

# Lord of the Hackers

By Sherry Turkle

**T**HE LORD OF THE RINGS: The Fellowship of the Ring is a brainy and beautiful film that has received more Academy Award nominations than any other film this year. It takes nothing away from its artistry to allow that its appeal, like that of the books on which it is based, owes much to the computer culture that made J. R. R. Tolkien's fantasy world its own.

That culture has a particular way of using the computer to think about the world, a binary perspective that is appealing but problematic. Our fascination with Tolkien's work says more about us than it does about Tolkien.

In many ways, Middle Earth, the universe of "The Lord of the Rings," is like a computer program, rule-driven and bounded. In the early 1970's, the computer scientists at Stanford University's Artificial Intelligence Laboratory were so enamored of the books (they were first published in the 1950's, but did not gain popularity in America until a decade later) that they designed

## Tolkien's world seems made for computer people.

three elfin fonts for their printers. Two of the researchers wrote a Tolkienesque, single-player quest game that became known as "Adventure"; it spread worldwide via the nascent Internet.

The personal computer movement of the 1970's and early 1980's was deeply immersed in Middle Earth and translated it into hugely popular (and enduring) role-playing games like "Dungeons and Dragons." When the pioneers of personal computing organized their conferences, they used the metaphor of medieval "fares." In 1993, a computer science student who now works for Microsoft put up the first Web site about Tolkien. Today there are about 856,000 sites devoted to the author and his work.

These days computer programmers appropriate the standard Tolkien palette of elves, knights, wizards and dwarfs to build their online fantasy games. They also use computational metaphors to reinterpret Tolkien, who is recast as the programmer of Middle Earth. One online contributor theorizes that the rings, the central metaphor and driving force of the story — they empower and corrupt all who wear them — are "hardware-only" computers "with all their operating code permanently burned into their structure."

Like the rings, the inhabitants of Middle Earth behave according to a set of rules. This is part of what makes it so easy to translate Tol-

kien's work into game worlds. In "Dungeons and Dragons," for instance, character attributes like charisma or strength are assigned according to a point system. There is little room for psychological ambivalence or complex motivations in such a personality.

Frodo, the hero of "The Lord of the Rings," is part of a fellowship, although it is more properly called a fraternity: in Tolkien's world, the men bond. The few females are loved and feared as icons or charms.

And the computer culture, by and large, is a world built by engineers for engineers, by men for men. (This is a culture that found it natural to have "abort, terminate, and fail" as three choices on a screen prompt.) Like Tolkien's world, most computer games are about mastery through violence; they serve as a socialization into the computer culture for adolescent boys.

It's not surprising that fewer girls decide to cross the threshold. My 10-year-old daughter has noticed the resemblance between "The Lord of the Rings" and computer games — in both substance and form. There are no girls in either, she says, because "girls don't do these kinds of adventures."

Adolescents are wise in the psychology of computer games and Middle Earth. They live in a world they can't control, in a body that seems increasingly alien. To them the computer world is soothing, offering reassurance through mastery. Just as each episode of "The Lord of the Rings" presents a danger and each has its resolution, so many adolescent boys move from one block of intransigent code to another, from one screen to the next, declaring victory as they go.

But this distinction is about more than gender; it is about ways of looking at the world — real, imagined or computer-generated. Some pioneers of computing had a style of working that rewarded risk. They spoke of programming itself as though it were a dangerous quest. At M.I.T. computer hackers even had a name for it: "sport death." To pull back from the impending doom of a system crash required near magic, an almost empathetic knowledge of the intricacies of code. For this community, a certain bravado came to be seen as valuable, even necessary, beyond the world of programming.

Middle Earth offers its own version of "sport death." In the movies or on the computer, life is danger and triumph, screen by screen. In the fellowship of the microchip, you may crash but ultimately you win. In computer games the goal is to overpower the enemy. There is no place for negotiation or compromise.

**H**ackers used to be known simply as computer people. But if we take the computer as representative of a way of knowing, a way of seeing the world, then we are all computer people now. We use computers in different ways, of course, and they can offer more than one perspective on our lives.

But the work of J. R. R. Tolkien captures a certain computational aesthetic that is reflected in the mass culture. This sensibility tends to be binary. Perhaps such simplicity helps explain the current popularity of "The Lord of the Rings"; at a time

when friends and enemies are sometimes indistinguishable, the black-and-white world of fantasy holds a particular allure.

The computer world owes its simple clarities to the fact that it is not real. Tolkien's Middle Earth and the world of the computer screen leave little room for ambiguity, ambivalence or contradiction. But the real world demands that we be comfortable with them.

employment of police officers. The Compstat program developed during the Giuliani years has become a model for much of the country and in many other parts of the world.

And even as the police force was expanding and Compstat was being put in place, the terrible plague of crack cocaine that had brought insane levels of violence to the city's streets began to ease. Attitudes in the hardest-hit neighborhoods changed. People were sickened by the violence. Children traumatized by the murder of older siblings or cousins or parents or friends turned away from crack, and crackheads eventually became pariahs.

I think young New Yorkers have

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So what's ahead? The city is facing huge budget problems that make it difficult to maintain Police Department strength at its highest levels — a little over 40,000. There are about 38,000 officers now, and that will increase to 39,200 after July 1. Mayor Michael Bloomberg and Police Commissioner Kelly have both said they will attempt to hold the line there.

As for deployment, Mr. Kelly said, "We still have to keep ourselves focused very much on the issue of crime suppression." But in the aftermath of Sept. 11 the department also has what he described as "this sort of overarching issue that can't be ignored — counterterrorism."

He said he was confident the department could do both.

### Leaving no one behind: Part II

## Laborious indeed at the first ascent

In an essay, John Milton pointed out that a noble education is hard at first, but then "so smooth, so green, so full of goodly prospect" that the initial effort is well justified. This is the story for everyone, but it is especially true for the disadvantaged and members of minority groups.

Previously, we described the many groups that help women and minorities obtain a better general education, and how business can support them. And a good general education is the foundation for hope and advancement.

Yet many businesses need employees with advanced skills and technical training. When the opportunity is given to obtain these skills, the progress of disadvantaged groups will be accelerated.

Fortunately, the number and sophistication of organizations devoted to improving the professional education of minorities and women are both large and growing. We are proud to provide support to several.

One challenge is to recruit and then to prepare students for advanced training in engineering and business. A southeastern U.S. group called SECME has this as its focus, operating through an outreach program at the high school level. Another key business-supported organization, the National Action Council for Minorities in Engineering, gives college scholarships to minority students interested in engineering.

A group with a similar but distinctive objective, the LEAD Program in Business, selects 350 minority students to participate in summer institutes hosted by university business schools.

Another organization, the Cooperative Development Energy Program at Fort Valley State University in Georgia, operates a high school-level training program for minorities in math, science and engineering, and then, coupled with two other universities, offers dual degrees in geosciences and engineering.

Attracting women to mathematics and the technical and engineering professions is important and has been the goal of the Society of Women Engineers. The Association for Women in Mathematics both recruits women to major in math and has programs devoted to retaining the women who are already specializing in this field.

In college, students receive continuing encouragement to complete their engineering or business studies. The National Society of Black Engineers is a professional organization that supports students through scholarships and campus events. A similar focus is provided by the Society of Hispanic Professional Engineers, which promotes the engineering profession among Spanish speakers.

The dedication of these organizations to attracting and sustaining women and minorities in technical fields is encouraging. Over time, they have had a palpable effect on the number of women and minorities that choose technical studies, excel in them, and go on to professional employment. The first "ascent" may have been a challenge, but the results offer enormous hope for the future.

Next: Promoting minority business.

**ExxonMobil**