Because It's Time

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Abstract: Recent advancements in technology and the dramatic increase in access to the Internet have made electronic journals feasible. This paper discusses the rationale for starting *Medical Education Online* and some thoughts on how electronic networks and other advances in communication are going to impact on scientific journals and scholarly communication in general.

BITNET "Because It's Time NETwork" was implemented in 1981 as a cooperative network among educational institutions [1]. I proposed the idea of *Medical Education Online* (MEO) because, like BITNET 15 years ago, ***it's time*** for an electronic journal in medical education. Electronic journals have been in existence for quite awhile and a number have flourished. Until recently, however, there have been real barriers to electronic publishing. These include limited access to wide area electronic networks, user-*un*friendly software, and the lack of a consistent standard for transmitting anything other than ASCII text files.

A number of factors have coalesced over the last few years to essentially abolish these limitations and provide a level of flexibility in electronic publishing that goes far beyond the traditional paper journal format[2]. Chief among these are the exponential increase in access to Internet, the development of easy-to-use browser software, and the use of client/server protocols and file formats that support formatted text, graphics, sound, and even full multi-media. Today virtually any medical educator can access an electronic journal such as MEO with very little effort.

Along with the fact that it is becoming feasible to create an electronic journal, we need more journal space in medical education. The review and publication process for the current journals takes too long. Additionally, a lot of material that is worth disseminating doesn't get accepted for publication. There are a number of reasons for this. Some may be the fault of the journal editors, however most probably are not. The major problem in my view is the high per-page cost of traditional publishing. This results in page limits creating long queues for publication and the rejection of potentially good manuscripts. When *Academic Medicine* by their own admission accepts only 10%-15% of the submissions they receive, something is wrong! This is compounded by the subjective and sometimes arbitrary nature of the peer-review system. Electronic publication is not a total panacea, but can certainly go a long way towards relieving the problem of limited journal space.

The inherent advantages to electronic publishing have led some to predict the total demise of paper journals[3]. While I doubt that is going to happen, at least within the foreseeable future, online journals are going to play an increasingly important role in the future dissemination of scholarly information. Nicholas Burbules and Bertram Bruce [4] provide an insightful discussion of what form scholarly electronic communication might take and the implications it has for the way we do business in academia. It is hard to tell what will happen, but things are going to change.

A few years ago our dean organized a conference on information technology. One of the speakers made the point that when a new technology evolves, people have a great deal of difficulty figuring out what to do with it, tending to stick to very traditional and often ineffective uses for the new technology. He gave the example of photography where after its development, photographers limited themselves to taking pictures the way painters painted. It took many years before photographers began to explore the full potential of the media. To a large extent, our current use of electronic networks is a lot like the early photographers painting pictures on film. It is going to take awhile to develop the full potential of electronic communication. Part of the problem is

figuring out effective ways of using the technology, but what may turn out to be a more difficult task is changing the norms, values and habits of the way scientific publishing is done.

Scientific journals can be traced back to the middle of the seventeenth century and continue to remain the central means of disseminating information[2]. Journals have retained this role for so long because the system has worked reasonably well. What electronic networks have done is open up a whole new set of possibilities for transcending our current conception of publication and the means in which scientific information is disseminated. In thinking about how electronic networks might transform publishing, it is helpful to start with the roles journals play in scientific communities. According to Schaffner[5], there are at least four core functions of a scientific journal. They include building a collective knowledge base, communicating information among scholars, distributing rewards, and creating scientific communities.

Building a collective knowledge base is arguably the central role of scientific journals. Journals have acted as the core repository of scientific knowledge for many years. There are certainly other sources, but until recently, journals provided the most up-to-date, comprehensive archive for knowledge in a discipline. The importance of paper journals in this role is probably going to erode over time. As an example, Paul Ginsparg developed an automated information storage and retrieval system on Internet (http://xxx.lanl.gov/) for research communications in high energy physics. The system which has a user base of over 40,000, allows physicists to electronically submit, search as well as update and correct communications in that field. The system functions without peer-review and costs almost nothing to operate[3].

Along with issues of convenience, the development of electronic repositories, such as the one in physics, will likely impact on the future development of a scientific discipline. With an Internet based repository such as Ginsparg's, research communication becomes available to the scientific community as soon as it is posted by the author. Journals generally take 18 months or more from the time a manuscript is submitted until publication. Due to peer-review and limited journal space, only a portion of the material ever submitted for publication is disseminated through scientific journals. It is not clear what the impact is of imposing this filter on the collective knowledge base. It provides a level of quality control and review before research results and scientific thought are disseminated. While this probably is useful, the peer-review process is also biased against the new, the novel, and the nonsignificant. There is some empirical evidence that this filter may have less of an impact than one might expect[6]. However, it probably retards or at least slows down the dissemination of new ideas.

The importance of journals for providing a means of communicating among scholars has been eroding as other modes of communication have become available[2]. A multitude of other methods are now available that provide more efficient ways of disseminating ideas. Attendance at scientific meetings, phones, faxes, and more recently, e-mail and listservers provide far more convenient and interactive means of communication. Although the speed and interactive nature of other modes of communication are a clear advantage in many respects, journals offer a unique type of communication that has value in its own right. For this reason, I suspect they will continue to exist in paper format for the foreseeable future. As Burbules and Bruce state:

> *"the care and precision of proofreading, revision, editing, designing, and typesetting manuscripts to create an authoritative (and aesthetically appealing) version of an author or authors' document has traditionally been linked with the finality of creating a printed, bound version that will be archived as such for posterity. Both the producer of the text and its editor and publisher have a common interest in seeing it as complete, persuasive and carefully written as possible, since there is a sense in which, once published, there is no taking it back. The printed medium, therefore, also has distinct benefits." (pp 15-16)*

Traditional journals offer a distinct form of communication that trades speed and spontaneity for polish and permanence. There is a need for both thoughtful and reflective as well as quick and interactive communication. I believe for that reason,

journals will continue to retain an important role in scientific discourse.

Assigning recognition and distributing rewards may be the function of scientific journals that ends up being the most resistant to change. Publication in prestigious peer-reviewed journals has remained one of the most important measures of academic productivity. Whether it is right or wrong, publication in peer-reviewed journals has been key to promotion, tenure, and success in receiving external funding, the other major indicator of academic success. Traditional journals have, at least to date, retained this function despite advances in other modes of communication. I suspect publication in prestigious journals will continue to be a key measure of success in most fields for some time if for no other reason that the methods of assigning recognition and rewards in academia are so institutionalized.

As with communicating information among scholars, the importance of journals in creating scientific communities has eroded with advances in communications. They still, however, offer a unique mode of communication that is an important component of scientific discourse and will probably remain a force in defining scientific communities, but take on a far less dominant role.

It is clear that the role of traditional scientific journals is changing rapidly. They are losing their preeminence in a number of the functions they serve; however, they are likely to continue to be an important means of scientific communication. Electronic journals can play a role similar to traditional journals, but can also expand beyond them by providing a variety of new ways of exchanging information. We have begun to do this with MEO by including sections for educational resources, interactive discussions, and informational notices along with sections for traditional peer-reviewed manuscripts. There are probably many other ways to use the capabilities of electronic format. I look forward to hearing your ideas on how to improve MEO.

Over the last few months I have received a great deal of (and much appreciated) encouragement for starting MEO. MEO's success, however, is going to depend to a large measure on whether people such as yourself make use of the journal. I urge you to consider submitting manuscripts and postings as well as material for the Resource Section that other medical educators would find useful. We will also need help in reviewing manuscripts and your ideas on how to better use the capabilities of an electronic journal.

References

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