Information Ecologies: Using Technology with Heart, by Bonnie A. Nardi and Vicki L. O'Day.. Cambridge, MA: MIT Press (1999), viv, 232 pp.

Reviewed by Dr.Chris Halaska , Social Design, Eugene, Oregon.

In Information Ecologies, Bonnie Nardi and Vicki O'Day present a new metaphor for thinking about technology. Going beyond the common metaphors of: technology as tool (objects to control and manipulate), technology as text (carrier of meaning from designer to user), and technology as system (technology embedded in social systems), they introduce the idea of technology as ecology.

Based on biological ecosystems, a technological ecology has several key components:

- it is a system of interrelated people and tools;
- it contains a diversity of roles for the people and functions for the tools;
- there is a coevolution over time as new technologies arrive and are assimilated, and as peopleâs roles develop and change;
- there is a keystone species - a particular role, such as a person who can translate across disciplines - that is essential to the success of the ecology; and
- it has a defined locality.

According to Nardi and O'Day, the limited size and human scale of technological ecologies offer the possibility for meaningful action by individuals. Thinking about technologies in a defined environment lets ãpeople act locally in a committed, reflective way. "by responding to technologies with an initiative that is grounded in local understanding and values."

The book is divided into two halves: the first describes their views within the field of technology criticism and elaborates on their ideas about information ecologies, and the second is a collection of real-world case studies based on field work the authors have carried out. The field studies are all examples of information technologies being used in small-scale commercial or educational settings: corporate reference libraries; a virtual world based in an inner-city school in Phoenix, Arizona; corporate spreadsheet and CAD user; digital photography in another school; and a dysfunctional hospital operating room.

Local Action

The concept of a technological ecology is a useful metaphor, particularly because of its local focus. It has the possibility of changing relationships in the same way that the ecological notion of a watershed does. Political boundaries can become less relevant, while geographical ones predominate.

Nardi and O'Day point out correctly that looking at technology as part of larger political and economic systems can leave one feeling hopeless. If one sees technologies as embedded in these large, unresponsive systems, it is difficult to see how to effect change. The ecological metaphor helps address that dilemma by bringing the action down to a local level. The authors repeatedly point out that in smaller, local arenas, individuals and groups have the most influence and opportunities to leverage the system. This idea is crucial, as one canât overstate the positive benefits of giving people a way to make individual contributions, especially those who normally see themselves (or are disparaged) as technologically unsophisticated.

I wish the authors would go further, however, by locating personal, local action as a first step in a larger framework of taking responsibility for the technologies we choose to use and how we use them. By focusing exclusively on the local, they preclude important, wider action and place people into the position of always reacting to the next technology coming down the road instead of helping direct which technologies are created in the first place.

Presenting information ecologies as the first step in a progression could show how becoming involved on a local level will give people experience with directing the use of technology - experience that can be valuable later when they enter the larger arena of political activism. That growth has already been seen over time in such arenas as the environmental and civil rights movements. People who have started by focusing on immediate, local concerns

have ended up being active participants in national, political organizations working for wider changes.

Evolving Information Ecologies

Nardi and O'Day's suggestions for evolving information ecologies are useful, although somewhat vague. They first suggest that one understand one's own and others' core values, to avoid letting technology designers or the marketplace decide what values are important.

They also suggest that one should pay attention to technologies and the activities that involve them, and wonder aloud why things are done the way they are. It is, of course, hard to pay attention to everyday activities -- we actively ignore them so we can get on with our lives. But particularly around the use of technology, it is important to occasionally rethink why we do things and why we are using particular tools. This is when it is particularly useful to have people unfamiliar with a technology --those who are not experts -- comment and ask questions.

Nardi and O'Day provide a good list of strategic, open-ended questions to get one thinking about technology in a particular setting. Because asking lots of questions and re-thinking the use of technology in a particular ecology can lead to an excess of information and indecision, they suggest focusing on something small that will jump start larger action.

Isolated Ecologies

While I find the metaphor of technological ecologies to be a useful way to think about technological systems, my biggest criticism of the book is the way in which the authors place themselves in the larger discussion about technology. In particular, they set up simplistic technophilic and technophobic extremes, while claiming an untrodden, nuanced middle way for themselves.

The problem with this positioning is that at least two middle ways already exist. One of these is the dominant view of technology, which says that technologies are neutral, and good or bad effects depend only on how the technologies are used. This morally neutral view does not admit that technologies might have inherent biases. Nardi and O'Day do agree that technologies are not neutral, but donât acknowledge the extent to which the technology-is-neutral viewpoint dominates and influences our conception of technology.

For example, they point out how our culture often unquestionably accepts new technologies, and how that acceptance is actively promoted by technologists who expound on the inevitability of the new tools and techniques. But Nardi and O'Day don't talk about how this "rhetoric of inevitability" is fostered by thinking of technologies as neutral. If we consider all technologies to be morally neutral, then there is no point in judging whether or not a technology should be allowed. If all technologies are allowed, then it becomes inevitable that any technology that can be conceptualized, will eventually be created. The authors' middle way of focusing on information ecologies avoids dealing with one middle way that already exists -- the prevalent and damaging idea that technologies are neutral.

The authors also dismiss another middle way, the metaphor of technology as politics. This view has much in common with the metaphor of technology as system that they discuss - the views share the belief that technologies are integrally embedded in our social, political and economic systems. However, while the system metaphor they use leads to the conclusion that technological systems are overwhelming and autonomous -- and therefore uncontrollable, the politics metaphor recognizes that technologies are created by humans for human purposes, and can therefore be controlled by humans who work to change social and political structures.

Nardi and O'Day write off political action in a paragraph, claiming it is not the appropriate avenue for everyone. That may be true, but without tying information ecologies to political action, larger change will not occur, and those inhabiting local ecologies will always be reacting to outside forces. Technologies will continue to be developed and introduced by others outside these local ecologies, while within them people will attempt to adapt the technologies for local use. There is no avenue for participants in a local ecology to help direct the development of technology so that it might reflect their values in the first place.

Abandoning Control

The theme of not wanting to control or restrict technologies except on the smallest scale runs through Information Ecologies. In their theoretical chapters, Nardi and O'Day specifically say that we shouldnât turn our back on technologies, and that in any case, technological systems are too complex to understand and control. They donât mention the existence of the field of technology assessment, which has been successful at predicting the major effects of new technologies.

Nardi and O'Day say that it is important to look at specific uses of technologies to avoid becoming trapped in generalizations about those technologies -- an excellent suggestion, as long as one doesnât lose sight of the big picture. Unfortunately, the authors use their suggestion in a one-sided manner to avoid the possibility of restricting the Internet. They criticize the technology commentator Jerry Mander for not looking at the way specific uses of the Internet foster diversity and help oppressed peoples. Then, despite discussing the dangers of commercialization of

the Internet, they don't look at specific uses of the Internet that further commercialization and standardization -- two related issues they oppose. If they did, they would probably see that the list of detrimental uses of the Internet exceeds the positive uses.

This holistic comparison of a technology is precisely what Mander says needs to be done. He suggests that if you look only at the personal and local impacts of technologies, you might see personal and local benefits. But if you take a wider view, you might see that although a technology has benefits for you, it might have much greater benefits for institutions that harm you. Although the Internet (or any technology) can appear beneficial for everyone, it can be a net loss for those in favor of increasing diversity and community power.

On the scale of information ecologies, Nardi and O'Day do encourage people to control technologies. In their examples and case studies, they highlight the ways in which technologies are restricted in particular ecologies: one school decided not to send out newsletters via email because it would lose something in the new medium; another school decided to restrict certain technical features of virtual world software to help kids learn to deal with uncomfortable social situations; and in libraries they advise not replacing librarians with software due to the human expertise librarians add.

Finally, there are a couple of weaknesses in the case studies. First, they all involve information technologies, which is not surprising, given the authors' backgrounds (and the title of the book!). However, it would have been useful to have at least one example of a technological ecology that didn't involve computers. The case studies also could have benefited from a summary that compared the five aspects of information ecologies (system, diversity, coevolution, keystone species, locality) in each case to show how those factors affected the different situations.

Conclusion

Information Ecologies is written in an engaging style, which makes it easy to delve into, even in the more theoretical chapters. Nardi and O'Day's main project of introducing the concept of a technological ecology is an important one. Any metaphor that helps us think about how to encourage more individual and small group control over technologies is positive. However, there are a couple of key failings that make the book less persuasive and useful than it could otherwise be: their discussion of the technology criticism field is incomplete and less nuanced than they claim, and the presentation of their real-world case studies is not well connected with their theoretical material.

By focusing on the small, they provide an entry point for non-technical people to begin to control the technologies they face daily. But by failing to connect their information ecologies with the larger political system of technology development, their metaphor limits the possibility for larger change. The ecologies seem geared to deal with an inevitable flood of new technologies into small, local worlds, rather than places where committed people can direct the development of desired technologies.

Environmentalism: A Global History, by Ramachandra Guha. New York: Longman (2000), xiii, 161 pp.

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Environmentalism: A Global History is best read as a short but ambitious text that will introduce readers to a series of environmental thinkers from across the globe. In Guhaâs own explanation of the book, ãthis is a historical account and analysis of the origins and expressions of environmental concern, of how individuals and institutions have perceived, propagated, and acted upon their experience of environmental decayä (p. 2). As such, it is not a history of the environment itself, which he leaves to scientists, but a history of environmental ideas. In just 145 pages of text, Guha covers many of the most prominent environmental thinkers over the last two centuries, and adds a few lesser known as well. The thinkers are placed in their social contexts, with particular attention to the unfolding of industrial and colonial (and post-) processes. Taken as a whole, the book is well written and engaging; I think it would be successful as a text chosen to instigate discussion of global and historical varieties of environmentalism.