

Opening Speech to the 4th Pan-Hellenic Conference with International Participation on the "Didactics of mathematics and Informatics in Education", The University of Crete, Rethymno 1-3 October 1999, proceedings p. 14-19.

## Opening Speech

### 4<sup>th</sup> Conference: A Test for Electronic Communication

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Ένα σύγχρονο δίστιχο:

**Θα πάρω υπολογιστή μικρό μου στο μητάτο να δίνω με το INTEPNET το γάλα των προβάτω.**

(και φυσικά στον Ψηλορείτη μόνο δορυφορική σύνδεση είναι δυνατή)

A handy transcription

**I will buy a computer in the sheepfold to send via INTERNET the milk from the sheep**

(and of course in the High Mountains of Crete only a connection via satellite is possible).

1.-This conference was organized electronically in order to cope with the crucial problems of time limitations, cost of communication and paper (re) production. This choice gave us the opportunity to test the feasibility of electronic communications. I think that, despite the limitations, the experience gained on this specific case will be useful to other persons planning a similar activity. My personal observations presented here, may not bring new knowledge, however, their listing may help to spot some issues that influence dramatically the effectiveness of an electronic communications system. This presentation begins with a synopsis of my observations and the feeling I have obtained, for the benefit of the busy ones whose time is limited. Specific comments and issues are also presented later. These comments are diary excerpts with a little editing mostly in the form of explanatory remarks or personal comments.

2.-**A Synopsis.** Everyday we encounter praise for the opportunities of the electronic communication, in Education or in (almost all) the other aspects of Economic and Social Life. This attitude towards electronic communication raises the question '*is it a fiction or a reality? And if it is a reality, to what extent and with what advantages or limitations may it be used?*'.

My impressions from the organization of this conference using electronic communications are:

- Despite the short time elapsed from the 1<sup>st</sup> announcement of the Conference, this Conference is realized with a large number of participants and of papers submitted, a fact meaning that electronic communication is a reality. The technology, at the least, and its extensive use are already present.
- It was amazing how many persons make a frequent use of INTERNET and e-mail communication. E-mail response to e-mails or announcements on the Conference web page was almost immediate. So, was the detection of (new) viruses.
- However, the large number of 'trivial' problems encountered signifies that a culture compatible with an 'Informatics Conscious Society' has not been fully established yet.
- It seems, at least to me, that Electronic communication as a Service is not yet considered in a level comparable e.g. with the water, power or telephone supplies.

The experience from the organization of this conference has also shown some advantages and limitations of electronic communication such as:

- Low Cost of Communication. The cost of Communication for the Conference organizers was absorbed in the cost of operation of the University network. However, to receive the information, some of the other persons involved have to bear the cost for their connection to the Web.
- If there exist persons to (effectively) use the technology available, it is an easy and fast way of Communication,
- The operation is round the clock and 'round the globe' (i.e. the recipient could receive the information anywhere he is moving to as long as he has an INTERNET connection),
- It may potentially address different and larger target groups of persons. However persons not familiar with this technology are completely excluded,
- The operation was still not as reliable as expected. Frequent backups and, in some cases, hardcopies are still necessary.
- There was a lack of proof of evidence of the communication exchanged in a level comparable to the traditional communication means. It must be noted that a relevant technology is already available (secure connections, signature validation, proof of receipt, etc.). This technology is not widespread yet and, it was judged unnecessary for the purpose of the Conference. However, this a crucial issue, e.g. in finance and related market activities.
- It was prone to attacks; new viruses in the e-mails exchanged, were detected almost concurrently with their detection announcement by McAfee. This may be considered as evidence of an extensive and frequent use of INTERNET surfing and file downloading from all over the World.
- The tracing and the personal privacy protection are issues mostly unknown to the average user. For example, a very time consuming task was to inhibit the tracing of authors and of the referees for the blind review process to work. A kind of simple and easily understandable tracing is inherent to the documents (e.g. in the .doc format) produced with the MS-Word (or other MS-Office) application programs by checking the document properties tab. Although the elimination of this tracing is a routine task, in two over sighted instances, the aware user may have misguided to wrong conclusions.
- The operation produced also a lot of unnecessary bit and data flooding. The total size of the files relevant to this Conference was more than 500Mbytes. Should these files had contained ASCII text characters, they would correspond to about 500 large books, e.g. the kind of the volumes of the Encyclopedia Britannica or Larousse.

In evaluating the statements above, one must keep in mind that in this test case considered:

- The majority of the persons involved were living in Greece but a significant percentage was also in other (mainly European) countries.
- The persons involved are expected to be familiar with electronic communication and, more generally, with the use of computers, in a level above the society average.
- The infrastructure used was based on the Computer network facilities of The University of Crete, which has a long tradition in electronic communication (from the early '80's).

**3.-Specific issues.** In early May 1999 e-mail announcements were sent through e-mail lists to individual researchers and other educationalists potentially interested on the Conference, and, also, to the server administrators ('*all-users*' e-mail accounts) of major institutions such as Universities, Research Institutes and (relevant) Governmental Offices. At the same time a web home page was created (<http://www.clab.edc.uoc.gr/conf/conf99.htm>), hosted on a peripheral server of the University of Crete (<http://www.clab.edc.uoc.gr> or <http://147.52.242.110>), belonging to the Laboratory for Science Teaching. The infrastructure of The University of Crete computer network was used as an INTERNET and e-mail provider (ISP provider). Also one (and only) conventional

letter on paper was also posted to schools through the district education authorities, to bring to the attention of teachers in schools the web page of Conference. The Conference took place on October 1 to 3, 1999 in the University of Crete campus at Rethymno. A diary was kept on issues relevant to the Conference during the preparation time from May to September 1999. In addition to the general comments presented earlier, some more issues that may be of interest from this diary follow.

**3-1.-Network Reliability and Quality.** Five major breakdowns were occurred, two of them due to the ISP provider (The University of Crete) the other three to the Telecommunications Agency (OTE). Even if we exclude the breakdown due to the summer of 1999 earthquake in Athens it still counts almost a breakdown per month, a rather poor value for a service that must exhibit, to the highest possible level, the features of: a/continuous availability, b/security and integrity, c/well known and understood rules (reflecting on the social behaviour) of operation. Other 'minor' but equally frustrating problems affecting the quality of the service included:

- Two breakdowns of the server of the School operating as domain name (DNS) and as e-mail server with the result to disrupt the e-mail communication and the availability of the Conference web page (the page could still be reached if one knew and used directly the IP address 147.52.242.110 instead of its name alias). Both were due to the electricians doing repair work without advance notice. Investigating the incidents it resulted that in the first instance (a 'long' weekend) their excuse was that *'they did not saw anyone working in the building so, as an additional safety measure they cut off (although it was not necessary) also the power supply (the expensive UPS) to the server'*. In the second instance, which resulted in the destruction of the server's hard disk and a consequent long time revival of the server from backups and original (re) installations, their excuse was that they did not considered necessary an advance notice *'as the interruption was only for less than two minutes'*.
- The other kind of problems was the frequent disruption of the (fast) data link connecting the university servers at Rethymno and Iraklio. This data link connection is the responsibility of the telecommunications company. As the gate of the University to the rest of the web is through the servers at Iraklio the result was the 'cut-off' of the servers at Rethymno. What is more annoying in this case is that we could still use the INTERNET (although at lower transfer rates) through the (internal) phone lines and the dial-up points of the computers at Iraklio if there was a better organization of the administration of the University network. As it is now the case, the University personnel at Rethymno are able to login through the dial-up points at Iraklio only whenever the data link between Iraklio and Rethymno is in operation.

We avoided possible repetitions of the same or similar problems of the first kind by the purchase and use of a separate 5-minute autonomous UPS supply specifically for the server of the School. For the second case the problem still exists. Although the response of the technicians involved in each case was eager and prompt, I think that both these types of problem could have been avoided. Also, that these incidents are indications of differing attitudes with respect to the use of (and the dependence on) the Informatics in a modern technological society. I am optimistic that in the future, these types of problems will cease, the only worry being how far in the future this will happen. These types of attitudes are similar, although of a different level, to other widely differing attitudes, e.g. towards 'hacking', which to some it seems an amusement or a challenge while to others it is a serious crime equivalent to terrorism, or towards the intellectual property rights for computer programs, where some respect these rights in full, while for others the 'clopyright' (= right to theft) may prevail. To my opinion, these differing attitudes make up a kind of 'cultural gap' comparable to the one between last century Europeans and the natives in the colonies, with the difference being now that the gap is between groups which otherwise belong to the same society.

**3-2.-Issues on Software.** The de facto standards imposed by the dominance of Microsoft have limited software problems to a minimum. We encountered many of the problems in the tests of executing computer presentation programs due to incompatibilities between the different software versions and/or the data displays used. However, most of the problems we encountered in this area were due not to software incompatibility but rather to software inadequacies or to the ineffective use of the relevant application software. Characteristic examples are:

- **Greek language.** There are more than four incompatible between themselves known solutions to this problem, despite the adoption of the official standard from the Standardization Agency of Greece (ΕΛΟΤ) a long time ago. Most of the problems encountered were associated to the inadequacy of the e-mail or the e-mail server application programs. Greeklish (=Greek words with Latin characters) were extensively used. The ever expanding UNICODE characters and the dominance of MS-Word has kept this problem to a minimum. However there are still problems (mainly due to codepage incompatibilities). The fonts used (e.g. HellasArial, ArialGreek or Arial, 161 – the Unicode ones) and the import filters (when Macs and PCs are involved) were also a cause for problems. In the later case the conversion (import filters) seems to be depended upon the Windows version used, with the Greek versions of the Microsoft programs to achieve a higher score than their usual corresponding Multilanguage versions, although in both cases the view of ‘*scandinavic characters*’ (i.e. vowels with accents, diaeresis, dashes etc) was not uncommon. In all cases try to avoid using Greek characters in file names, unless you are absolutely certain that all persons in your group have the same versions of the same software. The use of Greek characters makes also more difficult the development of effective procedures to process data automatically.
- **e-mail.** Most of the problems in this class were due to the use of older mail programs. The use of Greek characters in the ‘*address*’ and/or the ‘*subject*’ fields, apart from the possibility to make it undecipherable, requires, usually, increased skills for the development of automatic processing procedures. A common problem was the type of coding (7- or 8- bit) and the way of file attachment where, in many cases, the attachment was indicated only by a (hyper) link to a non-available or unknown computer. Another source of problems was the limitations imposed by the e-mail server on its clients, e.g. the 5Mb total limit on all e-mail messages or the 50Kb limit on every single e-message. Another common cause of annoyance was the way used to indicate the recipients of the e-mail messages. Many people used the ‘Reply’ and ‘Reply to all’ indiscriminately. Filling the ‘*Send to*’ box of an e-mail message with the name of a ‘*mailing address group*’ kept locally instead of a ‘*mailing list*’ name may result in a multipage printing filled with the names of the recipients, even for a message of only a couple of words. This issue will become crucial in the next years for those who are going to use e-mail through their cellular telephones, because, due to current limitations on the length of the message a cellular telephone can accept, what they will see, in such a case, will be only the sender’s e-mail address and some of the recipients’ e-mail addresses. Also, to include the original message in a reply may be a convenient practice in general; however, its continuous indiscriminate use will produce lengthy messages, repeating earlier communications, usually with a number of multiple characters (e.g. ‘>’ or ‘|’) in front of the lines of the previous messages.
- **Viruses and attacks.** The number and the frequency of attacks were astonishing. Many times we had received a virus before or concurrently with the notification of its detection by McAfee. It lead us to abandon the extensive use of ‘on-line’ registration and process as, by that time, the necessary java applets and scripts were not sufficiently safe to use.
- **The Proliferation of bits and bytes** was amazing due, most probably, to the development of fast high storage hardware, the development of powerful application software with an easy to use user interface, the development of fast computer networks and the great improvement on speed and capacity of (voice and data) dial-up telecommunication lines. It

might be impressive to have a high-resolution multimillion color photograph on the personal PC. However to incorporate this photograph in a web page or in a document and/or to attach it to an e-mail, it will result to the transmission of quite a few million bytes, an amount equivalent to thousands of simple text pages. When such an e-mail message is sent to many recipients, the capacity of the e-mail server may easily be exceeded. When such a file is transmitted via dial-up lines, the time needed to complete the operation (e.g. view a web page or send-receive an e-mail message) may become enormous. Of the papers we received, none exceeded the limit of 14 pages. However, the size file for many of them (they were MS-Word documents) was more than 10, even 20 Mbytes (20 million bytes!) due to the embedding of photographs (of a rather small size, usually) with high resolution and multimillion colors. In almost all the cases, transforming them to a graphic of low resolution with 256 colors or gray scale had shown no visible difference apart from a drastic reduction to the size of the file (from some Mbytes to less than 100Kbytes). In some cases using the 'Save as' feature of MS-Word and saving the file with a different name or in a removable (e.g. a diskette) media reduced also its size (it is deficiency of early versions of the program). Some simple rules we used to keep low the file size of the documents include: a/whenever possible, to use simple graphics instead of photographs (it depends on the compression algorithm used), b/to keep the number of pictures (graphics, drawings or photographs), the size, the resolution and the number of colors in every picture used, as low as possible, c/to avoid extensive formatting (e.g. peculiar tables, background effects, etc), d/to avoid the use of macros (although they are useful, they consume a lot of space and are also suspect for virus contamination).

- (old) **Habits and ethics.** In anticipation of an expected large number of incoming messages (we actually received more than 7 thousands), we had planned for an automatic process of the e-mails to be received. To facilitate this automatic process, we had asked: a/all relevant to the Conference messages to have as a subject the words '4th Conference', b/all documents (papers submitted, review forms, etc) to use a specific format. Only in a few cases a full conformity to the rules was observed. The better conformity to the rules was from persons in commercial firms, the worse from academics. Of course the 'automatic process' was not used. Other related instances included:
- e-mails containing (in varying forms of wording) '*..thank you for the information on the Conference. Could you send me also a printout on paper...*' were not unusual.
  - A significant number of the e-mails received, were mixing issues on the Conference (responsibility for the members of the Organizing Committee) with other issues (of interest only to the specific recipient of the message). In an automatic process, at least some of the issues involved could not have been processed.
  - Only a few of the review forms were returned in the format they were sent, not to mention a couple of handwriting on paper printouts of the documents sent electronically. Although this was convenient to the reviewers, it made impossible any automatic process.
  - In many cases, the papers were submitted in pieces with the main body and/or the abstracts and/or the figures and/or the pictures and/or the tables in different files (reflecting possibly the application programs the authors were using) and in some cases in separate mails some time apart. The organizing committee (read Andreas and Athanasia) had a difficult task to assemble them in a one-piece document<sup>(\*)</sup>.

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<sup>(\*)</sup> In many cases the pictures and/or drawings were not '*embedded*' in the document but they were inserted as '*links*' to the original files. In this case, these pictures or drawings were not available and may not have been printed correctly, as mentioned in the Introduction. If this is causing problems please contact me

- The use of mail lists for communication was a convenient way to reach large numbers of persons but produced some side effects. A person complained that he (she) did not like to be bothered with these mails. He (she) was included in an ‘*all-users*’ list outside my control. We cope with this, by keeping messages very short using always the same subject (‘*4th Conference*’) and sender so that any ‘annoyed’ person could easily delete them automatically. Some persons received multiple copies of the messages sent, due to the inclusion of their e-mail addresses in more than one lists (but no one complained on this issue). What however was really annoying to the organizers was the fact that every time a message was sent to the mailing lists about 50 to 80 ‘*failure to deliver*’ messages were received back. It seems that some of the administrators in charge of the ‘*all-users*’ lists do not update them regularly.

Although the above should have been expected and to some extent they may denote a healthy reaction, all the same they indicate again the lack of an ‘*Informatics culture*’.

**4.-Epilogue.** Most of the issues presented above are related to difficulties and problems in the use of electronic communication. They were presented in the expectation that they might be a useful experience to share to. Also, in order to draw the attention of persons who potentially can act to improve the situation on these issues (this last remark is also addressed to our Rector, Professor Nicolaou, and to our Vice-Rector, Professor Damanakis, the presence of whose I would like to thank). However, the very fact that this Conference is realized, confirms the reality, the usefulness and the practicability of electronic communication. The remedy of the problems referred to earlier will increase its effectiveness.

I wish you a nice stay in Rethymno with enjoyable memories to take back home and, of course, a fruitful Conference.

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