

language," says Michealene Cristini Risley, group director of licensing and character development for Sega. The company would like to hook girls at the age of 4, before they've developed fears of technology.

Girls need freedom to explore and make mistakes. Betsy Zeller, a 37-year-old engineering manager at Silicon Graphics, says that when she discovered computers in college, "I swear I thought I'd seen the face of God." Yet she had to fend off guys who would come into the lab and want to help her work through problems or, worse yet, do them for her. "I would tell them to get lost," she says. "I wanted to do it myself." Most women either asked for or accepted proffered help, just as they are more likely to ask for directions when lost in a strange city. That may be the best way to avoid driving in circles for hours, but it's not the best way to learn technical subjects.

Schools are trying a number of approaches to interest girls in computers. Douglas and her colleagues are participating in a mentorship program where undergraduate girls spend a summer working with female computer scientists. Studies have shown that girls are more attracted to technology if they can work in groups; some schools are experimenting with team projects that require computers but are focused on putting out a product, like a newspaper or pamphlet. At the middle- and high-school level, girls-only computer classes are increasingly popular. Two months ago Roosevelt Middle School in Eugene, Ore., set up girls-only hours at the computer lab. Games were prohibited and artists were brought in to teach girls how to be more creative with the computer. Students are also learning to use e-mail, which many girls love. Says Debbie Nehl, the computer-lab supervisor: "They see it as high-tech note-passing."

Power Networks

AS A RELATIVELY NEW industry, the leadership of computerdom might be expected to be more gender-diverse. Wrong; few women have advanced beyond middle-management ranks. According to a study conducted last year by The San Jose Mercury News, there are no women CEOs running major computer-manufacturing firms and only a handful running software companies. Even women who have succeeded say they are acutely conscious of the differences between them and their male coworkers. "I don't talk the same as men," says Paula Hawthorn, an executive at Montage Software, in Oakland, Calif. "I don't get the same credibility." The differ-

ence, she says, "is with you all the time."

Women who work in very technical areas, such as programming, are often the loneliest. Anita Borg, a computer-systems researcher, remembers attending a 1987 conference where there were so few women that the only time they ran into each other was in the restroom. Their main topic of discussion: why there were so few women at the conference. That bathroom cabal grew into *Systers*, an on-line network for women with technical careers. There are now 1,740 women members from 19 countries representing 200 colleges and universities and 150 companies. *Systers* is part mentoring and part consciousness-raising. One graduate student, for example, talked about how uncomfortable she felt sitting in her shared office when a male graduate student and a professor put a picture of a nude woman on a computer. The problem was resolved when a couple of female faculty members, also on the *Systers* network, told their offending colleagues that the image was not acceptable.

Women have been more successful in developing software, especially when their focus is products used by children. Jan Davidson, a former teacher, started Davidson & Associates, in Torrance, Calif.,

Men typically imagine devices that could help them conquer the universe. Men think of machines as an extension of their physical power.

Women want machines that meet people's needs, the perfect mother. And one who can be turned on and off at the flick of a switch.

with three programs in 1982. Now it's one of the country's biggest developers of kids' software, with 350 employees and \$58.6 million in revenues. Multimedia will bring new opportunities for women. The technology is so specialized that it requires a team—animators, producers, scriptwriters, 3-D modelers—to create state-of-the-art products. It's a far cry from the stereotype of the solitary male programmer, laboring long into the night with only takeout Chinese food for company. At Mary Cron's Rymel Design Group in Palos Verdes, Calif., most of the software artists and designers are women, Cron says. "It's like a giant puzzle," she adds. "We

Gender

Men want to force computers to submit. Women just want computers to work.

By Deborah Tannen

I WAS A COMPUTER PIONEER, BUT I'M still something of a novice. That paradox is telling.

I was the second person on my block to get a computer. The first was my colleague Ralph. It was 1980. Ralph got a Radio Shack TRS-80; I got a used Apple II+. He helped me get started and went on to become a maven, reading computer magazines, hungering for the new technology he read about, and buying and mastering it as quickly as he could afford. I hung on to old equipment far too long because I dislike giving up what I'm used to, fear making the wrong decision about what to buy and resent the time it takes to install and learn a new system.

My first Apple came with vid-eogames; I gave them away. Playing games on the computer didn't interest me. If I had free time I'd spend it talking on the telephone to friends.

Ralph got hooked. His wife was often annoyed by the hours he spent at his computer and the money he spent upgrading it. My marriage had no such strains—until I discovered e-mail. Then I got hooked. E-mail draws me the same way the phone does: it's a souped-up conversation.

E-mail deepened my friendship with Ralph. Though his office was next to mine, we rarely had extended conversations because he is shy. Face to face he mumbled so, I could barely tell he was speaking. But when we both got on e-mail, I started receiving long, self-revealing messages; we poured our hearts out to each other. A friend discovered that e-mail opened up that kind of communication with her father. He would never talk much on the phone (as her mother would), but they have be-

DEBORAH TANNEN is university professor at Georgetown University and author of the best seller *"You Just Don't Understand: Women and Men in Conversation."*

Gap in Cyberspace

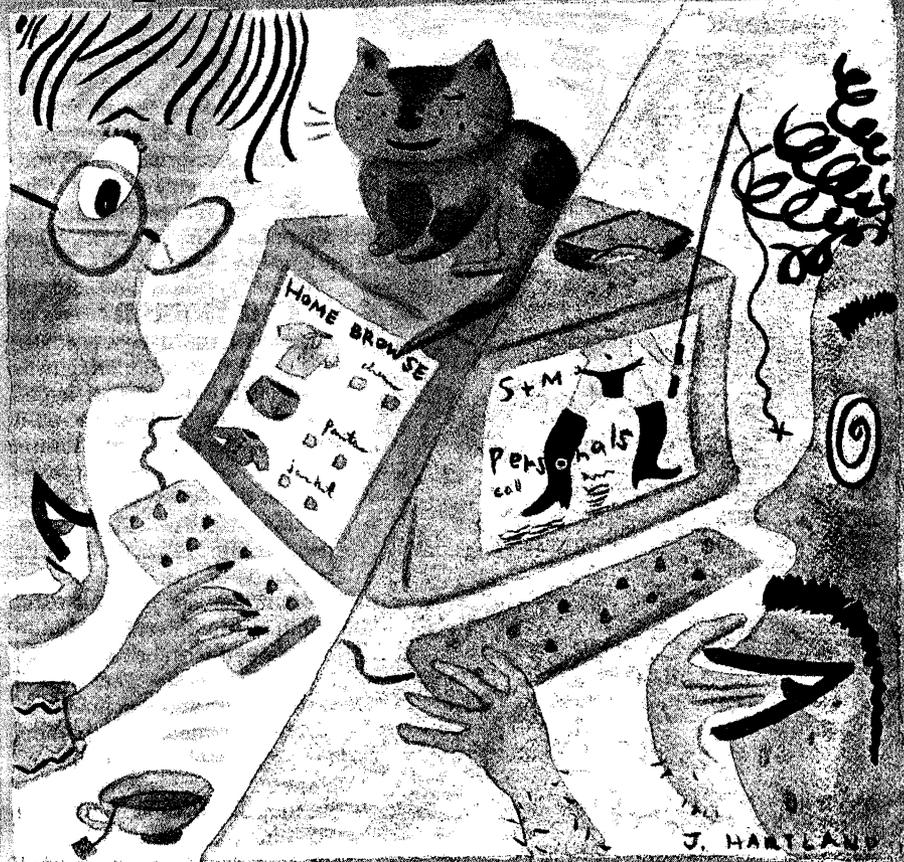


ILLUSTRATION BY JESSIE HARTLAND

come close since they both got on line.

Why, I wondered, would some men find it easier to open up on e-mail? It's a combination of the technology (which they enjoy) and the obliqueness of the written word, just as many men will reveal feelings in dribs and drabs while riding in the car or doing something, which they'd never talk about sitting face to face. It's too intense, too bearing-down on them, and once you start you have to keep going. With a computer in between, it's safer.

It was on e-mail, in fact, that I described to Ralph how boys in groups often struggle to get the upper hand whereas girls tend to maintain an appearance of cooperation. And he pointed out that this explained why boys are more likely to be captivated by computers than girls are. Boys are typically motivated by a social structure that says if you don't dominate you will be dominated. Computers, by their nature, balk: you type a perfectly appropriate command and it refuses to do what it should. Many boys and men are incited by this defiance: "I'm going to whip this into line and teach it

who's boss! I'll get it to do what I say!" (and if they work hard enough, they always can). Girls and women are more likely to respond. "This thing won't cooperate. Get it away from me!"

Although no one wants to think of herself as "typical"—how much nicer to be sui generis—my relationship to my computer is—gulp—fairly typical for a woman. Most women (with plenty of exceptions) aren't excited by tinkering with the technology, grappling with the challenge of eliminating bugs or getting the biggest and best computer. These dynamics appeal to many men's interest in making sure they're on the top side of the inevitable who's-up-who's-down struggle that life is for them. E-mail appeals to my view of life as a contest for connections to others. When I see that I have 15 messages I feel loved.

I once posted a technical question on a computer network for linguists and was flooded with long dispositions, some pages long. I was staggered by the generosity and the expertise, but wondered where these

guys found the time—and why all the answers I got were from men.

Like coed classrooms and meetings, discussions on e-mail networks tend to be dominated by male voices, unless they're specifically women-only, like single-sex schools. On line, women don't have to worry about getting the floor (you just send a message when you feel like it), but, according to linguists Susan Herring and Laurel Sutton, who have studied this, they have the usual problems of having their messages ignored or attacked. The anonymity of public networks frees a small number of men to send long, vituperative, sarcastic messages that many other men either can tolerate or actually enjoy, but turn most women off.

The anonymity of networks leads to another sad part of the e-mail story: there are men who deluge women with questions about their appearance and invitations to sex. On college campuses, as soon as women students log on, they are bombarded by references to sex, like going to work and finding pornographic posters adorning the walls.

Taking time: Most women want one thing from a computer—to work. This is significant counterevidence to the claim that men want to focus on information while women are interested in rapport. That claim I found was often true in casual conversation, in which there is no particular information to be conveyed. But with computers, it is often women who are more focused on information, because they don't respond to the challenge of getting equipment to submit.

Once I had learned the basics, my interest in computers waned. I use it to write books (though I never mastered having it do bibliographies or tables of contents) and write checks (but not balance my checkbook). Much as I'd like to use it to do more, I begrudge the time it would take to learn.

Ralph's computer expertise costs him a lot of time. Chivalry requires that he rescue novices in need, and he is called upon by damsel novices far more often than knaves. More men would rather study the instruction booklet than ask directions, as it were, from another person. "When I do help men," Ralph wrote (on e-mail, of course), "they want to be more involved. I once installed a hard drive for a guy, and he wanted to be there with me, wielding the screwdriver and giving his own advice where he could." Women, he finds, usually are not interested in what he's doing; they just want him to get the computer to the point where they can do what they want.

Which pretty much explains how I managed to be a pioneer without becoming an expert. ■