WIRED

The Dragon Ate My Homework

They are online virtual worlds built from words. They are so popular that educators are alarmed. MUDs are the latest rage on college campuses all around the world. Australia has even banned them.

By Kevin Kelly and Howard Rheingold

David spends twelve hours a day as Lotsu, a swashbuckling explorer in a subterranean world of dungeons and elves. He should be in class, but he has succumbed to the latest fad sweeping college campuses: total immersion in multi-user fantasy games.

Multi-user fantasy games are electronic adventures run on a large network, usually fueled by university computers. Players commonly spend four or five hours a day logged onto fantasy worlds based on Star Trek, The Hobbit, or Ann McCaffrey's popular novels about dragon riders and wizards. Students like David use school computers or their own personal machines to log onto the great international computer highway in the sky known as the Internet. Colleges freely issue Internet accounts to any student wanting to do research; by logging on from a dorm in Boston, a student can "drive" to any participating computer in the world, link up free and stay connected for as long as he or she wants.

So what can you do with such virtual travel, besides download papers on genetic algorithms? Well, if 100 other students were to show up in the same virtual "place," you could have a party, devise pranks, do some role-playing, scheme, even build a better world. All at the same time. The only thing you'd need is a place to meet.

In 1980, Roy Traubshaw, a British fan of the fantasy role-playing board game Dungeons and Dragons, wrote an electronic version of that game during his final undergraduate year at Essex College. The following year, his classmate Richard Bartle took over the game, expanding the number of potential players and their options for action. He called the game MUD (for Multi-User Dungeons), and put it onto the Internet.

MUD is very much like the classic game Zork, as well as any of the hundreds of text-based adventure video games that have flourished on personal computers. The computer screen displays a message such as: "You are in a cold, damp dungeon lit by a flickering torch. There is a skull on the stone floor. One hallway leads to the north, the other south. There is a grate on the grimy floor." Your job is to explore the room and its objects and discover treasures hidden in the labyrinth of other rooms connected to it. You'll probably need to find a small collection of treasures and clues along the way to win the mother-lode booty, a search that may involve breaking a spell, becoming a wizard, slaying a dragon, or escaping from a dungeon.

You explore by typing something like: "Look skull." The computer replies: "The skull says, 'Beware of the rat.' " You type: "Look grate," and the computer replies: "This way lies Death." You type: "Go north," and you exit through the tunnel, on your way into the unknown of the next room.

Since the original MUD was created, about 200 similar games have cropped up around the world, according to Amy Bruckman, a Massachusetts Institute of Technology researcher who studies the

sociological aspects of MUDs (see Amy Bruckman: A Study in MUDs, below). There may be as many as 200 undocumented MUDs flourishing as well, Bruckman said.

MUD's many improved offspring (known generically as MUDs, Muses, TinyMUDs, and MOOs, depending on the programming language used or the type of game played) are very similar to adventure games on PCs, but more powerful. First, the newer MUDs allow as many as 100 other players to roam the dungeon with you. They could be playing alongside you as jolly partners, or against you as wicked adversaries, or even above you as capricious gods creating miracles and spells. Second, you and the other players can add or modify rooms, as well as invent new and magical objects. You say to yourself, "What this place needs is a tower where a bearded elf can enslave the unwary." So you make one, just by typing in its description. In short, the players invent the world as they live in it. The game is to create a cooler world than you had yesterday.

Social interaction in MUDs happens in a variety of real-time "chat" modes, not the kind of bulletin-board-style communication you find on BBSes or the WELL. MUDs are very much about who is in the same place at the same time, and how they interact. It's more of a hangout than a publication, more like a game board than a bulletin board.

MUDers use "poses" as well as words to convey meaning and action, giving MUDs an odd but definitely useful kind of disembodied body language. Posing (also known as "emoting") can be used in polite, informal conversation or in more structured discourse.

If you are a character named "hivemind," for example, and you give the command "emote leaps onstage," everybody else in the same room sees the message "hivemind leaps onstage" on their computer screens. It adds a new dimension to your communications. Instead of replying to a statement, you can smirk. Instead of leaving the room, you can disappear in a cloud of iridescent bubbles. Emoting seems awkward and artificial at first, but once you get the hang of it, poses give you some added control over the atmosphere in which a conversation takes place - the all-important context that is often missing from words alone.

In this way, MUDs have become a medium for consensual virtual reality. Someone tinkers up a virtual holodeck for the heck of it. Later, someone else adds a captain's bridge and maybe an engine room. Next thing you know, you've built the Starship Enterprise in text. Over the course of months, several hundred other players (who probably should be doing calculus homework) jack in and build a fleet of rooms and devices, until you wind up with fully staffed Klingon battleships, Vulcan planets, and the interconnected galaxies of a StarTrek MUD. You can log on 24 hours a day and greet fellow members of the crew - all in role-playing characters - as you collectively obey orders broadcast by the captain, and battle enemy ships built and managed by a different set of players.

The more time you spend exploring and hacking the MUD world (it does take some knowledge to build MUD objects), the greater your status with the rulers overseeing that world. A player who assists newcomers or who takes on janitorial chores in maintaining a MUD's database can earn the power to teleport (move to another part of the game) without penalty, or can be exempted from certain everyday rules of the game.

Ultimately, every MUDer dreams of achieving local god or wizard status, accorded those who do the most to keep a system going. Some become better gods than others. Ideally, gods promote fair play. But stories of abusive and deranged gods are legendary on the Internet.

Real-life events are recapitulated within MUDs. Players hold funerals and wakes for real players, as well as characters, who die. There have been "TinyWeddings" for virtual and real people. The slipperiness between real life and virtual life is one of the attractions, particularly for teenage kids who are wrestling with their own identities.

On a MUD, you define who you are. As you enter a room, others read your description: "Judi enters. She is a tall, dark-haired Vulcan woman with small, pointed ears and a lovely reddish tinge to her skin. She walks with a gymnast's bounce. Her green eyes seem to flirt." The author may be a petite female

with a bad case of acne, or a bearded male masquerading as a woman. Most players live out virtual life with more than one character, as if trying out various facets of their persona. "MUDs are a workshop for the concept of identity," Bruckman said. "Many players notice that they are somehow different on the Net than off, and this leads them to reflect on who they are in real life." Flirtation, infatuation, romance, and even "TinySex" are now as ubiquitous in MUD worlds as on real college campuses.

Pranks are also rampant. One demented player devised an invisible "spud" that, when accidentally picked up by another player we'll call Visitor, would remove Visitor's limbs. As this happened, others in the room would read: "Visitor rolls about on the floor, twitching excitedly." Worried players could summon a wizard or god to fix Visitor, but as soon as they "looked" at him, they too would be spudded, so that everyone would then read, "Wizard rolls about on the floor, twitching excitedly."

Ordinary MUD objects can be booby-trapped to do almost anything. A favorite pastime is to manufacture an object and get others to examine or use it without knowing its true powers. For example, when you innocently inspect a "Home Sweet Home" cross-stitch hanging on someone's wall, it might instantly and forcibly teleport you back "home" to the beginning of the game, while flashing "There is no place like home."

MUDers get lost, find their way, then get lost in another sense and never want to leave. As a result, the continuous telecommunication traffic due to nonstop MUDing can cripple a computer center. Amherst College in Massachusetts recently outlawed all MUDing from its campus. Australia, linked to the rest of the world by a limited number of precious data lines, has banned all MUDs from its continent; student- constructed virtual worlds were crowding out bank note updates and personal phone calls. Other institutions are sure to follow the ban on unlimited virtual worlds.

Until now, most MUDs have been written by fanatical students in their spare time. But recently, new MUD forms involving researchers and scientists have appeared (see The Future of MUDs, page 72). The dawn of commercial MUDs, where virtual goods can be bought and sold, or political MUDs, where lobbyists and politicians schmooze in virtual hallways, can't be far away.

Welcome to Cyberion City

Since most MUDers are 20-year-old males, violence often permeates these virtual worlds. In response to the growth of elaborate slash-and-hack universes, one experimental world running at MIT outlaws killing altogether. That world is Cyberion City. Based on the idea of a cylindrical space station, Cyberion City has gathered a huge following of elementary and high-school kids. On any random day, about 500 kids beam up into Cyberion City to roam or build without pause. So far, the kids have built more than 50,000 objects, characters, and rooms. There's a mall, complete with multiplex cinema (and text movies written by kids); a city hall; a science museum; a Wizard of Oz theme park; a CB radio network; acres of housing suburbs; and a tour bus. A robot real- estate agent roams around making deals with anyone who wants to buy a house.

There is no map of Cyberion City - on purpose. To explore is the thrill. Having no rule book is the teacher. You are expected to do what the kids do: Ask another kid. Barry Kort, the real-life administrator of the project, said, "One of the charms of entering an unfamiliar environment and culture such as Cyberion City is that it tends to put adults and children on equal footing. Some adults would say it reverses the balance of power."

The main architects of Cyberion City are 15 years old or younger. The sheer bustle and intricacy of the

land they have built is intimidating to the lone, overeducated immigrant trying to get somewhere or build anything. As San Francisco Chronicle columnist Jon Carroll exclaimed on his first visit, "The psychological size of the place...makes it seem like [you're] being dropped into downtown Tokyo with a Tootsie Roll and a screwdriver."

To access Cyberion City, you need a computer, a modem, and an Internet account (see Getting Online, page 72). Log on, then type "telnet michael.ai.mit.edu." Register and connect as "guest." You can then follow instructions on registering a character (you'll have to read the charter first). Once you're in, you'll see something like this:

========== Welcome to MicroMUSE! We are hosted at chezmoto.ai.mit.edu, port 4201. ========== REMINDER: Read 'NEWS' regularly to keep up on changes and additions to the server. New commands will be listed in 'news' with details provided in 'help'. For more information, new players should type: help getting started ========== Cyberion City Main Transporter Receiving Station The bright outlines of the Cyberion City Transporter Station slowly come into focus. You have been beamed up here (at considerable expense) from one of the Earth Transporter Stations. You are among the adventurous and moderately wealthy few who have decided to visit (and perhaps dwell) in Cyberion City, the largest space city in the solar system. You are welcomed by the transporter attendant, who gives directions to all newcomers to this space city. Contents: Attendant Obvious exits: Out Welcome to MicroMUSE, your name is Guest1 attendant says "Welcome, Guest, to Cyberion City." attendant says "Feel free to contact any Official for aid." attendant says "Be sure to use our extensive on-line help command." attendant says "I hope you enjoy your stay." The attendant smiles at you. You step down off the MTRS platform. Main Transporter Lobby This room has high, vaulted ceilings and white walls. The thick, black carpet makes no sound beneath your feet. You are just inside the Transporter Lobby, where Visitors arrive from Earth. To one side is an Information Desk. A door leads to the Tours office, and another leads Out into Cyberion City proper. A Public Relations Dept. Intercom stands in the center of the floor; type 'look Intercom' for instructions.

Joichi Ito:Cyberspace Veteran.....

Joichi Ito, at age 26, is already one of the gray-beards of the MUD universe, having spent more than half his life exploring the fringes of Net culture. Ito was born in Kyoto, one of Japan's most conservative cities and its capital for a thousand years until a little fishing village called Edo grew up to become Tokyo. Ito's mother's family had been part of the ruling class for eighteen generations. His father was from a merchant-class family. "Both families disowned them when they married because of the contradiction of such a marriage," said Ito.

Now reconciled with their families, Ito's parents moved to the US when he was three. Ito grew up in the suburbs of Detroit in the midst of a financial crisis precipitated by the success of the Japanese auto industry. He and his sister spent summers in Japan with his grandmother, who "indoctrinated us with the values of traditional Japan." He moved back to Japan when he was fourteen, where he "learned Tokyo street language, street smarts, and computers."

As a teenager, Joichi discovered computer networking - a "means of communicating with people beyond the confines of a high-school reality." He got so involved with people he met on the Source (an early online service) that he traveled to Toledo, Ohio to see friends at the wedding of two of the

group's members. He remembers how many online friends were shocked by how young he was, in view of his sophistication.

Ito was one of the few people in Japan who used his modem to explore the online cultures around the world before Japan deregulated telecommunications in 1985. He even discovered the original MUD - MUD1 - which started at the University of Essex in England in 1980. Ito still remembers the night he sat in his room in Tokyo, devastated because his MUD character had been killed. Later, he attended Tufts University and the University of Chicago, then dropped out to work part-time with Metasystems Design Group to start a virtual community in Tokyo and work nights as a disc jockey in nightclubs.

Ito now works as a negotiator between Japanese and US companies, travels as much as he stays put (his online sign-off always includes his physical location and the dates of his next trip), and develops and coordinates Pan-Pacific technical and cultural projects. He also confesses to having spent about 100 hours on MUDs in the past couple of months. Ito is starting a new MUD called Gothic. E-mail him at jito@netcom.com for more info.

Amy Bruckman: A Study in MUDs

I met Amy Bruckman, face to face, in Berkeley at a conference on computer communication technology. Her paper on the social aspects of MUDs attracted my attention, and before long we were weekly e-mail correspondents. When Bruckman started MediaMOO, a MUD for media researchers (see page 72), I became one of the early users. Amy is a MUDer herself, preferring TrekMuse, based on Star Trek - The Next Generation, but she also makes the rounds at Xerox PARC's LambdaMoo, Cyberion City at MIT, and other stops on the MUD circuit.

Bruckman earned her undergraduate degree, cum laude in physics, from Harvard in 1987. "But if you look at my transcript," she notes, "I actually studied more English literature and art history than physics. I've always tried to balance creative and technical things."

Bruckman considered studying contemporary art history in graduate school, but instead took a job as a medical writer for a small medical publishing company. Since she had a computer background from high school, the company put her in charge of its computer-based training contracts (CBT). "Since I was doing their CBT, it was natural to assign me to work on their interactive video contracts," she said. "That's how I became interested in interactive video."

In 1989, Bruckman began a graduate program at MIT's Media Lab in the Interactive Cinema Group, working with Professor Glorianna Davenport. Her thesis, The Electronic Scrapbook, Towards an Intelligent Home-Video Editing System, encourages people to use home video as a creative medium. The system includes a library of "story models," which help people to tell home video stories.

Bruckman finished her master's degree and stayed on for a PhD in the same research group. "That fall, I registered for a class with Professor Sherry Turkle. She inspired me to think about the psychological nature of people's relationship to technology. I did a sociological analysis of MUD players for her class, and she hired me to finish that research," she says.

Bruckman found the topic so exciting that she switched research groups to work with Professor Mitchel Resnick in the Epistemology and Learning Group at the Media Lab. "I view MediaMOO as a sort of warm-up for a project to use MUDs as a learning environment for kids," she says. "I believe that MUDs can create an authentic context for kids to read, write, and program. . . I also hope this will help girls

become more comfortable with computers." For more info, e-mail Bruckman at asb@media-lab.mit.edu

...The Future of MUDs...
There's More than Games to This MUD...MediaMOO's Inaugural Ball.....

"If you take away the dragons and wizards from a MUD, what kind of communication medium do you have?" This question moti-vated MediaMOO (for Media MUD, Object Oriented) architects Amy Bruckman and Mitchel Resnick to experiment in MUDing as a serious form of scientific communication. Bruckman, a graduate researcher at MIT's Media Lab, realized that scientists and scholars who share a specific research interest are a kind of virtual community. They meet for face-to-face conventions once a year, read the same journals - both electronic and print - and correspond with one another, but there is a lack of daily informal continuity to these communities of interest that span continents.

Why not design a MUD to continue the kind of informal conversation that makes conferences so important to scientific communication? The "professional virtual community" that Bruckman and Resnick, a professor at the Media Lab, had in mind was the community of people like themselves - media researchers.

When MediaMOO was announced early in 1992, Bruckman and Resnick emphasized the incompleteness of the architecture. The MOO re-created only the public corridors, stairwells, and a few public places within MIT's Media Lab. The community of users was expected to build the rest, as they do in any good MUD. The objective was to see whether the collaborative work of building a shared world could help foster interaction between researchers in related fields.

In MediaMOO, as in any scientific conference, you can look at other participants' badges and see what they have to say about their special interest. People can find themselves in a hallway or a room with a group of strangers, look at their virtual badges, and strike up conversations.

The architects of MediaMOO decided to have an inaugural ball to celebrate MediaMOO's opening on the same night Clinton and Gore were celebrating their inauguration, January 20. Those who attended the ball could "see" each other's real names, salient background information, and an e-mail address. Costumes, worn by all, were designed by the participants (I contributed a green-on-orange, double-breasted paisley dinner jacket, a "minimicro" Velcro tuxedo, and a loincloth of many colors.)

Although it opened with a party and its online atmosphere is informal, MediaMOO's population is comprised of people who are serious about the study of virtual communities and other media. In that context, meeting somebody "socially" at an event like an inaugural ball has implications for everyone's intellectual and professional interests.

MUDs aren't always games, although gamers invented the medium. Media that are invented for one purpose often evolve into very different instruments than the ones the inventors had in mind. If MediaMOO and Jupiter are successful, expect to see serious-minded MUDs proliferate on the Net. Xerox PARC has a similar and more ambitious project known as Jupiter, a MUD through which researchers can navigate and switch to direct audio or even interactive video linkup with any colleague they encounter. Pavel Curtis, a researcher at PARC, is already adapting the software behind the Jupiter project for use as "an international teleconferencing and image database system for astronomers."

Getting Online
There are two ways to jack into the network of networks. Prodigy and Compuserve are not either of them.

The free way. Most universities offer free Internet accounts to their students, particularly in the sciences. We've heard of people enrolling for a credit or two to keep their accounts, but it may only be an urban myth. If you are a student, you should certainly demand an account. Many corporations offer full Internet access, but many also limit employees to a gateway for Internet e-mail. Ask and you may receive.

The paid way. About 30 small businesses offer full Internet access for a moderate price. They either charge per hour, or per month, or a combination of both. Good rates are around $2 per hour or $20 per month for all you can use. If it's a long distance call to reach the port, you pay for that. As expected, most of these outfits are located on the coasts, with a few scattered here and there in the rest of the country (and a few in other countries). The Whole Internet Guide, (reviewed in Street Cred), can point you to the full list. Or you can call the WELL: +1 (415) 332 4335 and ask for the location of the outlet closest to where you live.

As a head start, here are a few popular and hip services: PANIX, +1 (212) 787 3100/modem, +1 (212) 877 4854/voice; MindVOX, +1 (212) 988 5030/modem, +1 (212) 988 5987/voice; the WELL, +1 (415) 332 6106/modem, +1 (415) 332 4335/voice; Netcom, +1 (408) 554 8649/voice, local dial-ups in the following area codes, 310, 408, 415, 510, 619, 916/modems.

H3>The Kline Family: Learning via MUDs
David Kline (known as "Spark" in the Cyberion City MUSE), is an energy economist for the National Renewable Energy Laboratory in Golden, Colorado. His wife, Judy Gilligan, performs most of the couple's home- schooling duties and is launching a business selling children's books. Native Californians all, they moved to Boulder, Colorado in 1991. That's where I met them face to face.

"Our primary motivation for home schooling," Judy said, "is that we think we can offer the kids an all-around better education. A lot of the socialization that happens in school is counterproductive."

Much of that home schooling happens in Cyberion City, where kids, educators, and cybernauts commune in a space colony of the 24th century (see Welcome to Cyberion City, page 70).

"I discovered Cyberion City and thought of Zack (age eleven) right away," David recalled. "He and I 'went' there together. This was definitely the right move, because Barry Kort (known as "Moulton" in Cyberion City), David Albert ("Aslan") and the others treat the kids as honored guests. When they found out that Zack was looking over my shoulder, they gave him a character on the spot and started talking to him. He'd never seen anything like it - 'Here's this guy in Massachusetts, and another in Minnesota, and they're talking to me!!' "

"The next day, I left Zack a note that read: 'Here are the ten secret incantations you need to type to connect to the Muse. Have fun. Love, Dad.' "

A week later, Zack had taught himself to touch-type, just so he could keep up with conversations on the Muse. Then father and son both started to learn how to build and program. "Zack had an advantage, though; he could spend hours at it every day," David said. "Within a couple of months, he was showing me stuff that he had picked up."

A couple of other Cyberion City kids live in Boulder. With them, Zack built an online world in which all the characters were snakes. They changed their names to Slim, Slick, and Sleek, and joined a group called the Snake Brigade. In real life, they often kept up the role play of snakes. Connie Wallace ("Ibis"), who in real life is a librarian from North Carolina, befriended the family and created virtual "candy mice" to feed the snakes when they visited with her online. She later visited Boulder in person, bringing homemade fudge shaped like mice.

Howard Rheingold

Kevin Kelly (kk@well.sf.ca.us) is executive editor at Wired.

Howard Rheingold (hlr@well.sf.ca.us) is editor of The Whole Earth Review and author of The Virtual Community (Addison-Wesley), to be published this fall.