horrific stories of hackers with software which, in order to find credit card numbers, "sniffs" 16-digit numbers out of the streams of data, allowing fraudulent use of the cards. These stories are often apocryphal, and besides, one can understand a hacker wanting a credit card number, but a scientific paper does not carry the same appeal.

In the article by Appel (1) on which this dialogue is based, the issue of security is not mentioned except by implication. One assumes that all details are stored on a networked computer, and that adequate backup procedures are in place, or else this aspect of security may be in doubt. Otherwise, I believe that security is not a contraindication for e-mail editing of scientific papers.

If one is concerned about security of transmission, a system known as Secure Sockets Layer (SSL) is an encryption scheme that seems to be the answer. A random number is generated from the sender's computer and is recognized by the recipient's. This number is used as a key for encoding characters (including spaces) in the transmitted message. A simple example of this is ROT13, in which every letter is moved 13 letters or characters forward in the alphabet. The letter "A" thus becomes the letter "M," "B" becomes "N," and so on. A space, in SSL, will also be allocated a letter, so anyone "sniffing" at the stream will not be able to tell where a word begins or ends.

The random number is different each time the computer logs on because the number depends on the log-in procedure followed at the sender's computer and the date and the time the message is sent. To make it even more difficult to be cracked, the random number consists of 40 digits. It has been estimated that a mainframe computer, working constantly, will use about $100 million worth of time to crack the random number.

One other point regarding Appel's article: The programs and procedures he uses are all UNIX-based. While UNIX is an extremely powerful system for certain applications, it is user unfriendly, and time consuming to learn. Furthermore, Appel describes custom-written programs for his manuscript tracking and e-mail. There are many commercially available efficient, user-friendly programs for e-mail and manuscript tracking. Examples are RMTS (manuscript tracking) and Pegasus Mail, Eudora, or Netscape for e-mail.

**Conclusion**

Whatever manuscript tracking system is used, wherever authors, editors, and reviewers are located, and whatever type of journal is being published, I am in no doubt that use of electronic communication services is an invaluable method of manuscript transmission and one that is inescapable in the future of publishing.

---

**Security: So What's the Big Deal?**

Security on the Internet is one of those conversations whose term has expired. Yes, there are still reports of piracy of intellectual property and even financial propertyinstigated by hackers and evil doers. However, I am not convinced that any great harm has been done to mankind because of these intrusions on scientific communication.

This insecurity about security reminds me of pioneer days in the American West. Most people stayed in their comfortable homes in Philadelphia, drinking tea out of fine china cups, while a few brave souls rode barefoot over the Great Plains to reach the promised land. There wasn't much security in walking over Donner Pass, but somebody had to do it. Now we don't think anything about moving from coast to coast because it is secure.

Where is the security in basic research labs? Colleagues meet and discuss their work. Scientists report their work in progress at meetings, where feedback is solicited. Interim reports are submitted to funding agencies and journals as work in progress. Reports are left in unsecured files and on researchers' desks. Reports are photocopied and faxed by clerical staff who have no stake in the proprietary nature of the work. The postal workers and express mailers handle the data and manuscript in its various stages. I won't even mention the breach of confidentiality that happens too often in the review process. Why are these not seen as places of possible insecurity?

Psychologists contend that during the 1st stages of change we are shocked by the news of the change and become fearful. Transmitting manuscripts on the Internet requires a change in the way we think. It is the Federal Express of the 1990s and the pioneers of the 1840s. Oddly enough, many of us want this to work, but we are stuck in the fear stage as we face our 1st big river with our horses and wagon. It's time to leave the extra baggage behind and figure out how to make this work.

---

**Reference**