

Computer Conferencing and Electronic Journals for the
Scholarly Community

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INTRODUCTION

This talk aims to give an insight into electronic journals and computer conferencing, discussing some of the advantages and disadvantages of each. Particular reference will be made to the Birmingham and Loughborough Electronic Network Development (BLEND) project, which is funded by the British Library Research and Development Department (BLR&DD).

ELECTRONIC COMMUNICATION

For the purposes of this talk, 'electronic' refers specifically to computer based communication and excludes telephone, video and so on. The commonest form of electronic communication is a simple mail system. This is most often compared with the normal postal service, but really is more like a system of putting messages in pigeon-holes, since the recipient must log on to the computer in order to 'fetch' his mail.

COMPUTER CONFERENCING

Computer conferencing, by contrast, is more like a cross between a notice-board, and a meeting where minutes are being taken. Several people can be logged on together, and each can direct a message to a single person or to the entire group. This allows a greater degree of interaction than electronic mail, without relying on the presence of all members simultaneously, as with face-to-face meetings, since all entries are stored and displayed to anyone logging in later. Messages may also be referred back to once read.

Like face-to-face meetings, computer conferences have a 'loudest voice' problem - the person with the fastest typing speed and highest baud rate can dominate an interactive discussion. However, during the BLEND project this has never really become a problem, since people tend to prepare text, and then send it at the computer's pace, not their own. This down-loading also reduces telecommunications costs, which can be quite high.

Computer conferencing lacks human protocols to some extent, but it is possible to watch as these develop. For example in one of the BLEND communities, one person began to underline his headings with a series of dashes and the others, quite unconsciously, followed suit.

ELECTRONIC JOURNALS

An electronic journal is a collection of papers stored on a computer in such a way that they can be retrieved and read. This is not quite as straight forward as it may appear, since the attributes that make a paper journal useful must be consciously thought out and provided by the creators of an electronic text. Examples of such attributes are cues provided by thickness of an article and print size which allow you to find your place and to judge roughly how long you will need to read a section, the ability to annotate your own copy of the text, and so on.

There is no question that electronic journals are the next step. As scientific fields become increasingly complex, and the length of time required to write, referee and publish a paper approaches two years, not only is it difficult to find a particular article in the maze of interconnected publications, but if it covers current information it probably hasn't been printed yet. Today's information, based on out of date papers, takes another two years to publish, so information falls behind still further.

With electronic journals, distribution at all points in the preparation of a paper should be more or less instantaneous, so that only the work involved adds to the time taken. Likewise, the search for a particular reference can be handed down to software, leaving the reader free to actually think about the subject matter.

Electronic journals should also be cheaper to produce, not only because of ease of distribution, but also because the use of so much paper is expensive as well as ecologically unsound. For example, the proposal document for the Birmingham Olympics used 60 tons of paper, worth about £1500 in scrap value alone. Unfortunately for the world's forests, we are in a period of parallel working at the moment, where paper journals still predominate, and electronic journals rely on hardcopy and so use even more paper. We await the electronic journal that is portable enough to be read on the train or in the bath.

To sum up the forms of communication figure 1 compares traditional forms with the electronic ones. Synchronous communication involves the presence of the recipient.

(Figure 1)

| Media | Numbers | Sync or Async | Interactive | Delivery |
|-----------------------|-----------|----------------------------|-------------|-----------|
| Face-to-face meeting | 1 to many | Synchronous | Interactive | Immediate |
| Postal Mail | 1 to 1 | Asynchronous | - | Delay |
| Telephone | 1 to 1 | Synchronous | Interactive | Immediate |
| Electronic Mail | 1 to 1 | Asynchronous | - | Delay |
| Computer Conferencing | 1 to many | Synchronous & Asynchronous | Interactive | Immediate |
| Electronic Journals | 1 to many | Asynchronous | - | Delay |

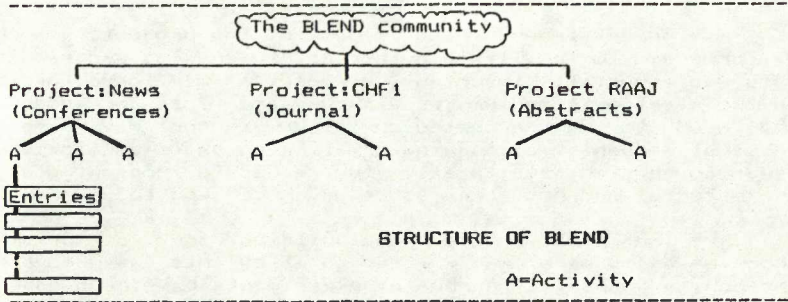
BLEND SYSTEM

The BLEND system combines computer conferencing with electronic journals and uses NOTEPAD, a computer conferencing suite written by Infomedia Corporation in America, as its basis.

In NOTEPAD, a one-to-one private message is called a 'note', a one-to-all public message is an 'entry'. Notes and entries are units of text and are numbered sequentially making them searchable. They can be read or added to at any time. Entries are the building blocks of 'activities', and a collection of activities make up a NOTEPAD 'project'. Each computer conference uses an activity and all the members of a project form a NOTEPAD 'community'.

BLEND has extended this concept and allows members of its communities access to a number of projects. Some projects were exclusively used as electronic journals. In such a project an activity became a paper and its entries became sections of the paper's text, usually amounting to a couple of paragraphs.

(Figure 2)



The major community of the BLEND project is the Loughborough Information Network Community (LINC), which consists of some fifty scientists and academics. The system allows up to 512 people to use an activity at any one time, so all could join in a discussion simultaneously without any problems. In practice, except when pre-arranged, one 'meets' a colleague only rarely.

The material produced over the four years amounts to some 40 Mbytes (which in theory could just about fit on a single CD-ROM compact disc) and ranges from the most formal refereed journals through to the most informal gossip.

(Figure 3)

| | | |
|----------|-------------------|-----------------------------|
| FORMAL | Refereed journals | (CHF1 TO CHF3) |
| : | | (RAAJ) |
| : | Unrefereed papers | (POSTER) |
| : | | : |
| : | | : |
| : | Conferencing | (NEWS:Teleconference on ... |
| : | | :General Messages |
| INFORMAL | | :Chit-chat) |

Formal papers can be written, refereed and read on-line; they need never be printed out. One group of people wrote a paper (The Active Mailbox - your on-line secretary - Wilson, Maude, Marshall & Heaton) based on a computer conference held between 3rd May 1983 and 31st October 1983. Some of the participants had never actually met face-to-face until after the paper had been completed. Surely an excellent example of the invisible college in action.

PROGRAMS

We developed, in the course of the project, a number of programs to facilitate authoring, refereeing and reading. This was especially important, because, as mentioned earlier, in the electronic medium certain cues are lost or confused and need to be recreated on the VDU in some way. Also the physical mechanism of turning or flicking pages unconsciously needs to be simulated to allow the reader to concentrate on the material and not worry about which command to use next.

The READ program, the building block for the other programs as it were, was written to allow this easy movement through a paper. A number of experiments have been done to discover which reading philosophies are the best. These range from simple and inadequate scrolling to 'flicking' through screen 'pages'. We hope to continue this research. READ's commands are listed in Figure 4.

(Figure 4)

READ COMMANDS

| | |
|-----------------|---|
| Abort | End running of program |
| Forward | Display next entry |
| <return> | Display next entry |
| Back | Display entry most recently seen |
| Previous | Display entry most recently seen |
| Repeat | Display current entry again |
| Number of entry | Display entry of that number |
| "Quoted string" | Display next entry with the title containing given string |
| " | Repeat last string request |

REFeree, in addition, allows all entries to be annotated or marked to bring any points to the attention of the author or editor.

JOURNAL STRUCTURE

In BLEND there are currently four issues of the journal 'Computer Human Factors'. Each maps onto a NOTEPAD project. These journals are dynamic; that is, once 'published', they can still be added to. Any comments, discussion and letters to the editor can be added to the journal in question and need not appear in a later issue. This makes it straightforward to refer back to anything mentioned in a comment.

The papers/activities contained in CHF1 are listed in Figure 5 as an example of an electronic journal. The code at the end of the titles refers to the size of the paper. Simply giving the number of entries (e.g. E45) was found to be inadequate as their size varies and so the number of lines was added. (e.g. L818)

(Figure 5)

STRUCTURE OF A JOURNAL

Computer Human Factors Issue 1

1. Editorial 1 October 1982 [E.7-L.87]
 2. Shackel B The BLEND system - Programme of study [E72.L986]
 3. Morrison D & Green T Adaptive methods in recognized speech [E45.L575]
 4. Bason B & Wright P Detour routes to usability [E45.L818]
 5. Dodd P Computer conferencing aided learning [E26.L369]
 6. Review - Wilson P on Galitz WD 'HF. in Office Automation' [E14.L245]
 7. Discussions/Questions by Readers on 1. Editorial & General Aspects
 8. Discussions/Questions by Readers on 2. Shackel paper
 9. Discussions/Questions by Readers on 3. Morrison & Green paper
 10. Discussions/Questions by Readers on 4. Bason & Wright paper
 11. Discussions/Questions by Readers on 5. Dodd dispatch
 12. Discussions/Questions by Readers on 6. Wilson book review.
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STRUCTURE OF A PAPER

Each paper also follows a strict structure. This allows people to know where a particular section will be and facilitates better reading.

(Figure 6)

STRUCTURE OF A PAPER

Title
Contents
Summary
Introduction
:
(Body of text)
:
Conclusions
References

RAAJ

RAAJ (References, Abstracts and Annotations Journal) is a special journal aiming to cut through the vast information overload to enable the prospective reader to find the right papers. It contains some 400 references and abstracts from 8 journals from January 1981 and 700 references from 5 bibliographies to the end of 1981. These can be searched using keywords to allow references on any subject in the Computer Human Factors field to be found quickly and easily. This could be extended to cover any field including archeology.

Unlike other abstract journals, there is an interactive element. Annotations and comments can be added by readers, subject to editorial control, and searched and read by others. This enables you to select papers favourably reviewed by others known to you in your particular field and enhances the feeling of working with colleagues in a that field even if you have never met.

CONCLUSIONS

I hope I have shown that Electronic communication is an area with great potential. I have outlined some of the work carried out on the BLEND project to realise this potential. At this point the success of Electronic communication depends upon ergonomics, the human factors involved.

The work carried out here and at Loughborough is by no means complete, for instance our Electronic Journals have no graphics as yet. Eventually I believe that this form of communication will become the most important for a wide range of differing communities that need to write, publish and archive articles and to communicate over a distance.