First Monday, Volume 1, Number 1 - 6 May 1996

f i ® s t m ¤ ñ d @ ¥

PEER-REVIEWED JOURNAL ON THE INTERNET

Spreadsheet Anthropologist Apple researcher Bonnie Nardi observes digital villagers at work

Anthropologist Bonnie A. Nardi has studied New Guinean and Western Samoan villagers. Now Nardi's field work takes her on explorations of digital jungles, electronic alleys, and everyday offices and cubicles. She has been trying to understand the computing culture that's developed in the last few decades, with the same techniques that have been used for decades with more alien cultures. Nardi's natives are ordinary computer users like you and me. Among these tribes, she finds the ordinary extraordinary. Her subjects use tools like personal computers, software applications, and the Internet. She's studied how spreadsheet users, brain surgeons, reference librarians and teenagers use technology and what they think of it. She's been trying to answer questions about how these natives interact with their new tools and how cybertools affect the way they interact with each other. In turn, her work may change the way in which programmers and designers think, altering the ways in which future tribes use electronic tools.

Nardi is the author of "A Small Matter of Programming: Perspectives on End User Computing" (Cambridge, Mass: MIT Press, 1993) and the editor of "Context and Consciousness: Activity Theory and Human-Computer Interaction" (Cambridge, Mass.: MIT Press, 1996).

FM: Why would an anthropologist find computer users interesting?

Computing is intensely social. It requires social support, produces social products, and enables new social relationships. Most research and philosophizing on computing has come from computer scientists and cognitive psychologists. They are not prepared to deal with the social. So we have been looking at computing in black and white. I want to see it and report it in its true brilliant colors.

Genetically, people and the other large primates are almost identical. What makes us different is our ability to envision and then actually create and use artifacts according to the envisionment. A chimp can pick up a stick and use it to scoop termites, but the chimp will never design the stick. I cannot think of anything more interesting than understanding how the design of digital sticks changes culture.

From a more practical standpoint, it is remarkable how many products are designed and brought to market with very little idea of how people will use them or whether they will use them at all. A good ethnography is a fertile source of design ideas. The kind of nuanced understanding that anthropologists achieve is important all over the place for product design. For example, the size and placement of office space in the home, union politics in schools, organizational hierarchies, office work practices, levels of literacy, and cultural expectations can affect the way a technology is deployed (or not deployed). That's why I work in industry, so I can address those issues.

FM: A journalist in Wired recently said, "If cultural anthropologists could write, a lot of journalists would have to find other work." Doesn't the turgid style of ethnographies mean that they don't communicate well to product designers, marketers and others who could use the information they contain?

Yes! I am working with my colleague Brian Reilly at Apple on a multimedia ethnography (on a CD). We want to pioneer a new, more accessible form of ethnography that is rich visually and textually. Other researchers are tackling the communication problem by trying to write compelling narratives. But they miss the whole visual end and they are going to find that playwrights and novelists beat them at that game. Film has impact but by itself it's way too linear and doesn't afford the scope for a good old fashioned argument in words. Words in a row, as Bruce Sterling says, are a great tool. Multimedia exploits each medium for its own strengths and good multimedia weaves them together seamlessly. The CD we're doing now is about a digital photography class at Lincoln High School in San Jose, California that we spent months studying. We have the beautiful artwork the students did, every handout the teacher provided, videos of the class, digital photos, some QuickTime VR and lots of audio interviews. Plus our own reflections on what happened in the class. It will be a very detailed resource for teachers, a record of what is possible when kids have great technology and the necessary training, a design and marketing resource, and a documentary of the class.

FM: How do computer users resemble your subjects in New Guinea?

In New Guinea, even in the small village where I lived, each person had their own unique interests and talents that they

contributed to the community. There was a musician and a law-and-order type who "policed" the village. There were entrepreneurs who traded in coffee and cacao and there was a sorcerer. There was a politician, self-serving just like our politicians. When I studied spreadsheet users, something very similar hit me over the head. I found that I needed to pay attention not just to the design of the spreadsheet itself, but to how people created their spreadsheets through the specific contributions of different individuals with different interests. There was the office guru who knew how to program macros. There was the accountant with a flair for graphics. And the manager who insisted on debugging every formula. It's quite interesting how people slip and slide in a social situation to gain a bit of turf for themselves. Personal interests and talents are used in the service of the group. Technology design should reflect this. Technology that assumes at the outset that its raison d'etre is to enable people to create socially produced and valued things will be far more sophisticated and useful than what we have been used to.

FM: How are New Guineans different than those you study in the West?

They're overwhelmed by the sheer bulk of the material goods Westerners have. I lived in the area formerly known as the home of "cargo cults." Practitioners in these cults believed they could attain the same goods Europeans had, through magic, prayer and dance. The massive material differences between their lives and ours is a continual puzzle to them.

FM: What would you consider an advanced technology in New Guinea? How is it used?

New Guineans have a wonderful system of communication via "slit gongs," which are simply hollowed out tree trunks audible for miles when struck with a stick. They have codes for names, places, and events and transmit all sorts of news. Great wireless technology. They use slit gongs to announce meetings, call people back to the village if they are out in their gardens, relay news of social gatherings and funerals.

FM: For New Guinea natives, the dream state is a virtual one. Yet in our culture, we claim to have a real, a virtual, and a dream state. Or are virtual and dream states one and the same?

Actually I think that everything is virtual or everything is real, depending on your perspective. The need to experience the virtual is deeply human. In the most primitive cultures, people take drugs, gaze at pictures in caves, listen to folk tales, go into trances, dress up and take on the identity of dead ancestors, imbue every animal, vegetable, and mineral in sight with identity and perhaps magical power. By the same token, back here in the West, reading a book is pretty virtual. Think of how much time you spend doing that.

FM: Is there a relationship between reality and responsibility?

I have been influenced by activity theory. It's a psychological theory that was developed in the Soviet Union in the 1920s under conditions of extreme repression and danger. It basically says, you are what you do. Thinking is a kind of doing. Thought and behavior are cut from the same cloth. You are responsible for your fantasies, your memories, your thought processes - activities you have chosen. In "The Little Prince" by St. Exupery, the fox says the same thing to the little prince: "You are responsible for your rose." That's what my book "Context and Consciousness" is about. I want people to reflect on the technology they design and use. Is that video system with surveillance capabilities really what you want to design and sell? How about making a cheap handheld device to help people in developing countries learn to read instead? This may sound naive, but decisions like this get made in industry everyday and these decisions impact lives, lots of lives. Reality is the accretion of all these decisions, the activities we choose.

FM: You propose for the future an evolution of an "information ecology." What does that mean?

Information is used most effectively when embedded in a system, or ecology, of people and diverse resources such as paper and pencils and computers. A library, for example, is a wonderful place because not only does it have books, magazines, tapes, and films, it has librarians who can help you find and use them. A library has computers. It has story time for 2-year olds, and study halls for teens. It is a living and breathing ecology in which information is shared and used. It's not a collection of bits, which is how virtual information systems end up being characterized.

FM: Why use the loaded word "ecology"?

Loaded words get people's attention! And I like this one a lot. Ecologists have taught us that diverse ecologies, populated by many different species, are robust and healthy. Monoculture - a fake, brittle ecology - gives sensational results for a short time, then completely fails. Information ecologies should be rich and diverse for robustness. A rain forest is a much more interesting place to be than 10 square miles of soybeans.

FM: There are already examples of the misuse of information on the Internet by the gigabytic discharge of factoids to millions of unsuspecting readers. If there is an information ecology, will there be information polluters? Who will clean up the mess? Librarians? Will there be the equivalent of a global Information Protection Agency?

Librarians will be in the forefront of information pollution prevention. They are technically expert at assessing databases, spend their days sniffing out the latest valid information. And there are Internet information brokers, a new job created by technology. They specialize in specific areas and gather the best and most current data for their subscribers. The mess and the muck will never completely go away because human gullibility and perversity are not going to go away. There will

always be gossip, rumor, innuendo, and lies, as there are in every human society. I'm afraid the Information Protection Agency would be straight out of Orwell. Without thought police and censorship, the flowers round the privy is what we should aim for terms of information cleanup, realistically speaking. Educating kids to think is the best inoculation against information pollution. In addition to the tools of logic, educators should take very seriously the work of Betty Edwards on training in visual/perceptual modes of thinking. Her books, "Drawing on the Right Side of the Brain" and "Drawing on the Artist Within," are very important.

FM: In your new book, "Rotwang's Children" what does Rotwang symbolize?

For some, a character from the 70-year old German film "Metropolis" might not have much relationship to current technologies or the future. Rotwang is the ancestor who didn't get it quite right, but started the family line anyway, so we respect him. In the film, Rotwang is a mad scientist who creates a robot he hopes he can love, a robot with both mechanical and human attributes. But the robot quickly gets out of control because she has no soul, no heart, she doesn't care. The point of the film is that technology without heart will be debased. Our own creations, Rotwang's children and grandchildren, can get it right, if we choose.

FM: Do you see a difference between the way young people use computers and the way you use them?

My children think of computers as convenient tools over which they are in control. I'm still awestruck by computational power. I'm more like a New Guinean marveling over European goods.

First Monday Interviews Bonnie Nardi
First Monday, volume 1, number 1 (May 1996),
URL: http://www.uic.edu/htbin/cgiwrap/bin/ojs/index.php?journal=fm&page=article&op=view&path[]=470&path[]=391