



Chapter III

The Progress of the Internet¹

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By simplifying communication, the Internet is causing significant, broad changes. This chapter describes some effects of the Internet on teaching and research: the use of Web pages in teaching, spread of remote statistical analysis, elimination of journal page constraints, and the impact on activities that benefit from debate and discussion. The chapter ends by pointing out that although the technical implications of an innovation are predictable, the major social implications often do not become apparent for years.

The Web, the Internet, and other aspects of electronic communications are the most important things to happen to computing in the 1990s. They are changing the way we think about computing and, many believe, they have the potential to change our society, our politics, and our culture, not to mention academic institutions and research programs.

When we talk about evolution, it is useful to begin with *direction*. What direction are we moving? A helpful starting point is to remember what made the Internet explode into a mass phenomenon. A common thread runs through many major changes in computing. For example, text-mode word processors like Wordstar or WordPerfect 5.1 were supplanted by WYSIWYG word processors like Microsoft Word, and command line interfaces are being replaced by graphical interfaces. Windowing graphical interfaces, when combined with mice and menus, are generally superior because they are easier to learn and often easier to use; they require less technical computer skill to do productive substantive work. The reason can be summarized in a single word: they are simpler. The same thread runs through the Internet: compared to gophers, FTP, file servers, or e-mail, just having a link on your desktop or in a document is a marvelous improvement. How simple to just click on a link and see all sorts of new stuff. The Web and HTML, with Web browsers to tie it all together,

made the Internet much easier to use, much simpler. What made the Internet take off is that the barrier to information on your desktop became much, much lower. (The words “Web” and “Internet” are used interchangeably here and elsewhere in this article even though the Internet is considerably broader, that it includes other protocols like gopher, FTP, and WAIS, in addition to the World Wide Web protocol.)

The result of the Web breakthrough is the Internet we see today. Today the Internet is something like the early 1980s in personal computers. In the early 80s, most people buying a personal computer didn't know much about computing; they didn't know what to expect, and they were hungry for new experiences. Many people buying computers in the early 1980s would read a DOS message like 'Not ready reading drive B:' and they'd think, "This is *so* much fun! Microcomputers are great!"

This is where the Internet is today. Many Internet users don't know much about the Web, they're hungry for new online experiences, and they're willing to try anything. Because so many new users are so enthusiastically uncritical we can call this the “honeymoon” stage of the Internet. As with PCs, the honeymoon market will disappear in a few years. The coming market will be less forgiving, more expensive, harder to please. The standards for design and interface quality, and quality of information will rise quickly. This will lead to much more complex web sites. It is one of the factors underlying the rapid rise in the cost of corporate web sites.

This has implications for academic users. Academics were once on the leading edge of Web site designers and Internet users; no longer. As designers, academics can't compete with the time, money, and skills of the professional designers hired by corporate web users. Nor, given the interests of most academics, would they want to. The Internet has moved away from its origins in research and is now dominated by the needs and goals of corporate users. Their primary goal is to make money.² Many currently hot topics like security and authentication of message senders reflect the need to transmit financial information like credit card numbers or purchase orders securely across the Web. While academics are also interested in these things, there is a distinct shift of emphasis from the original focus on noncommercial exchange of research information and email.

As academics, both faculty and students, continue to gain experience with the Web, it is clear that we will all make more use of it for classes, administration, and research. A Web site for a class is rapidly becoming a standard just like a course syllabus. For large undergraduate courses, academic textbook publishers now compete by supplying items like instructor's manuals, sample exams, videos, and other teaching aids. Publishers will soon supply professionally designed, sample Web pages, as well as suggestions for how to use them to ease the burden of teaching.

While using the Web to sell products has attracted attention because of the money to be made, we should not forget that one thing the Internet is very good at is providing reference information. Reference information is material that does not go out of date quickly and it includes detailed product specifications, contact information, customer support and service information, or advertising. Academic versions of reference information includes course descriptions and syllabi, departmental and faculty office numbers, phone numbers, and office hours, requirements for majors, applications for graduate or post-graduate study, funding opportunities, applications, and deadlines. Because it is cheap, fast, accessible, and asynchronous the Web is an excellent way to deliver reference information.

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