Brief Communication

The Internet: which future for organised knowledge, Frankenstein or Pygmalion? Part 2

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Abstract: This paper is the second half of an invited paper given by the author to the international conference, promoted by the UNESCO Philosophy Forum, to celebrate the fiftieth anniversary of the founding of the organisation (Paris, 14-17 March 1995). The first half, which deals with a slightly different theme, is published as an Article earlier in this issue.

What we need to solve

The time has now come to turn to the new problems that the growth of a network of information and communication has already caused, or soon will give rise to. My impression is that there are at least ten principal questions worthy of attention. I shall deal with them very briefly and in what I take to be their increasing order of importance.

1. Digital discrimination

We have already entered the stage in which digital information is unduly preferred over non-digital simply because it is available online, not because of its quality. However, the more resources undergo the conversion, the less serious the problem will become.

2. Disappearance of the great compilers

By greatly increasing the supply of data, the Internet satisfies to a large extent an ever growing demand for information. In this process, the use value of information has increased steadily, in parallel with the complexity of the system. Its exchange value, however, has been subject to a radical modification. Because of the great and rapid availability of data, the Internet has caused a devaluation of some intellectual enterprises, like compilations, collections of images, bibliographical volumes and so forth, whose original high value depended mainly on the correspondingly high degree of inaccessibility that afflicted information in the book era. Today, some of the data that in the past had to be discovered and collected with great expense of time and energy are freely available on the Internet. The result is that users will look more and more frequently for value added to works done on raw data and then on electronic sources and tools. The era of the great collectors on paper is over. Raw data simply won't travel through the printed medium any longer; they will be (more or less freely) available through the digital channels of the network.

3. Emergence of the computerised scholar

So far, academia has been slow in recognising that new forms of scholarly activity have appeared, like moderating a discussion list, keeping an online bibliography constantly updated or publishing a paper in an electronic journal. The sooner such activities are properly recognised and evaluated, the easier it will become for individuals to dedicate more time and effort to the digital encyclopaedia, and the more the latter will improve, compelling further recognition for those who have worked on its creation, and so forth, until a full balance between work and reward will be reached.

4. Stored knowledge > knowledge accessible

There is more knowledge on the Internet than we can access. In the macrocosm represented by the Internet, the fundamental imbalance between the extraordinary breadth of the system and the limited amount of knowledge that can be accessed by an individual mind at any one time arises again because the technology responsible for the processes of management is far less efficient than the technology responsible for the accumulation of knowledge. The quantity of information potentially available on the Internet has increased beyond control, whereas the technology whereby the network actually allows

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us to retrieve our data has improved much more slowly. The result is that nowadays we are once again very far from being capable of taking full advantage of the full extent of our digital encyclopaedia. Information technology developed in the 1950s as an answer to the explosion of the system of knowledge originated by the book age. After a few decades, it can be seen to have defeated itself by extending the encyclopaedia beyond its own control. The challenge of the next few years will consist of narrowing the gap between quantity of information and speed of access, before it becomes even greater. Projects like the American Information Superhighway or SuperJANET in Great Britain are of the highest importance, not because ultimately they will resolve all our problems of management but because they can restore once again a better balance between real extent and potential access to the encyclopaedia. We should keep in mind that closing the gap between the two factors is impossible, as the fundamental lack of balance is rooted in the very nature of the system of knowledge. We shall always lag slightly behind the growth of organised knowledge.

5. Knowledge accessible > knowledge manageable

This is the problem of 'infoglut', and concerns the degree to which retrievable information can actually be managed. Compared to our present age, any other moment in the history of thought has been in a context of shortage of data. This led in the past to a rather voracious attitude towards information. Today, we face the opposite risk of being overwhelmed by an unrestrained, and sometimes superfluous, profusion of data. The old heuristic rule *melius abundare quam deficere* has become self-defeating. A critical form of censorship is therefore a precondition for the individual mind to be able to survive in an intellectual environment, in which exposure to the human encyclopaedia is greater than ever before. Plato and Descartes thought that knowledge could be compared to food for our mind. If this is the case then today, for the first time in the history of thought, we definitely need to learn how to diet. Without a new culture of selection, and tools that can help us to filter and refine what we are looking for, the Internet will become a labyrinth which researchers will either refrain from entering or in which they will lose themselves. In order to avoid both extremes, one can only hope that the care exercised today to avoid damaging the integrity of knowledge or los-

ing information during the process of input (that is during the conversion of organised knowledge into a digital macrocosm) will soon be paralleled by equally close attention to the process of output (that is, efficient and economical ways in which we may select and retrieve all the information we need from the new encyclopaedia).

6. Digital parricide

The global network may cause the loss of information on paper. Some libraries are already destroying their records on paper after having replaced them with OPAC catalogues. This is unacceptable, as would have been the practice of destroying medieval manuscripts after an *editio princeps* was printed during the Renaissance. We need to preserve the sources of information after digitisation in order to keep all our memory alive. After all, the new encyclopaedia is still too unstable to be trusted as a final repository. The development of a digital encyclopaedia should not represent a parricide.

7. No epiphany on paper

Because increasing sectors of the new encyclopaedia will remain forever digital, access to the network will have to be universally granted in order to avoid the rise of a new technological élite.

8. The new language of the encyclopaedia

IT is the new language of organised knowledge, therefore elements of IT will have to become part of the minimal alphabetisation of any human being, if the freedom to information has to remain a universal right.

9. Intellectual space or polluted environment?

Because the Internet is a free space, where anybody can post anything, the Internet can become a dumping ground for any sort of intellectual rubbish, and organised knowledge could easily get corrupted or lost in a sea of junk data. In the book age, the relation between writer and reader is clear and mediated by a number of sociological, cultural and economic filters. One may be unhappy with it, but we know how it works and, after all, such filters do provide some positive selection. On the Internet, when there is any distinction at all, the relation between the producer and the consumer of information is direct, so nothing protects the latter from corrupt information. Now, there is a lot to be said in favour of the free exchange of information on the network, and I do believe that any producers of data should be free to make it available online as they wish. But I am

also convinced that users should possibly be protected from corrupt knowledge by an intermediary service, if they wish to be so. Unless academic and cultural institutions or recognised organisations provide some form of quality control, we may no longer be able to distinguish between the intellectual space of knowledge and a very polluted environment of junk mail and data. In spite of what many people are claiming nowadays, direct access to knowledge is only a temporary stage. In the future, reliable *intermediary* services will become fundamental.

10. Decentralisation vs. fragmentation

This is probably the most pressing issue on our agenda. By converting the encyclopaedia into an electronic space, we are running the risk of transforming the new body of knowledge into a disjointed monster rather than an efficient and flexible system. In the past, inadequate efforts have been made to forecast how the human encyclopaedia was going to be affected by the binary revolution occurring in the management of information, and so promote changes that could be found more appropriate in order to meet the rise of new intellectual demands. The consequence has been that the Internet has developed in a very chaotic, if dynamic way, and today it suffers from a regrettable lack of global organisation, uniformity and strategic planning. While we entrust ever vaster regions of the human encyclopaedia to the global network, we are also leaving the Internet itself in a thoroughly anarchic state. We seem to be unaware of the consequences of what we are doing. Efforts at coordination are left to occasional initiatives by commendable individuals, or to important volunteer organisations, but all this is still insufficient to guarantee that in a few decades organised knowledge will not be lost in a labyrinth of millions of virtual repositories, while energies and funds are wasted in overlapping projects. The Internet has been described as a library where at the moment there is no catalogue, books on the shelves keep moving, and an extra lorry load of books is dumped in the entrance hall every hour. Unless it is properly structured and constantly monitored, the positive feature of radical decentralisation of knowledge will degenerate into a neo-medieval fragmentation of the body of knowledge, a fragmentation that in turn will only result in a virtual loss of information. Already it is no longer possible to rely on the mere speed of our networked tools (NIR) to browse the whole space of knowledge, and collect our information in a reasonably short time. If global plans are disregarded or postponed, and financial commitments delayed, the risk is that information may well become as easy to find on the network as a needle in a haystack. Some people in the past have compared the invention of the computer to the invention of printing. I have argued that the comparison can be very misleading, at least in one important sense: the appearance of the printed book belongs to the process of consolidation and enlargement of our intel-

lectual space, whereas the revolutionary character of information technology has rested on making possible a new way of navigating through such a space. But there is another sense in which I would be inclined to accept a substantial affinity between the two phenomena: for, in the same way as the invention of printing led to the constitution of national, copyright libraries that would coordinate and organise the production of knowledge in each country, so the Internet is in need of an info-structure of centres which, through their coordinated efforts, may fulfil the following five tasks:

(1) guarantee the *stability, reliability* and *integrity* of the digital encyclopaedia;

(2) provide *constant access* to it without discrimination, thus granting a universal right to information;

(3) deliver a *continually updated map* to the digital universe of thought;

(4) expand the *number* and *quality* of *primary, secondary* and *derivative resources* available online, especially those that won't attract commercial operators;

(5) support and improve the *methods* and *tools* whereby the encyclopaedia is converted into a digital domain, and then networked information is stored, accessed, retrieved and manipulated.

I hope that what I am suggesting won't be misunderstood. I am not advocating the creation of some international bureau for the management of the Internet — a sort of digital Big Brother — nor do I have any wish to see national organisms take control of our electronic new frontier. Such projects would be anti-historical, contrary to the fundamental rights of freedom of communication, of thought and information, and moreover they would be impossible to realise. Far from it; I believe in the complete liberty and refreshing anarchy of the network. What I am suggesting is that the Internet is like a new country, with a growing population of millions of well educated citizens, and that as such it does not need a highway patrol; but it will have to provide itself with an infrastructure like a Virtual National Library system, which could be as dynamic as the world of information, if it wants to keep track of its own cultural achievements in real time, and hence be able to advance into the third millennium in full control of its own potential. It is to be hoped, therefore, that institu-

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tions all over the world may soon be willing to take full advantage of the new technologies available, and promote and coordinate such a global service, which is essential in order to make possible a really efficient management of human knowledge on a global scale.

Today we are giving the body of organised knowledge a new electronic life, and in so doing we are constructing the digital heritage of the next millennium. Depending on how we meet the challenge, future generations will consider us as new Pygmalions or as old Frankensteins.

Appendix: the Internet on the Internet

Any book written on the Internet is bound to be out of date the very day it reaches the book shop. The best strategy for getting up-to-date information is to retrieve files from the network itself. Here are some suggestions:

- **Big Dummy's Guide to the Internet**, retrievable via anonymous FTP, *ftp://ftp.eff.org, directory/pub/ EFF/papers/*; via gopher, *gopher://gopher.eff.org* (the infoserver of the Electronic Frontier Foundation) — see 'EFF on-line document library'; or via e-mail, by sending the message *SEND books/big-dummys-guide /README to archive-server@germany.eu.net.*

- **Electronic Communication and the Humanities Scholar** (*ftp://gwuvm.gwu.edu*), compiled by Scott Stebelman (Gelman Library, George Washington University, e-mail *scottlib@gwuvm.gwu.edu*).

- **Introducing the Internet**: to get this brief guide, send the message *send access.guide to nis-info@nic .merit.edu.*

- **Pipeline Gopher**, *gopher://pipeline.com* or *198.80 .32.3*. Contains several guides to the Internet.

- **The BBC Internet Guide**: a very simple introduction, retrievable at *http://www.bbcnc.org.uk/babbage/.*

- Most of the previous documents and many others, like the first version of *Zen and the Art of Internet* by B. Kehoe, are available through the gopher of the University of Michigan Library (*gopher://gopher.lib .umich.edu*, directory */What's New/Clearinghouse*) or via WWW, *http://www.lib.umich.edu/chhome.html.*

Note

The two parts of this article (see Abstract) together form a revised version (4.5) of an invited paper I gave to the international conference, promoted by the UNESCO Philosophy Forum, to celebrate the fiftieth anniversary of the founding of the organisation (Paris, 14–17 March 1995). Several electronic versions of the whole thing have been made available through the Internet in the last few months: see *http://www.ucet.ufl.edu/~true/1101/floridi/, http://www.napplisci.com/~nas/floridi.html, http://www.nlc-bnc.ca/ifla/pubs/core/udt/visions/floridi .htm* or *http://www.mbnet.mb.ca/cm1.* I wish to acknowledge the suggestions and comments sent to me via e-mail by hundreds of people who helped me to improve it.

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