A Good Fit

When we asked students, during their first interview, to describe their computer science peers, both men and women responded with the same image. They described a person in love with computers, myopically focused on them to the neglect of all else, living and breathing the world of computing, "at the computer 24/7." Computer science students are said to emerge from being at their keyboards, just once in a while, with a "monitor tan." A campus electronic bulletin board ran a thread about the types of students in the different schools at Carnegie Mellon. The School of Computer Science (SCS) was pegged with descriptive acronyms such as "See, Can't Socialize," "Sleep, Code, Sleep," and "Socially Challenged Students."

For some students, the image of a computer science major as someone who is myopically obsessed with computers is a perfect fit. Ben, a first-year student, is elated at finally finding "all these people who love computers as much as I do." Now he can now talk about "this stuff" without being thought strange:

> I like that I can talk and discuss some interesting things that I see with computers and what we can do with them. I mean, that's probably the difference between computer science people and others—that I can actually talk what I want to do. . . . You're so amazed that hey, there's all these other people all of a sudden that love these computers! And I can now talk about this, instead of just talking about just more socially interesting subjects.

Another first-year student, Steven, draws a distinction between *real* computer science students and others:

> I think there's two types of people in computer science: there are those who are very smart and work hard, but it's not their life, and then there's me, who could be on the computer all the time. I can go to computer science and spend many, many hours every day. If I had my druthers, I'd spend all day on the computer. I really like summertime because I get to work and I work at a computer all day. I produce programs and what not, and it's like a really good time for me.

This persistent image of the computer science student has deep historical and cultural roots. These roots go back to the days of the early hackers who were discovering the magic of computers at places like Harvard, MIT, Stanford, and Carnegie Mellon. Steven Levy's (1984) book *Hackers: Heroes of the Computer Revolution* describes the lifestyle, passions, and beliefs of these "founding fathers." Hacking was a holy calling, a mission for these young men; computers were considered the magical key to the future. All that mattered about people was their "hacking ability." Brain power was focused on finding the perfect algorithm, and the emotional realm of life was rarely explored. Levy (1984) describes the hacker's world as one without women, in which women and relationships were often regarded as a distraction that took up precious "memory space":

> You would hack and you would live by the Hacker Ethic, and you knew that horribly inefficient and wasteful things like women burned too many cycles, occupied too much memory space. "Women, even today, are considered grossly unpredictable," one PDP-6 hacker noted, almost two decades later. "How can a hacker tolerate such an imperfect being?" (p. 83)

Machines, gadgets, and computing power were objects of fascination. Young males would live and breathe computers, with the computer labs becoming their habitats. The notorious description of the early hackers by prominent MIT computer scientist Joseph Weizenbaum, quoted by Levy, still strikes a familiar chord as the expected image of a computer science "geek":

> Bright young men of disheveled appearance, often with sunken glowing eyes, can be seen sitting at computer consoles, their arms tensed and waiting to fire their fingers, already posed to strike, at the buttons and keys on which their attention seems to be riveted as a gambler's on the rolling dice. When not so transfixed, they often sit at tables strewn with computer printouts over which they pore like possessed students of a cabalistic text. They work until they nearly drop, twenty, thirty hours at a time. Their food, if they arrange it, is brought to them: coffee, Cokes, sandwiches. If possible, they sleep on cots near the printouts. Their rumpled clothes, their unwashed and unshaven faces, and their uncombed hair all testify that they are oblivious to their bodies and to the world in which they move. These are computer bums, compulsive programmers. (pp. 133–134)

Popular portrayals of computer science students today still play with this image. Doonesbury cartoons feature computer science students oblivious to the world around them; a cartoon about Internet Barbie depicts her sitting in front of her computer wearing sweats and drinking coffee. *The New Hacker's Dictionary* (Raymond 1996) describes the computer geek as "withdrawn, relationally incompetent, sexually frustrated and desperately unhappy when not submerged in his or her craft" (p. 529). While the dictionary's editor believes the stereotype is less true than mainstream folklore would have it, he does describe hackers as having "relatively little ability to identify emotionally with other people" (p. 528) because they are accustomed to spending hours and hours at the computer keyboard.

The Glamorous Geek

Recently, cyberspace money and fame have added a touch of glamour to the nerdy geek image. In this cultural shift, the socially clueless computer nerd has merged with the hip, successful, cool guy. A *New York Times* oped piece by Michiko Kakutani (2000) on cyberculture and language opens with the observation that "the lowly geek has become a cultural icon, studied by the fashionistas of Seventh Avenue and the Nasdaq watchers of Wall Street alike" (p. B1). But while computer whizzes may be cooler and more glamorous than before, the expectation is still that young men, sequestered in their cubicles, living and breathing computers, are creating the new world. And the lifestyle of today's computer startups reflects this: offices in Silicon Valley are equipped with bunk beds, workout equipment, and direct lines to the best take-out restaurants. Life is online. Kakutani describes the new language of cyberspace as conjuring up "a chilly, utilitarian world in which people are equated with machines and social Darwinism rules" (p. B1). For example, to be fired or dismissed is to be "uninstalled." A new employee who fits in without any additional training is a "plug and play." Indulging in "nonlinear behavior" means acting irrationally. "Bandwidth" refers to talent or brains, and "client/server action" refers to sex.

Geek Mythology

While both male and female students provide similar descriptions of the typical computer science student, a larger number of students than we had expected (both male and female) say this image of the computer science student "is not me." Contrary to the stereotype, about half of the computer science students we interviewed enjoy computing but also have broad interests and are not glued to their computers. We call this the "geek

mythology" paradox: 69 percent of the female computer science majors we interviewed, as well as 32 percent of the men, perceive themselves as different from the majority of their peers and assert that their lives do not revolve around computers.

Robert, a first-year student, does not feel like the stereotypical computer science student. He talks of walking down his dorm hallway and seeing his peers riveted in front of their computers morning, noon, and night:

> Every single time I pass by their room they're always on the computer typing away. I don't know what they're doing. Either playing games or they're doing e-mail or whatever. But my roommate, for example, stays up until four in the morning just typing away, and I have no idea what he's typing. But he's just there right in front of the computer in the dark and just typing, typing.

Robert does not spend his life at the computer and complains that this singular focus on the computer flares up wherever computer science students congregate. He cites his experiences in the computer science lounge, where "every time I walk in there, the ongoing conversation is about computers." He adds: "They can't stop talking about computers!" Even the whiteboard is covered in "computer language." Matt, another first-year student, specifically distances himself from the hacker mentality: hackers' "intellectual interests aren't necessarily very broad."

Sarah, a first-year student, complains animatedly about what happens when she goes out for dinner with the computer science crowd. While she tries to move the conversation to other topics, it always lands and seems to stay on computers:

> So we're all working on a project, and someone says, "Do you want to go out to dinner?" So six or seven of us pile in a car and go to Eat-N-Park or whatever. And all that happens at the table is I'm sitting there like, "So did any of you hear the new CD by [this band]?" or something, or, "You wouldn't believe this poem we read in my class today!" And they're like, "Oh, we don't care. So anyway, you should see this system that Derrick got. Oh my God! It's so huge! He got an Indy! He got an Indy, and it's like sitting right on his desk just to flaunt at all of us that he's got a better computer than us!" And they're like, "What's the processor speed?" "I don't know, it's somewhere around 100 megahertz!" "Oh!!!" "He's got a 2 gig hard drive!"

Sarah exclaims, "I'm like, 'I don't care! Can't you people talk about anything but computers?' And the thing is, some people here are so happy for the fact that they finally have these friends that just talk about computers! It's like, 'Hey, we can go out to dinner and talk about computers, and people won't laugh at us anymore because computers are hip!' "

Geek Myth More Damaging to Women

While the stereotype of the computer science student as someone who is myopically focused on computing is rejected by many male and female students, women report more distress and are more affected by the perceived difference between themselves and their peers. One-third of the male students we've interviewed say they differ from the stereotype, that they have a broader range of interests than just computing. But twice as many women (more than two-thirds of those we interviewed) feel different from the stereotype. And 20 percent of the women we interviewed question whether they belong in computer science because they feel they do not share the same intensity in focus and interest that they see in their male peers.

Donna is a junior who was very involved in the Internet before coming to Carnegie Mellon. She has always regarded herself as a math-science person. By her second semester, Donna doesn't think that computer science is for her. Comparing her own set of interests to those of her male peers, who seem so driven by computers, she began to doubt her place in the field: "It's not my passion like everyone else. They're all really into it." In her particular case, her boyfriend is "really into robotics" and is planning on going to graduate school and becoming a professor. When we ask her to describe why computer science is not for her, she says:

> When I have free time, I don't spend it reading machine learning books or robotics books like these other guys here. It's like, "Oh my gosh, this isn't for me." It's their hobby. They all start reading machine learning books or robotics books or build a little robot or something, and I'm just not like that at all. In my free time I prefer to read a good fiction book or learn how to do photography or something different, whereas that's their hobby, it's their work, it's their one goal. I'm just not like that at all; I don't dream in code like they do.

Comparing herself to peers who "dream in code," who do nothing but computer science, she questions her own motivation and whether she belongs:

> Sometimes I feel they [male peers] have a motivation that's deeper than I do. It's weird. I have that kind of feeling like, "What? Do I belong in this major if they love programming that much?" And I have friends who will be like, "Well, I am going to teach myself a new language," and they'll go pull an all-nighter. I don't have that motivation, so am I in the right department? Am I in the right thing?

Each student's self-evaluation becomes a critical part of his or her sense of belonging in computer science, and the myopically obsessed computer

whiz types have become the reference group—a frame of reference for each student's self-evaluation and attitude formation. An exceptionally high level of obsession and expertise has become the expected norm and has raised the bar for the level of knowledge, interest, and expertise identified with computer science majors. For women, seeing most of their male peers as totally absorbed in computing, the fear that "I don't seem to *love* it as much as the men, and therefore I don't belong," lurks in many women's doubts.