawl or stretching out of the last word or syllable in a phonemic
   clause;
3) cessation of gestures
4) sociocentric sequences such as 'you know';
5) a decrease in pitch or loudness at the end of sociocentric sequences
6) the completion of a grammatical clause
   (Patterson, 1990, p. 107)

On MUDs, almost all of the above is completely impertinent (except perhaps
item 4 and 6). This near complete dissimilarity in the way interaction is
regulated is due to certain peculiarities of text based environments, adroitly
documented by Cherny (1995a), including:

1) The size of an utterance is determined entirely by speaker.
2) Overlap of utterances impossible, due to the command parsing of
   MUDs; two users may be typing at the same time, but it is only
   upon pressing "return" that their utterance is processed by the
   MUD and displayed to other users.
3) The order of utterances need not be sequentially relevant on MUDs,
   for meaningful conversation to take place.
4) Due to the persistent nature of text communication, a listener need
not listen at the time of the utterance(s), but rather has the option of returning to one's computer later to catch up on what has been said. (Cherny, 1995a, pp. 204-210)

To make up for these peculiarities, MUDders keep their utterances rather short; Cherny (1995a) reports an average range of 5 to 13 words per utterance in conversations on MUDs. This increases the feeling of interactivity for participants, as users' commands consequently produce output more frequently. Keeping utterances short, especially when broken up at strategic points (points at which more information is implied, such as "Well, I think that-"), also lets listeners know that the speaker is not idle and not finished speaking. A final consequence of generally short utterances is that they allow more opportunity for backchannel and repair (Cherny, 1995a).

Besides the simple solution of short utterances, there is rarely an explicit attempt to regulate MUD interaction. Rather, multiple threads of meaning develop, rendering some utterances irrelevant, breaking up others into multiple topics, and generally complicating things. MUDders become quite adept at maintaining these multiple threads, and it is not uncommon to be involved in as many as five conversations at once.

However, there are times that interactions simply must be regulated. For instance, when one participant in a conversation doubles or triples the typing speed of the other, it can become difficult for the slower typist to
produce relevant remarks at all. In these situations, a few conventions were observed. To yield a turn, users occasionally emoted "listens." (which produces the output "[your name] listens."), in order to designate the end of their turn. In another case, a dyad used the simple utterance "go" in order to let the other know that they were done speaking.

Even these conventions work poorly however, when there is a relatively large group in a room all attempting to speak at once. In such situations, creative solutions can be created, such as the microphone described earlier (Chapter 3, "Proxemics").

So, while some attributes of MUD environments make regulating interaction difficult, others make it less crucial to do so at all, at least in the sense that conversants regulate interactions in face to face talk. Without doubt, MUD turn regulation requires some exposure and practice before it feels natural (or even comprehensible) to new users, but once the idiosyncracies of the environment become intuitive, interaction can be lively, organized, and multi-threaded.

Expressing Intimacy

Expressing intimacy is the nonverbal function which allows one to enhance (or decrease) levels of involvement, affection, inclusion, depth, and trust in a relationship. Burgoon et al. (1989) suggest that intimacy can be
expressed in behaviors such as decreased conversational distance, forward
lean, direct body and facial orientation, postural openness, frequent
gesturing, touch, and increased and directed gaze. While some of these
behaviors are readily representable (and represented) on MUDs, others are
less so, with more stylized actions complementing the array of potentially
communicative acts.

For instance, behaviors related to posture (such as the forward lean,
postural openness, and body orientation) are less meaningful in MUD
environments because these behaviors (which are concurrent with speech in
face to face conversations) would have to be enacted separately from
utterances. In this sense, such behaviors could be termed ambient, and in
the intentional domains that are MUDs, the ambient must generally be made
explicit. This, combined with the fact that distances within a MUD room are
of indeterminate import (see chapter 3, "Olfactsics, proxemics, and
environmental cues") makes the postural cues less than crucial to expressing
intimacy.

What MUD users use frequently to express intimacy are the
preprogrammed "feelings" available on most MUDs. The fact that these
commands can be directed at another user corresponds to the significance of
gaze as an affect intensifier. For example, to merely smile (i.e., to type
"smile", so that others in the room see the output "[your name] smiles.")
implies no oculesic phenomena whatsoever, while smiling at someone
implies virtual eye contact, a commingling of experience, which can serve to either enhance or negate intimacy; in short, the implied eye contact of directed MUD feeling commands can act as an affect intensifier, just as can be found in face to face interactions. For example, "Imhotep smiles." is less intimate than "Imhotep smiles at you.", the latter implying the directed gaze. Likewise, "Aarchon glares." is not as threatening as "Aarchon glares at you."

One of the most celebrated ways of expressing intimacy in virtual environments, including MUDs, is MUDsex (also called cybersex, Tinysex, and MUDscrumping). This phenomenon involves two (or more) participants typing explicit depictions of intimate actions, as well as comments and reactions to such actions. Popular media have predictably seized upon this provocative facet of virtual environments, portraying it alternately as the ultimate in safe sex, alarmingly deviant behavior, or a questionable substitute for real life intimacy (c.f. Turkle, 1996, Stryker, 1996, Rigdon, 1995). While any one of these depictions may contain a kernel of truth in a given situation, it can at least be generalized that MUDsex can have emotional results analogous to actual sex, ranging from relationship enhancement, to lust and excitement, jealousy and betrayal, and the feelings of violation that can result from MUDrape. Different users consider these behaviors as having varying degrees of consequence, ranging from the brash (e.g., "Hell, I'd rather rape on a MUD, where nobody gets hurt"), to the cautious (e.g., "The experiences and emotions are often real. The tricky part
is knowing how seriously each party is taking it"), to full reification (e.g., "The Internet is as much real life as anything else. They may just be words on the screen, but there are real people behind those words and they can be hurt just as badly in VR [virtual reality, i.e., MUDs] as RL [real life]).

When intimacy is expressed and accepted (validated) on MUDs, romances can develop. As in the physical world, these romances are characterized by spending large amounts of time together and increased mutual gaze (as described above) and touching. Gifts may be exchanged, promises made, and even weddings take place. An example of such a wedding can be found in Appendix 6.

As explained in Chapter 1, the death of one's character can be of varying consequence on adventure MUDs. As a general rule, it is something to be avoided, as it most often represents a setback of many hours of character development and experience. As such, MUDders share a common bond in their avoidance of death, and generally extend sympathies when someone is slain. On Paradox II, when someone dies, a message is sent to all other users, a fact which provoked the following flurry of friendly remarks:

>> Paradox II mourns the tragic death of Raptor.
>>[Gossip] Magnafix: ewps
>>[Gossip] Talrion: damn. ;(
>>[Gossip] Xiamin: urk??????
>>[Gossip] Dairon: NNNONOOOOO@
>>[Gossip] Bobo: ack
>>[Gossip] Death: nooooooooooooo
>>[Gossip] Manty: eek
>>[Gossip] Xiamin pounds wall in frustration at raptors death
In this example, Raptor's death elicited empathy and sympathy from the other users present. The [Gossip] line was used, as it represents a channel of communication to which everyone has access.

With regards to the appropriateness of the expression of intimacy in MUD environments, the social mores will vary slightly from MUD to MUD, but always roughly parallel "real life". For instance, just as it is inappropriate to grope or kiss a complete stranger with no prompting, so too is it the case on MUDs. In general, MUDs were found to be somewhat "looser" than mainstream Western society; a hug might be appropriate after a just few minutes of MUD interaction, for example. Most MUDs (including the ones specifically studied) have a stringent harassment policy to deal with users who insist on inappropriately expressing their affection.

Most MUD users agree that relationship development seems to proceed very quickly on MUDs. The various preprogrammed "feelings" (such as "smile", "hug", "massage", etc.) are certainly effective tools in expressing intimacy, but it is MUDders' frequent and spirited use of such commands as well as the hyperpersonal phenomena (q.v.) inherent in text-based environments that create this situation.
Social control and Presenting Identities and Images

While Patterson (1990) treats these two categories as separate functions, it was determined that the distinction is less meaningful in text based environments. In face to face interactions, one exerts social control upon one's conversational partner, and presents identities and images for third party observers. On MUDs, however, due to the oculesic and proxemic phenomena inherent in text based worlds (q.v.), all users present in a room are potential conversants; as such, the distinction of which are conversants and which are third party observers becomes difficult to make.

In the social theaters that are MUDs, every action that produces output presents an image or identity. On MUDs that stress role playing, this is even more true. Consider the following comment from a MUDder who frequents a MUD which is based in modern times:

I once had a cop char[acter] that had just tried to save an MT EMT [Montana Emergency Medical Technician] from a dog attack and failed miserably (*the dog was in actuality, a werewolf*). Things went very badly, and then I got the news that my IC [*in character*, i.e. virtual, not real life] little brother was found murdered in the sewers, I went to the bar and drank my sorrows away and contemplated taking out my service pistol and shooting myself. [the role-playing w]as quite fun for me and the others involved.

TrekMUSE was the only MUD specifically studied which encouraged role playing to the extent revealed by the comment above. However, as soon as one presents oneself as a persona (recall, "that through which the sound
comes") on a MUD, one begins playing a role to some degree.

For instance, each MUD user has a unique set of conversational habits. Some users observed included a "smiley" after every utterance. Others "spoke" with atrocious grammar and spelling, while others use perfect English. One user consistently included emoted action as part of his utterances (e.g., "Manty says: What's up? grin", or "Manty says: I don't think so smirk"). All of these nuances vary in their level of intentionality, but they do present a certain image to observers.

One colorful character on Paradox II actually aliased (as per the UNIX alias command, MUDs allow users to create "shortcut keys" for long commands) a special emote in order to present a certain image. This character was of the ogre race (generally thought of as big and dumb) and belonged to a social group known as The Barbarian Horde. In order to present himself to others within such a context, he would frequently enact his aliased command which produced the following output for others in the room: "Vail picks a louse from his loins and brings it to his lips."

This emoted action, produced solely for the benefit of other users, presents at least two images simultaneously. Within the MUD, it reinforces the character "Vail" as a grunting, uncouth Barbarian. On a broader level, it says something about the person at the keyboard as well; it might lead an observer to believe that he (in this case, the author knows that the person behind Vail is male) enjoys a degree of role-playing and has a rich (and
perhaps twisted) imagination.

With regards to social control, that is, the deliberate use of nonverbal behavior to influence someone, naturally there are ways in which this can be accomplished on MUDs, many of which have direct correlates in face to face interaction. Some characters may ply others with gifts of valuable items in the hopes of future returns, for instance. Threats may accomplish the same goal, as well. Formal requests may be phrased in less casual language (with the requisite grammar, punctuation, and spelling, of course), in order to inject some dignity and decorum into the interaction, as well as showing some respect for one's conversational partner (of particular use when speaking to a MUD superior).

These various examples, explanations, and conjectures show that interpersonal nonverbal behavior can indeed be managed on MUDs for such goals as image portrayal, social control, and impression management. Indeed, when it comes to intentional depiction of a certain mood or disposition, it seems that it is much easier to seem genuine on MUDs. A related feature involves the fact that when gender is self-selected, many people are tempted to "gender-swap", a phenomenon which will be treated in Chapter 5. So, while intentional depictions of specific emotions may be more easily represented on MUDs, the poignancy, subtlety, and delicate negotiations which are a part of face to face interaction may be blunted in text based environments, due to the restricted "bandwidth" of text.
Affect Management and Facilitating Service and Task Goals

These last two nonverbal communicative functions have been combined into a single section for two reasons. The first is that Patterson (1990) is quite explicit about their "speculative" status, and about how "relatively little" empirical research exists for either. Second, neither function is particularly salient to MUD phenomena, for reasons of intentionality in the former case, and the explicit purpose of adventure MUDs in the latter, i.e., gaming.

Affect management means adjustments in nonverbal behavior which can modify, intensify, or dampen the experience of emotion. This includes wringing one's hands when nervous as well as jumping up and down when excited. These behaviors are generally thought of as unintentional, unconscious adaptors. Hence, when applied to MUDs, the term cannot mean the same thing, due to the intentional nature of MUD behavior. This is not to say that MUDders don't choose to represent behaviors describable as affect management. For instance, the "feeling" command "blush" can be enacted when a user wishes to portray embarrassment. The bride at a MUD wedding was observed "checking herself in a mirror", clearly an attempt to represent nervous vanity. Likewise, one of the most popular commands used to represent happiness is the "bounce" command, which produces the output
"[your name] bounces around the room happily".

So, in order to further approximate human interaction in a text based environment, and, in the process, further reify the community of users, MUDders choose to represent behaviors which are almost universally unintentional in "real life".

Common examples of "facilitating service and task goals" are the behaviors that one engages in with one's doctor or dentist, including intimate touch and close visual scrutiny. Described in this way, one would think that these behaviors would ordinarily only be engaged in with a romantic partner. Clearly, though, it is the nature of the services being delivered, not a personal relationship, which necessitates or allows the behaviors.

Given the fact that adventure MUDs are quite explicit in their status as games, manifestations of this function were scarce. However, a couple of examples were discovered which approximated the service-task function on MUDs.

On adventure MUDs, each character can carry multiple objects (such as swords, shields, food and drink, etc), each of which has weight. If too many heavy objects are carried, the character becomes encumbered, and cannot lift any more. Likewise, no one may give the character any additional items. In these cases, the character will generally drop less valuable items so that they may be given the new item. In other words, in order to accomplish the task of one character giving an item to another, it is sometimes the case
that the receiver must drop an item before receiving the new item, which produces output such as "Vail drops an empty tankard".

On Paradox II, a social group (called a "guild") exists called the Barbarian Horde. One skill gained by joining the Barbarians is the ability to heal oneself (or another) of injuries through "primitive medicines". These primitive medicines are represented as including the ancient practice of bloodletting, necessitating the removal of any worn armors or clothing that the injured might be wearing. In this sense, to be treated by a Barbarian is akin to a modern trip to the doctor.

Another example is to be found in the "rescue" command. This is a combat-specific command which allows two people to do battle with a single foe and take turns being hit by that foe by rescuing each other, thus prolonging the time for which they can survive the foe's onslaught. When the rescue command is enacted during combat, output is as follows:

You jump in front of [your friend's name]!
[Foe's name] attacks you!

This is specific behavior, represented as nonverbal, physical action, which advances a mutual goal (defeating the foe).

While affect management and task-service goal functions may be of different consequence or in scant supply on text based adventure MUDs, they are still of some communicative import. Implications of these differences, especially those arising from intentionality, will be discussed in Chapter 5.
CHAPTER 5: DISCUSSION

In this chapter, implications of this research are discussed, and some conclusions are drawn. While the first research question, "How is nonverbal communication achieved?", has been demonstrated in Chapters 3 and 4, this chapter addresses the more evaluative and difficult second question, "Are the existing descriptive categories of nonverbal communication adequate?". It was concluded that the framework for nonverbal forms required more modification than the framework for nonverbal functions when applied to MUDs. Also included is a discussion of some sociopsychological features of interactions in text-based environments. The chapter will conclude with a look to the future of MUD research and technology.

Success of the form-function analysis

The value of any qualitative or ethnographic study is in part determined by the success with which the descriptive framework is supported, denied, or extended. As Philpsen (1982) has stated, "Each ethnography of communication produced... uses the the extant framework as an heuristic tool for description, and each study is to be examined for its potential contribution to development of the framework," (p. 14). In this section, the results of this thesis are examined in terms of how useful and
appropriate the traditional categories of nonverbal forms and functions were in examining nonverbal communication on text-based adventure MUDs.

While the traditional categories of form and function were informative and serviceable in the analysis of MUD behaviors, they were not always fully applicable to the peculiar environments studied. To illuminate their varying utility, the chart below (figure 1) is presented, with subsequent expansion in the pages that follow.
Evaluation of the form-function framework

<table>
<thead>
<tr>
<th>Framework Supported</th>
<th>Instances include:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most common nonverbal functions were enacted in the MUDs studied, including &quot;providing information&quot;, &quot;expressing intimacy&quot;, &quot;presenting identities&quot;, and &quot;social control&quot;.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Framework Extended, Restricted, or otherwise Altered</th>
<th>Instances include:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Some vocalic phenomena, such as the representation of shouting, yelling, and whispering, were supported.</td>
<td></td>
</tr>
<tr>
<td>The way in which users perceive the appropriateness of haptic behavior was supported, i.e., touches deemed inappropriate in face to face dyads were generally judged as inappropriate when represented on the MUD.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Framework Rejected</th>
<th>Instances include:</th>
</tr>
</thead>
<tbody>
<tr>
<td>The &quot;tell&quot; command extends the framework by allowing remote, private communication to which others are neither privy, nor aware of its occurrence.</td>
<td></td>
</tr>
<tr>
<td>The range of possible vocal stress is limited in text environments, due to the lack of available data.</td>
<td></td>
</tr>
<tr>
<td>Occulesic phenomena were represented to some degree, though the intentional nature of MUD communication reduced the primacy with which the eyes are considered in face to face interactions.</td>
<td></td>
</tr>
<tr>
<td>Turn regulation is a function which is, by necessity, totally different on MUDs, due to the sequential parsing of MUD commands.</td>
<td></td>
</tr>
<tr>
<td>The nonverbal forms of proxemics, olfactics, kinesics, and environmental cues were of marginal utility as applied to MUDs.</td>
<td></td>
</tr>
<tr>
<td>Chronemic phenomena, including the use of pauses in conversation, are completely different in MUD environments.</td>
<td></td>
</tr>
<tr>
<td>The affect management function is not salient, due to the intentional nature of MUD interaction.</td>
<td></td>
</tr>
</tbody>
</table>

Figure 1: Success of the form/function framework of nonverbal communication as applied to adventure MUDs

Framework Supported

Within the realm of what can be described as MUD vocalics, the
traditional categories were both supported and extended. For instance, as
the "loudest" and most invasive of the mechanisms for producing utterances,
shouting may also be the least common on MUDs. This fact probably holds
ture for face to face interactions as well.

Another form of nonverbal communication which supported the
descriptive framework to some degree was the appropriateness with which
haptic phenomena were viewed by participants. As explained earlier,
MUDders are likely to react with indignation if groped inappropriately, and
may, for example, shake hands to finalize a bargain. This phenomenon is
evidence of the deep-seated reification to which users subject their MUD
experiences, which in turn indicates the level to which the spatial metaphor
extends even to users' virtual bodies. That is, users feel as though they
actually have hands to shake with, and bodies that can be inappropriately
groped or lovingly caressed.

Most established (i.e., those documented by Patterson, (1990))
nonverbal functions were readily discernible in the behavior of the users
within the MUDs studied. A key element to all such behaviors, which has
profound consequences for how they are to be interpreted, is that they are
intentionally enacted in MUD interaction, which contrasts with their
sometimes unintentional enactment in face to face interaction. So, while the
function "providing information" was discernible in every MUD interaction
observed, it could just as easily been subsumed by "presenting identities and
images"; the verbal channel has always been the easiest for humans to control, and in a world created solely by words, where self-presentation is restricted only by one's imagination and typing skills, one's identity is itself presentational.

Framework Extended, Restricted, or otherwise Altered

While the evidence above generally supports the chosen framework, this was not always the case. For instance, the descriptive framework was extended when applied to MUDs through the existence of the "tell" command (q.v.). No face to face correlate exists for this command, while the other modes of producing utterances (shout, yell, speak, say, mutter, mumble, and whisper) all have such a correlate. This is a case in which the nature of the environment is exploited to create a mode of communication which is ideal in certain situations, i.e., the ability to send someone an explicit private message during a tense meeting with a third party, or when that person is out of range of ordinary utterances. This is an interpersonal luxury not afforded interlocutors in "the real world".

Another way in which the form of vocalics is altered in MUD environments lies in the means by which phrases within utterances can be stressed. While such stress is exceedingly complex in face to face interactions (i.e., it can be accomplished in an infinitely varying combination of rate, pitch, loudness, accent, etc.), the means by which vocalic stress is represented
on MUDs are restricted to text. Given the finite number of ways in which this is done (e.g., with asterisks, capital letters, underscores, et.al.), the complexity with which utterances can be modified is necessarily lessened.

**Framework Rejected**

Chronemics was a nonverbal form that, while not supported in traditional ways, was actually more appropriately used to refer to a different class of phenomena. For instance, as detailed in Chapter 3, numerous causes can lead to long periods during which a member of a dyad may produce no visible output. Since there are so many different possibilities, if a user fails to respond to a question, for example, any interpretation of their non-response becomes ambiguous and problematic.

A closely related issue, which also seemed to reject the traditional framework, was the fact that the ordinarily vocalic feature of conversations, pauses during or between utterances, simply did not apply to MUD interaction. This is due to the fact that, unlike face to face interactions, utterances are only made known as they are completed, rather than contemporaneously with their production. This unique state of affairs also has important implications for turn regulation behaviors.

As detailed in Chapter 4, MUDders compensate for the peculiarities of the environment by keeping their utterances fairly short, and adeptly maintaining multi-threaded conversations. MUD environments were
designed to be virtual spaces wherein users could interact, and these methods enhance that feeling of interactivity. As such, it is no surprise that lectures (i.e., "one way" communication) are exceedingly rare.

On the opposite end of the output spectrum are those individuals who have such irreproachable typing skills that they are able to overbear any conversation. Much has been said about the equalization of status in text based environments, but those individuals who can type quickly and accurately can achieve status and conversational control on MUDs.

Several nonverbal forms were difficult to identify on the MUDs studied, including olfactics, proxemics, environmental cues. While some exceptions are noted in Chapter 3, it was concluded that for such nonverbal forms to be particularly salient, actual physical copresence is required. This conclusion was reached when it was realized that such cues are hardly meaningful in other physically removed settings, such as video conferencing or telephone conversation.

Kinesic phenomena were similarly difficult to ascertain on MUDs. While the tradition of face to face kinesic behavior is one which has lead many to consider it as primary to interpreting interactions, the author has come to believe that the primacy of kinesic activity springs from the simultaneity which characterizes face to face utterances. That is, what makes kinesic behavior so powerful is its ability to enhance, modify, illustrate, intensify, belie, or otherwise affect others' interpretation of the
content of our utterances, while the utterance is being produced. While there are stylized methods for roughly portraying this simultaneity (e.g., "Aarchon says: *nodding happily* Really, I can do it!"), kinesic behaviors on MUDs are generally enacted independent of the utterances they may accompany (e.g., "Aarchon says: Really, I can do it." followed by "Aarchon nods happily"). This lack of simultaneity, combined with the fact that MUD commands are parsed only upon carriage returns, necessitates methods of conversational caretaking which are generally unique to text-based environments. These methods include more conscientious word choice (inevitable since words cannot be accidentally "blurted out" in the same sense as they can in face to face interactions), the use of the emote command and programmed feelings to illustrate and modify utterances, shortened utterances (to facilitate speedy repair), and a willingness (and ability) to follow multiple simultaneous conversations.

There are numerous implications of such a world of selective self-presentation. Without the wealth of visual nonverbal cues available in face to face interactions, it becomes easier to seem genuine, to depict interest, to conceal emotion, and to state falsehoods. In short, successful deception is a few mere keystrokes away, unfettered by the unintentional nonverbal "leakage" that often exposes inconsistencies in face to face interaction. Patterson's (1990) descriptive functional framework contends that "affect management", for instance, is an important nonverbal modifier to strong
emotional affect. On MUDs, affect is not merely managed, but is actively, and intentionally, created, and therefore differs from the framework of face to face nonverbal functions.

As this project was drawing to a close, the author hypothesized that the utility of the form/function framework as applied to MUDs could probably be summarized in the following statement: As human, social animals, we will seek to enact the same nonverbal functions no matter what variety of communicative environment we find ourselves in; what may differ is the modes of communication available. With the exception of the idiosyncratic functions "affect management" (which Patterson (1990) characterizes as "behavioral adjustments" which "are often spontaneous and temporally limited") and "facilitating service and task goals" (of limited utility due to the fact that such task-oriented relationships rarely arise on MUDs); it does seem to be the case that the more common intentionally effected nonverbal communication functions are no less important in MUD environments than they are in face to face interactions. Restricted as they are to text based interaction appearing on one's computer screen, however, the modalities, or tools, with which the functions can be enacted demands ingenuity and creativity on the part of both programmers and users.
Intentionality

Intentionality is an issue which has come up throughout this thesis, as it is a phenomenon which is peculiarly unique in virtual environments. While face to face interactions are characterized by a wealth of ongoing nonverbal behavior, some of which is communicative, and most of which is unintentional, MUD interactions are almost completely intentional in nature, with many unintentional messages being merely symptomatic of the modalities by which they are produced, e.g., typographical errors. As such, these unintentional messages are generally dismissed by other users, which contrasts with real life interactions, in which meaning is ascribed to unintentional behaviors regularly.

The verbal channel is the easiest to control in face to face interactions, as compared to controlling facial expressions or gestures. Due to their intentional nature, MUD interaction offers even more control of the words one utters, due to the availability of the backspace key on standard keyboards, which allows one to "eat one's words" even before they are uttered. As such, utterances are rarely "blurted out", and utterances are generally more deliberate than in face to face discussion.

Intentionality also has implications for backchannels in MUD conversation. In face to face interactions, backchannels are generally not explicitly intentional, but rather the byproducts of interpersonal
engagement. On MUDs, backchannels must be intentionally enacted. Moreover, backchannels take on an additional importance in text-based environments, since the lack of visual cues makes it impossible to know when other users may have been called away from their keyboards. Indeed, backchannels "play a large role in establishing achievement of mutual understanding and [facilitate] a sense of co-presence," (Cherny, 1995b, p. 13).

As noted previously in this chapter, the intentional nature of MUD nonverbal communication also has important implications for deception and affect management as well. Without unintentional nonverbal behaviors, MUDders find it much easier to selectively present themselves, either by only portraying their best qualities, by portraying qualities they perceive as desirable, or even by presenting qualities they may find repulsive in "real life", in order play some exotic role. Similarly, since there is no need to "manage affect", as there is in face to face relations, MUDders find that it is more comfortable to discuss topics that might be painful or embarrassing if conducted in a physically co-present setting.

In face to face settings, much time is spent endeavoring to control one's unintentional nonverbal behaviors. On MUDs, intentionality is a defining characteristic of all behaviors, which gives rise to phenomena which exists in sharp contrast to their "real life" correlates, as discussed above.
Cherny's categories of emotes

Cherny (1995b) categorized uses of the "emote" command (q.v.) into five distinct groups. While not directly related to the form/function framework pursued in this thesis, they point to some of the differences between MUD and face to face interactions. These groups are summarized by Cherny (1995b) as follows:

1) Conventional action, e.g., "Magnafix waves hello."
2) Backchannels, e.g., "Aarchon nods, mm-hmm."
3) Byplay, e.g., "Cormac digs Ref a grave."
4) Narration, e.g., "Thanos is mudding from work."
5) Exposition, e.g., "Vail thinks he drank too much last night."

The first category of emotes, "conventional actions", refers most directly to opening and closing behaviors, but also includes a "blink" or a "smile" to indicate that one is no longer idle. These actions are not content-driven, but rather ritualized mechanisms of greeting, and to skip them is to be less than cordial, similar to other conversational arenas.

The simulation of backchannels in MUD interactions is important, due to the lack of the visual cues which show that one is listening in a face to face conversation. Such emotes as "nods" and "smiles" are common backchannels in MUD conversations, which is similar to ways in which people show attention in face to face interactions; the difference is that MUD backchannels are intentionally, mindfully, explicitly enacted, and are not the
the mere byproducts of interpersonal involvement.

The third category of emotes is that of "emoted byplay". This includes simulated actions which could not ordinarily occur in "real life". To use Cherny's (1995b) example, "Karen detonates a low yield nuclear device over Penfold," (p. 16). This also includes cases in which interactions with MUD objects (actual or imaginary) are simulated, and narration of imaginary real life actions (such as "Vandal throws his computer off the third floor balcony").

The fourth category of emotes is narration of real life actions. Especially to explain an upcoming idle period, MUDders will document their real life actions for others, as in "Magnafix runs upstairs to make lunch."

Finally, Cherny (1995b) discerns the category of exposition, unique in that it need not be enacted in the simple present tense. For example, the author might emote "Magnafix has never seen that movie." These expositions "seamlessly fit into conversation as if they were [produced via the 'say' command]", (Cherny, 1995b, p. 23).

Cherny's (1995b) categories of uses of the emote command are informative in that they show various rich uses for a simple command, one which merely issues a message consisting of a user's name followed by a string of letters. This is testimony to the ingenuity of participants, as well as the depth which can be created in a world consisting of "mere text".
Implications for Gender and Identity

While the topic of presenting identities has been treated in Chapter 4, an expansion of this provocative topic is warranted. One of the first things that one sees upon logging into a MUD for the first time is "Please choose a gender". This simple, yet rather profound question is the first clue given that MUDs really can be "identity workshops" for exploring different aspects of the Self.

Some social MUDs allow users to change their gender at will, and some even have as many as ten different genders to choose from (including "both", "neither", and "none"). Adventure MUDs generally provide a choice of two or three genders, the third being "neuter", a choice which can generate some uneasiness for those with whom the genderless person interacts. MUDders report that this uneasiness is generally brought about by a sense of insecurity akin to speaking with someone of indeterminate gender in a face to face interaction. Even while they recognize that the person to whom they speak may not actually be the gender they’re presenting, MUDders find it easier to communicate when a gender is defined.

When that request, "Please choose your gender", appears on a new user’s screen, many decide to virtually cross-dress and choose their opposite gender. At that moment, the user enters into a complicated relationship with other members of the community. They must, among other things, think
about how gender affects speech, mannerisms, and interpretation of experience (Turkle, 1995). They may also be, at some point, forced to decide just how far they'll take their charade; i.e., what will they do if someone asks them point blank, "Are you gender-swapping?". While the utter novice may have no trouble in lying to other members of the community, their attempts (especially men trying to portray women) are usually quite transparent. More experienced users may be more successful at portraying the opposite gender, but then end up in very tangled relationships with other users which can end quite painfully, as evidenced from these excerpts from a conversation with a man who portrayed a woman on Ancient Anguish for many months, but was then discovered:

"I couldn't lie to her face, so I confessed."
"I act, I role play, but I don't lie."
"Some may decide that my simply being here in this form is a lie, but I don't feel that way."
"I feel that [my female persona] is a part of me, and this is just the manifestation."
"The whole point was anonymity. No one would be hurt if that could be maintained."
"All I really want is not to be loathed."

Indeed, the revelation that a MUD acquaintance has been gender-swapping can be even more painful for those who believed the swapper, as can be seen from the following quote from a personal E-mail sent to the author:

[a friend] told me that [my MUD wife] was really a guy in rl. I was completely shocked. I was so betrayed by his lying. I never had problems with cross gender players if they role play, but when they lie about rl it is more of a cruel trick....I started to distrust mudders after
So, if gender-swapping (or "genderbending") on MUDs can produce so much pain, it remains to be seen why it is that it can be such an intriguing option. Many theories have been put forth, not one of which is universally true. For instance, some people genderbend just to see if they can deceive other players, while others portray the opposite gender do so out of curiosity, to "see how the other half lives." Some have conjectured that those who genderbend are dealing with their own personal issues of sexuality, and find that by switching gender, they can become familiar with flirting with members of their own gender (Serpentelli, 1993). Some males may try presenting themselves as females in order to get the extra attention that is invariably showered upon female characters (given the paucity of female MUDders, this is not surprising). Women may present themselves as men for the opposite reason -- to avoid the extra attention. Men may present themselves as women in order to have a virtual lesbian coupling (with another female presenting persona). More rarely, women may present as men in order to have cyber-relations with other men (Turkle, 1995).

Regardless of individual motivations, one thing is certain. The choice of gender that MUDs provide is a tool which forces users to examine their preconceptions about gender and gender roles, sexuality, role playing, and identity.
Identity is a particularly interesting issue when examined in light of MUDs. Those who hold that MUDs are "just games" would posit that there is no "I" on the screen, but merely a fanciful representation, meaningless and essentially hollow. This is frequently the attitude of the uninitiated and of new users who feel as though their anonymity is a passport to vent their darkest impulses.

For postmodernists like Sherry Turkle (1995) and Amy Bruckman (1992, 1993), however, the persona as represented on the screen is just as much a Self as the ones who interact face to face with bosses, colleagues, friends, and family. In other words, identity is fluid rather than fixed, and "who you really are" changes as circumstances change. Turkle (1995) writes of "cycling through windows" of her professional life, family life, and MUD life. No single context brings about her "true self", for, as stated by Wilmot (1994), "the self is created by the relationships it has, AND the relationship(s) literally create the self.", (p. 82). Or, as put by the cognitive philosopher Daniel Dennet (1991), "Selves are not independently existing soul-pearls, but artifacts of the social processes that create us, and, like other such artifacts, subject to sudden shifts in status," (p. 423).

MUD Harassment Through Nonverbal Communication

As freely accessible sites on the Internet, access to most MUDs is quite
completely anonymous. That is, one is not required to give any "real life"
information such as name, address, telephone number, or anything else.

Curtis (1992) notes three significant effects of users' anonymity. The
first is the fact that since self-presentation can be so utterly successful,
overcoming most "real life" attributes, participants can completely fabricate a
persona through which to express themselves on the MUD. The second is
what Curtis refers to as "shipboard syndrome", or the feeling that since
nothing of lasting consequence will come of any MUD actions, it is safe to
discuss one's most intimate secrets. The third, though rare, refers to when a
user feels that she cannot be held accountable for her deeds, and therefore
feels free to be purposefully obnoxious or offensive.

Indeed, "[s]hielded by anonymity and distance from most consequences
of their actions, [MUDders] frequently behave in ways they would not in real
life," (Leslie, 1993, p.28). While this statement may seem to imply malice, it
can also mean disinhibition. Turkle (1995) reports that some young
teenagers experiment with sex online as a testing ground before
experimenting physically. While many may recoil at the thought of such
activity on MUDs, Turkle points out that, if the child is going to experiment
anyway, which is the safer forum? Of course, Turkle takes care to note that
the Internet is not a forum free of harassment and psychological abuses, and
that parents always have a responsibility to monitor their young children's
online activities, but her point is a valid one in any event. Even in adults,
"given the combined power of anonymity and textual suggestiveness to unshackle deep-seated fantasies," (Dibbell, 1993, p. 40) the disinhibiting effects of MUD interaction can lead to the virtual fulfillment of those fantasies.

Of course, when those fantasies are of less than virtuous character, or even in cases as simple and innocuous as the neophyte user who believes that "it's all just a game", MUD harassment can occur. This is a topic that has received volumes of discussion on newgroups and mailing lists (see Appendix 3), but about which there is no absolute consensus. Some feel that the solution for harasses is to simply log off, or even find a new MUD. However, this does nothing to prevent or repair the psychological damage done, for on MUDs, the line between word and deed is a difficult one to draw. While seeing the text "Scruffy gropes you, drooling like an animal." appearing on one's screen may be amusing or merely annoying to the uninitiated, to a young woman who has spent hours and hours developing and embodying the persona she lives through on the MUD, the effect can be quite devastating. Indeed, truly atrocious harassment has lead to MUD-wide outcries for the complete removal of the harasser (see, for example, Dibbell, 1993, or Masterson, 1995b).

It must be remembered that even if "real life" dictates that the blips on the computer screen are merely blips, and if the reality of the MUD dictates that one has actually been groped/fondled/molested/raped, the "reality" of the
situation can only be found in the "buzzing, dissonant gap between them",
(Dibbell, 1993, p. 38). Eventually, except in cases of the virtual sociopath,
users become much less likely to use their anonymity for mischief or malice.

Only with time and the acquisition of a fixed character do players tend
to make the critical passage from anonymity to pseudonymity,
developing the concern for their character's reputation that marks the attainment of virtual adulthood.
(Dibbell, 1993, p. 41)

In other words, once a participant truly counts herself as a member of the
MUD community, the allure of anonymity can dissolve, giving way to a sense of virtual responsibility inherent in the full reification of the connections and relationships made in such environments.

Afterword: What the Future Holds

The future for MUD technology, and MUD communication research, is bright. Looking beyond today's adventure and social MUDs, enough people have caught on to their benefits that their uses as professional/educational tools are growing rapidly. These benefits include the opportunity to bring people together from all over the world in a technology that supports synchronous or asynchronous communication, the use of a spatial metaphor to create a context for interactions, and the access to the speed and ease of data retrieval inherent in most, if not all, computer systems. Already, there are MUD environments designed specifically for astrophysicists, biologists,
and ecologists, which provide a forum for discussion with other scientific professionals all over the world. A MUD called Diversity University supports a college campus spatial metaphor, and the administrators are working to provide a full range of conferences and classes on diverse subject matters. MediaMOO, Amy Bruckman's creation, is a MUD-type environment designed with media researchers in mind, with archives of papers on MUDs and related media issues. Likewise, her MOOSE-Crossing virtual environment recently opened as a MUD wherein youngsters (age 13 and younger) from all over the world can get together to interact and learn some basic programming skills. A MUD designed for neurosurgeons is currently being developed. Finally, Pavel Curtis' Jupiter Project, when complete, will be the prototype for all the future multi-media MUDs to come, with graphics, sound, and even full motion video.

Whether traditional ethnographic methods will be applicable to all these virtual communities is a question to be considered. What is clear is that as the technology that supports them gets faster and more powerful, the so-called "bandwidth" of communication will widen, providing more and more communicative cues. This will in turn make these communities more and more like real life, as full motion video and sound via modem (especially cable modems, which promise to transfer data at 700 times the speed of many standard modems) makes text simply redundant.

These graphically represented MUDs will dramatically change the
cyberscape of the 21st century. Some say that they will open a wealth of new possibilities, allowing users to express themselves artistically, graphically, visually. Others cling to the text-based environments in much the same way that people "prefer the book to the movie", with the former leaving a large part of the representation to the limitless expanses of the imagination. One recent posting to the newsgroup rec.games.mud.misc sums this up nicely:

I am not arguing against graphically-oriented MUDs. however, I believe they will suffer because of the difficulty that players who cannot draw worth a damn will have expressing themselves in an impromptu fashion, the way they can on a text-based mud. on a text-based mud I can express nearly any action in a matter of a few words. to do the same thing on a graphic-oriented system requires at the least dozens of drawings--and as I can't draw worth a shit, I will have to rely on someone else to do so for me....

the problem is, in all likelihood, there will be a paucity of "words" available on your average graphic mud. rather than the virtually unlimited options of text, the average user will only have perhaps a few hundred (thousand, if he's lucky) "words" (images) with which to express himself.

(Goehring, 1996)

Nevertheless, the graphical MUDs (the term MUD now being used in its loosest, "Multi-User Dimension" sense) are springing up with regularity, including DOOM-like three dimensional combat arenas, virtual office space for forward thinking marketing firms, television network marketing vehicles, chat rooms for gays/lesbians/bisexuals, and interactive fanzines for up-and-coming rock bands (see http://thepalace.com for more details). While the breakthroughs being made represent important advances in multimedia technology, it is the author's opinion that the environments being created
will attract a new breed of computer user, those who have come to expect and demand a graphical user interface. Given that such users are comprising a growing share of the Internet market, the graphical MUDs will surely explode in popularity, opening up numerous avenues for continued nonverbal research, given the implications of users' freedom to represent meanings graphically.
REFERENCES


synchronous computer-mediated communication: A comparison of two genres. Presented at the 1994 annual conference of the Western States Communication Association; San Jose, California.


Rheingold, H. (1993). *The Virtual Community: Homesteading on the*


Zimmerman, L. E. S. (1977). First impressions as influenced by eye contact, sex, and demographic background. *Dissertation Abstracts International*, 37, 6414B-6415B.
Appendix One

INSIDE THE GRAND ILLUSION
by
Dennis Charlebois
(Sagit)

Through the looking glass the grand illusion beckons
The stagelights bright, the audience in place
We check the makeup mirror one more time
  Confident no one can see our face
As the mists of unreality surround us
  In costumes hiding gender and age
We build the grand illusion around us
And trembling, we walk onto the stage

Through the looking glass there lies a magic ballroom
Where only we can hear the music played
We search for things like friendship and love
  And dance inside our magic masquerade
As the mists of unreality surround us
  In costumes hiding gender and age
We build the grand illusion around us
And trembling, we walk onto the stage

But we're all only players on the stage
And the time comes when the audience goes home
When we take the costumes off forever
  And stand in the grayness all alone

Through the looking glass, is it all illusion?
  Or is mirage, perhaps the better word?
A vision unattainable that beckons
  A siren's song that's better left unheard
As the mists of reality surround us
And the looking glass slowly cracks in two
We see at last that in the grand illusion
  Love and friendship were just illusions too
And we're all only players on the stage...
And we're all only players on the stage...
Appendix Two

From chalice@rowlf.cc.wwu.edu Wed Nov 2 13:40:47 1994
Date: 1 NOV 94 19:19:57 GMT
From: Donald Chalice <chalice@rowlf.cc.wwu.edu>
Newsgroups: rec.games.mud.misc
Subject: MUD inspired

Just another faceless name
it's just another senseless game
it's just another day so lame, hangin on the network

it's just another time for tea
it's just another time for me
it's just another crying plea, by someone on the network

Millions and millions of bits every hour
into circuits and buses, they grow and they tower
rising above us, into the sky
all of us asking why...

Just another rainy day
it's just another time to play
it's just another courting way, when you're on the network

it's just another time for three..
   for you, the computer, and me...
it's just another time to be, singin on the network..

Open your mud account, where is the line
chatting for hours, hearts all in line..
wondering where.. all the time goes..
everyone cares.. nobody knows...

.........................
Just another life away..
it's just another boring day..
it's just a time to end dismay, playin on the network..

it's just a time for you and me..
so come on over and we'll be..
friends forever and we'll be free.. from playin on the network..
Appendix Three

From ddt@iinet.com.au
Wed Jan 18 07:57:43 1995
Date: 16 JAN 1995 08:35:59 +0800
From: David Bennett <ddt@iinet.com.au>
Newsgroups: rec.games.mud.misc
Subject: Re: Women Admins or harassment...

sac26400@saclinkl.csus.edu (Sharon L. Barber) writes:

>: If you're a female and that's the way you play, then I have
>: ABSOLUTELY no sympathy for you. I make my own terms and if the
>: 'guys' can't
>: handle
>: it, then I find others to play with.
>
>: really don't know too many people that do play that way...I agree, it's
>: not harrassment if you ask for it.

Be very careful with this one. People will say you ask for it by doing a lot
of totaly innocent things. Every case should be dealt with carefully.
If somone is complaining about it, then they obviously did not want it.
It would be easy for somone to be just flirting a bit maybe and suddenly
the male character gets totaly distgusting. There is a very fine line.

As you mention a bit lower. The 'She asked for it because she was
wearing a provocative skirt'. Or 'She asked for it because she
was weariunbg a provocative gender' get used way too much as excuses
for inexcusable behaviour on the parts of men (by the parts of men too).

>: and that the female did not bring it on themselves. I tend to sit in the
> room with both the

You are working on this from the wrong angle. You are throwing innocent
until guilty to the window. You are looking for reasons why the omen
brought it on herself. This automaticly puts in a position of thinking the
women is in the wrong.

>: I guess my point is... women, don't INVITE the problem.

>You're contradicting yourself here. That is my point. Women don't invite
>the problem sometimes. (I'm sure there are some that do but that's their
Even if they do invite the problem. It is still the man doing the harrasment! Just because I say something like, gosh I like your fist does not mean you should hit me.

>: Be sure of who you are and what
>: role you wish to portray while mudding. If you are an assertive character, then you more
>: than likely will not be harassed. Don't play the victim and you will be less likely to be a >: victim. Do not get me wrong, I am NOT saying that all women ASK for the harassment
>: they get or am I putting forth the tiresome arguement "the broad asked to be raped". It just
>: isn't so. Just make sure you fight fire with fire and most likely you will not be harassed.

So basicly. What you are saying is. Women cannot play whatever sort of character they choose. The have to play a aggressive tough one? Gosh, what a choice of career options.

Blue in red sauce,
David.
[DDT] Pink fish forever.
Appendix Four

From edmond@netcom.com Tue Feb 14 10:24:38 1995
Date: Fri, 10 FEB 1995 23:07:08 GMT
From: "Edmond L. Meinfelder" <edmond@netcom.com>
Newsgroups: rec.games.mud.misc
Subject: Re: MUSH vs. MUD

dbright@harp.aix.calpoly.edu (Darrin Lee Bright (Duck Ezra)) wrote:

> First of all, regardless of differences between the code, implementation,
> interface, parsers, etc., MOST folks affiliated with MUSHes usually rather
> resent being lumped together with "MUDs", which are usually brainless
> hack and slash arrangements.

I have been, for the past four years, almost exclusively affiliated with
MUSHes as have most of the people I know. Myself and my associates do
not resent considering MUSH a kind of MUD.

> There are two main types of "MUDs", Diku and LP, which are usually
> written in C. Dikus tend towards the hack-n-slash rack-em-up gold-and-xp,
> LP's tend to favor "quests".

Okay. So, the acronym MUD is only valid when applied to combat MUDs? I
would disagree. The distinctions are far too blurry to draw the line at
something so arbitrary as combat. Especially when you consider that a
MUSH can be given a combat system. True, it will suck to high heaven,
but that is beside the point.

What if I take an LP, re-do the interface so it looks like TinyMUD (the
ancestor of TinyMUSH)? Is the LP then not a MUD and suddenly a MUSH?
I
would hate to think so.

I accept that the interpretation of the word MUD is subjective to some
extent. For some it clearly means Multi-User Dungeon, for others it is
Multi-User Domain, and a few cling tenuously to Multi-User Dialogue. The
word MUD has been around long enough that it now has its own meaning.

I would define MUD as:
A multi-user environment that supports a spatial metaphor upon which an entire virtual world can be built. In which, at least simplistic expressions of communication are possible and constrained to some extent by location as dictated by the spatial metaphor. This communication, no matter how minimal, creates a sense of community (or communities).

That's it. The interface or the intention of the MUD does not, to me, change what it is.

>MUSHes, MOOs, and MUSEs can sort of be lumped together. These programs are
>large data-base intensive programs with a built-in interpreted "language"
>that can be "coded" while the program is running. The goal of such programs
>is usually to provide an environment for roleplaying so players can imitate
>their favorite Vampire/Werewolf/Dragon/Something-Fuzzy stories with or
>without the consent of the original author.

This may come as a shock, but TinyMUD and its descendants were not created
with a "goal" of role-playing. They are suited to role-playing, true, but that is not their "goal". They are open-ended, to be used however the local God sees fit.

Also, Tinys are not the only types of servers with parsers. In fact, LPs have, what is considered by many, a superior parser with a more structured C-like syntax, whereas TinyMUSH and its ilk look a look like line-noise. (The simile must be attributed to Russ Smith.)

>Most heavy roleplayers consider their efforts to be much more meaningful
>than the average hack-n-slash player and prefer not to be lumped together
>with these types.

This reeks of unfounded superiority. There is no reason good role-playing can not occur on an LP. From what I hear, this occurs on Ancient Anguish. I can not say for sure, but I doubt you can either.

>There are other talkers, mucks, etc. out there that might still be
>considered "games", but they don't have to be MUDs.

Whew. I would venture to guess that you have not spent a lot of time on MUDs. I could be wrong, but I am giving you the "benefit of the doubt."
### Appendix Five

Feelings available on Paradox II. Most of these have an array of acceptable adverbs which can be abbreviated with their first letter, e.g., "smile h" begets "You smile happily."

<table>
<thead>
<tr>
<th>Feelings available on Paradox II</th>
<th>Feelings available on Ancient Anguish</th>
</tr>
</thead>
<tbody>
<tr>
<td>accuse</td>
<td>The following atmospheric commands are available:</td>
</tr>
<tr>
<td>applaud</td>
<td></td>
</tr>
<tr>
<td>bark</td>
<td></td>
</tr>
<tr>
<td>beam</td>
<td></td>
</tr>
<tr>
<td>bite</td>
<td></td>
</tr>
<tr>
<td>bog</td>
<td></td>
</tr>
<tr>
<td>boggleg</td>
<td></td>
</tr>
<tr>
<td>bow</td>
<td></td>
</tr>
<tr>
<td>bop</td>
<td></td>
</tr>
<tr>
<td>calmp</td>
<td></td>
</tr>
<tr>
<td>caper</td>
<td></td>
</tr>
<tr>
<td>chortle</td>
<td></td>
</tr>
<tr>
<td>chuckle</td>
<td></td>
</tr>
<tr>
<td>clap</td>
<td></td>
</tr>
<tr>
<td>comfort</td>
<td></td>
</tr>
<tr>
<td>confess</td>
<td></td>
</tr>
<tr>
<td>congratulate</td>
<td></td>
</tr>
<tr>
<td>cuddle</td>
<td></td>
</tr>
<tr>
<td>curtsy</td>
<td></td>
</tr>
<tr>
<td>dance</td>
<td></td>
</tr>
<tr>
<td>daydream</td>
<td></td>
</tr>
<tr>
<td>explode</td>
<td></td>
</tr>
<tr>
<td>eye</td>
<td></td>
</tr>
<tr>
<td>faint</td>
<td></td>
</tr>
<tr>
<td>fart</td>
<td></td>
</tr>
<tr>
<td>fiddle</td>
<td></td>
</tr>
<tr>
<td>fire</td>
<td></td>
</tr>
<tr>
<td>flip</td>
<td></td>
</tr>
<tr>
<td>flop</td>
<td></td>
</tr>
<tr>
<td>fondle</td>
<td></td>
</tr>
<tr>
<td>foo</td>
<td></td>
</tr>
<tr>
<td>forgive</td>
<td></td>
</tr>
<tr>
<td>french</td>
<td></td>
</tr>
<tr>
<td>frolic</td>
<td></td>
</tr>
<tr>
<td>frown</td>
<td></td>
</tr>
<tr>
<td>fume</td>
<td></td>
</tr>
<tr>
<td>gape</td>
<td></td>
</tr>
<tr>
<td>gesticulate</td>
<td></td>
</tr>
<tr>
<td>gibeber</td>
<td></td>
</tr>
<tr>
<td>grind</td>
<td></td>
</tr>
<tr>
<td>grindz</td>
<td></td>
</tr>
<tr>
<td>groan</td>
<td></td>
</tr>
<tr>
<td>grovel</td>
<td></td>
</tr>
<tr>
<td>growl</td>
<td></td>
</tr>
<tr>
<td>grumble</td>
<td></td>
</tr>
<tr>
<td>grunt</td>
<td></td>
</tr>
<tr>
<td>guffaw</td>
<td></td>
</tr>
<tr>
<td>hang</td>
<td></td>
</tr>
<tr>
<td>headbutt</td>
<td></td>
</tr>
<tr>
<td>hiccup</td>
<td></td>
</tr>
<tr>
<td>hold</td>
<td></td>
</tr>
<tr>
<td>hop</td>
<td></td>
</tr>
<tr>
<td>hug</td>
<td></td>
</tr>
<tr>
<td>hum</td>
<td></td>
</tr>
<tr>
<td>ignore</td>
<td></td>
</tr>
<tr>
<td>isuzu</td>
<td></td>
</tr>
<tr>
<td>juggle</td>
<td></td>
</tr>
<tr>
<td>jump</td>
<td></td>
</tr>
<tr>
<td>jumpkick</td>
<td></td>
</tr>
<tr>
<td>kick</td>
<td></td>
</tr>
<tr>
<td>kiss</td>
<td></td>
</tr>
<tr>
<td>knee</td>
<td></td>
</tr>
<tr>
<td>laf</td>
<td></td>
</tr>
<tr>
<td>laph</td>
<td></td>
</tr>
<tr>
<td>laugh</td>
<td></td>
</tr>
<tr>
<td>leap</td>
<td></td>
</tr>
<tr>
<td>leer</td>
<td></td>
</tr>
<tr>
<td>lemming</td>
<td></td>
</tr>
<tr>
<td>lick</td>
<td></td>
</tr>
<tr>
<td>love</td>
<td></td>
</tr>
<tr>
<td>lower</td>
<td></td>
</tr>
<tr>
<td>massage</td>
<td></td>
</tr>
<tr>
<td>meow</td>
<td></td>
</tr>
<tr>
<td>mgrin</td>
<td></td>
</tr>
<tr>
<td>moan</td>
<td></td>
</tr>
<tr>
<td>mosh</td>
<td></td>
</tr>
<tr>
<td>muah</td>
<td></td>
</tr>
<tr>
<td>mutter</td>
<td></td>
</tr>
<tr>
<td>nibble</td>
<td></td>
</tr>
<tr>
<td>nod</td>
<td></td>
</tr>
<tr>
<td>note</td>
<td></td>
</tr>
<tr>
<td>nudge</td>
<td></td>
</tr>
<tr>
<td>nuzzle</td>
<td></td>
</tr>
<tr>
<td>nyuck</td>
<td></td>
</tr>
<tr>
<td>oggle</td>
<td></td>
</tr>
<tr>
<td>panic</td>
<td></td>
</tr>
<tr>
<td>pat</td>
<td></td>
</tr>
<tr>
<td>peer</td>
<td></td>
</tr>
<tr>
<td>pinch</td>
<td></td>
</tr>
<tr>
<td>plead</td>
<td></td>
</tr>
<tr>
<td>point</td>
<td></td>
</tr>
<tr>
<td>poke</td>
<td></td>
</tr>
<tr>
<td>ponder</td>
<td></td>
</tr>
<tr>
<td>pout</td>
<td></td>
</tr>
<tr>
<td>puke</td>
<td></td>
</tr>
<tr>
<td>punch</td>
<td></td>
</tr>
<tr>
<td>pull</td>
<td></td>
</tr>
<tr>
<td>puzzle</td>
<td></td>
</tr>
<tr>
<td>raise</td>
<td></td>
</tr>
<tr>
<td>roar</td>
<td></td>
</tr>
<tr>
<td>rofl</td>
<td></td>
</tr>
<tr>
<td>roll</td>
<td></td>
</tr>
<tr>
<td>ruffle</td>
<td></td>
</tr>
<tr>
<td>scratch</td>
<td></td>
</tr>
<tr>
<td>scream</td>
<td></td>
</tr>
<tr>
<td>shake</td>
<td></td>
</tr>
<tr>
<td>shiver</td>
<td></td>
</tr>
<tr>
<td>shrug</td>
<td></td>
</tr>
<tr>
<td>shudder</td>
<td></td>
</tr>
<tr>
<td>sigh</td>
<td></td>
</tr>
<tr>
<td>simper</td>
<td></td>
</tr>
<tr>
<td>sing</td>
<td></td>
</tr>
<tr>
<td>slap</td>
<td></td>
</tr>
<tr>
<td>sleep</td>
<td></td>
</tr>
<tr>
<td>smile</td>
<td></td>
</tr>
<tr>
<td>smirk</td>
<td></td>
</tr>
<tr>
<td>smyle</td>
<td></td>
</tr>
<tr>
<td>snap</td>
<td></td>
</tr>
<tr>
<td>snarl</td>
<td></td>
</tr>
<tr>
<td>sneer</td>
<td></td>
</tr>
<tr>
<td>sneeze</td>
<td></td>
</tr>
<tr>
<td>snicker</td>
<td></td>
</tr>
<tr>
<td>sniff</td>
<td></td>
</tr>
<tr>
<td>snore</td>
<td></td>
</tr>
<tr>
<td>snort</td>
<td></td>
</tr>
<tr>
<td>squeeze</td>
<td></td>
</tr>
<tr>
<td>stagger</td>
<td></td>
</tr>
<tr>
<td>stamp</td>
<td></td>
</tr>
<tr>
<td>stare</td>
<td></td>
</tr>
<tr>
<td>stifle</td>
<td></td>
</tr>
<tr>
<td>strangle</td>
<td></td>
</tr>
<tr>
<td>stroke</td>
<td></td>
</tr>
<tr>
<td>strut</td>
<td></td>
</tr>
<tr>
<td>stumble</td>
<td></td>
</tr>
<tr>
<td>sulk</td>
<td></td>
</tr>
<tr>
<td>sweat</td>
<td></td>
</tr>
<tr>
<td>tackle</td>
<td></td>
</tr>
<tr>
<td>tap</td>
<td></td>
</tr>
<tr>
<td>taunt</td>
<td></td>
</tr>
<tr>
<td>tease</td>
<td></td>
</tr>
<tr>
<td>thank</td>
<td></td>
</tr>
<tr>
<td>think</td>
<td></td>
</tr>
<tr>
<td>tickle</td>
<td></td>
</tr>
<tr>
<td>tip</td>
<td></td>
</tr>
<tr>
<td>tongue</td>
<td></td>
</tr>
<tr>
<td>tremble</td>
<td></td>
</tr>
<tr>
<td>trip</td>
<td></td>
</tr>
<tr>
<td>tsk</td>
<td></td>
</tr>
<tr>
<td>twiddle</td>
<td></td>
</tr>
<tr>
<td>twitch</td>
<td></td>
</tr>
<tr>
<td>wail</td>
<td></td>
</tr>
<tr>
<td>wave</td>
<td></td>
</tr>
<tr>
<td>whimper</td>
<td></td>
</tr>
<tr>
<td>whistle</td>
<td></td>
</tr>
<tr>
<td>wobble</td>
<td></td>
</tr>
<tr>
<td>wiggle</td>
<td></td>
</tr>
<tr>
<td>wrinch</td>
<td></td>
</tr>
<tr>
<td>winkle</td>
<td></td>
</tr>
<tr>
<td>wobble</td>
<td></td>
</tr>
<tr>
<td>wonder</td>
<td></td>
</tr>
<tr>
<td>worship</td>
<td></td>
</tr>
<tr>
<td>yawn</td>
<td></td>
</tr>
</tbody>
</table>
(Another player can be specified as an argument for most of them.)

ack, agree, ah, apologise, applaud, beep, bite, bkiss, blink, blush, boggle, bored, bounce, bow, breathe, burp, cackle, carress, cheer, choke, chortle, chuckle, clap, comfort, comp, complain, confuse, confused, cough, cover, cringe, cry, cuddle, curious, curtsey, dance, daydream, despair, die, disagree, drool, duck, duh, ear, faint, fart, fling, flash, flex, flip, flutter, fondle, forgive, french, frown, fume, gasp, gaze, ggrovel, gibber, giggle, glare, grab, grimace, grin, groan, grope, grovel, growl, grumble, grunt, guffaw, hand, happy, hiccup, high5, hkiss, hold, hop, howl, hsigh, hug, hum, ignore, insult, ising, interrupt, kick, kiss, kneel, lag, laugh, leak, lick, love, meditate, moan, mock, mgrim, mumble, nibble, nod, nudge, oh, ouch, panic, pant, pat, peer, pick, pinch, point, poke, ponder, pouf, puke, punch, purr, puzzle, raise, recoil, roll, ruffle, sad, scratch, scream, shake, shiver, shudder, sigh, sing, slap, smirk, smile, smother, snap, snarl, sneer, sneeze, snicker, sniff, snore, snort, snuggle, snivel, sob, spank, spit, squeeze, ssnarl, ssteam, stare, steam, strangle, strut, sulk, tackle, tap, taunt, thank, think, thug, tickle, tongue, tremble, ttackle, think, twiddle, wave, whimper, whine, whistle, wiggle, wince, wink, worship, wrinkle, yawn, yodel, yuck, xhappy, xlaugh, xsad, and xsob.

Ancient Anguish also has their famous "Pink elephant", which provides an additional array of flirtatious feelings. The following text was taken from the "elehelp" command:

```
---->>>> Dale's Fabulous Elephant <<<<<<

ahold ballad button dkiss ebreathe fhair jeans
lgaze lick scratch touch touch* lust massage
mchuckle nclimb neck nose nuzzle tfjaw tfip
tkiss swkiss whap whiss
* = you can specify both who and where
gift <player> = give an elephant to a friend
snuff elephant = get rid of the cute elephant

Thanks to all the elephant fans out there, especially Chick and Jahara for their help in making and inspiring new commands. -- Dale
```
Appendix Six

[Numerous people make use of the emote command to "join the circle"]
Lance says, "Friends, we gather here in this place to celebrate what is best in Cardassian society... the family."
Amanda trembles.
Lance says, "We mark and witness the joining of marriage of two who would be husband and wife."
Lance looks around the room and then continues.
Amanda smiles nervously.
Lance says, "Will the bride please step forward and declare her name and intent?"
Amanda steps forward.
Amanda says, "I am Amanda, and I intend to marry Hogue, and make him happy forever and ever. :)")"
Lance smiles broadly.
Amanda smiles.
Lance says, "Who acts as guardian for this woman?"
Hogue says, "I do :)"
Amanda gulps.
Lance coughs. "Someone other than the groom."
Hogue ah hems.
Doomgiver says, "I represent Amanda."
Amanda glances at Doomgiver nervously.
Hogue says, "typo :)")"
Lance says, "Guardian, is Amanda ready for the responsibilities of marriage?"
Doomgiver a smile creases grim features.
Doomgiver says, "Well, she can field strip a pulse rifle in 15 seconds, so I'd say yes, she is."
Amanda giggles.
Hogue grins.
Lance starts to say something but misses a beat and just decides to go on.
Amanda raises an eyebrow.
Amanda smiles.
Lance says, "Will the groom please step forward and declare his name and intent?"
Hogue steps forward.
Amanda looks at Hogue happily.

[And so on...]
Appendix 7: Sample Interview Questions

How did you start MUDding?
Do you play any other fantasy games?
Do you play non-interactive computer games?
Why do you MUD?
What is your gender and age?
Have you ever frequented so called "social MUDs"?
How do you start conversations?
Have you ever met anyone that you got to know on the MUD?
How much do you MUD per week?
Where are you from?
Do you miss classes or other commitments because of MUDding?
Do you talk to people when you MUD, or just play the game?
What about your MUD friends do you like?
Have you ever been involved in a MUD romance?
Have you ever gender-swapped? Why or why not?
How does your typical MUDding session go?
Do relationships develop on MUDs? How is it different?
Do you trust other MUDders? Why or why not?
How are your MUD friends different from "real life" friends?
How computer literate are you?
How do you use the emote command to communicate?
Do you use MUD conventions in other online forums?
How are MUD environments inadequate for interpersonal communication?
What's the best part about MUD communication?