

# From Internet to Gutenberg

A lecture presented by Umberto Eco  
at

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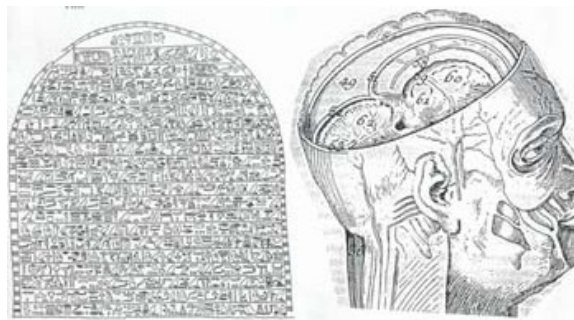
According to Plato (in Phaedrus) when Hermes, the alleged inventor of writing, presented his invention to the Pharaoh Thamus, he praised his new technique that was supposed to allow human beings to remember what they would otherwise forget. But the Pharaoh was not so satisfied. "My skillful Theut, he said, memory is a great gift that ought to be kept alive by training it continuously. With your invention people will not be obliged any longer to train memory. They will remember things not because of an internal effort, but by mere virtue of an external device."

We can understand the preoccupation of the Pharaoh. Writing, as any other new technological device, would have made torpid the human power which it substituted and reinforced - just as cars made us less able to walk. Writing was dangerous because it decreased the powers of mind by offering human beings a petrified soul, a caricature of mind, a mineral memory.

Plato's text is ironical, naturally. Plato was writing his argument against writing. But he was pretending that his discourse was told by Socrates, who did not write (since he did not publish, he perished in the course of his academic fight.)

Nowadays, nobody shares these preoccupations, for two very simple reasons. First of all, we know that books are not ways of making somebody else think in our place; on the contrary they are machines that provoke further thoughts. Only after the invention of writing was it possible to write such a masterpiece on spontaneous memory as Proust's *La Recherche du Temps Perdu*.

Secondly, if once upon a time people needed to train their memory in order to remember things, after the invention of writing they had also to train their memory in order to remember books. Books challenge and improve memory; they do not narcotize it. However, the Pharaoh was instantiating an eternal fear: the fear that a new technological achievement could abolish or destroy something that we consider precious, fruitful, something that represents for us a value in itself, and a deeply spiritual one. It was as if the Pharaoh pointed first to the written surface and then to an ideal image of human memory, saying: "This will kill that."

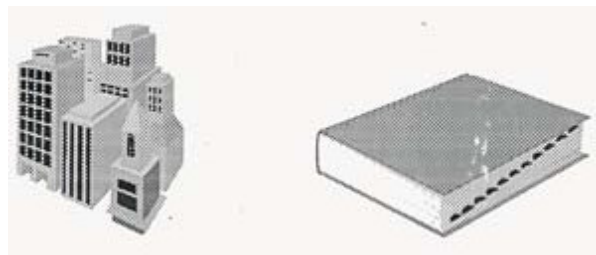


More than one thousand years later Victor Hugo in his *Notre Dame de Paris*, shows us a priest, Claude Frollo, pointing his finger first to a book, then to the towers and to the images of his beloved cathedral, and saying "ceci tuera cela", this will kill that. (The book will kill the cathedral, alphabet will kill images).

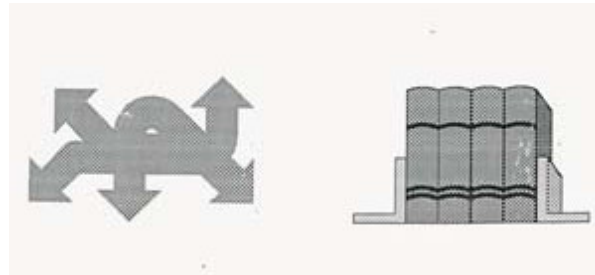


The story of *Notre Dame de Paris* takes place in the XVth century, a little later than the invention of printing. Before that, manuscripts were reserved to a restricted elite of literate persons, but the only means to teach the masses about the stories of the Bible, the life of Christ and of the Saints, the moral principles, even the deeds of the national history or the most elementary notions of geography and natural sciences (the nature of unknown peoples and the virtues of herbs or stones), was provided by the images of the cathedral. A medieval cathedral was a sort of permanent and unchangeable TV program that was supposed to tell people everything indispensable for their everyday lives as well as for their eternal salvation. The book would have distracted people from their most important values, encouraging unnecessary information, free interpretation of the Scriptures, insane curiosity.

During the sixties, Marshall McLuhan wrote his *The Gutenberg Galaxy*, where he announced that the linear way of thinking instaurated by the invention of the press, was on the verge of being substituted by a more global way of perceiving and understanding through the TV images or other kinds of electronic devices. If not Mc Luhan, certainly many of his readers pointed their finger first to a Manhattan Discotheque and then to a printed book by saying "this will kill that."



The media needed a certain time to accept the idea that our civilization was on the verge of becoming an image oriented one - which would have involved a decline of literacy. Nowadays this is a common shibboleth for every weekly magazine. What is curious is that the media started to celebrate the decline of literacy and the overwhelming power of images just at the moment in which, in the world scene, appeared the Computer.



Certainly a computer is an instrument by means of which one can produce and edit images, certainly instructions are provided by means of icons; but it is equally certain that the computer has become, first of all, an alphabetic instrument. On its screen there run words, lines, and in order to use a computer you must be able to write and to read. The new computer generation is trained to read at an incredible speed. An old-fashioned university professor is today incapable of reading a computer screen at the same speed as a teen-ager. These same teen-agers, if by chance they want to program their own home computer, must know, or learn, logical procedures and algorithms, and must type words and numbers on a keyboard, at a great speed.

In this sense one can say that the computer made us to return to a Gutenberg Galaxy. People who spend their night implementing an unending Internet conversation are principally dealing with words. If the TV screen can be considered a sort of ideal window through which one watches the whole world under the form of images, the computer screen is an ideal book on which one reads about the world in form of words and pages.

The classical computer provided a linear sort of written communication. The screen was displaying written lines. It was like a fast-reading book.

But now there are hypertexts. In a book one had to read from left to right (or right to left, or up to down, according to different cultures) in a linear way. One could obviously skip through the pages, one - once arrived at page 300 - could go back to check or re-read something at page 10 - but this implied a labor, I mean, a physical labor. On the contrary a hypertext is a multidimensional network in which every point or node can be potentially connected with any other node.

Thus we have arrived at the final chapter of our this-will-kill-that story. It is more and more stated that in the near future hypertextual Cd-roms will replace books

With a hypertextual diskette books are supposed to become obsolete. If you even consider that a hypertext is usually also multimedial, the complete hypertextual diskette will in the next future replace not only books but also videocassettes and many other supports.

Now we must ask ourselves if such a perspective is a realistic one or is mere science-fiction - as well as if the distinction we have just outlined between visual and alphabetic communication, books and hypertexts is really that simple. Let me list a series of problems and possible perspectives for our future.

Even after the invention of printing books have never been the only instrument for acquiring information. There were paintings, popular printed images, oral teaching, and so on. One can say that books were in any case the most important instrument for transmitting scientific information, including news about historical events. In this sense they were the paramount instrument used in schools.

With the diffusion of the various mass media, from cinema to television, something has changed. Years ago the only way to learn a foreign language (outside of traveling abroad) was to study a language from a book. Now our kids frequently know other languages by listening to records, by watching movies in the original edition, by deciphering the instructions printed on a beverage can. The same happens with geographical information. In my childhood I got the best of my information about exotic countries not from textbooks but by reading adventure novels (Jules Verne, for instance). My kids very early knew more than me on the same subjects from watching TV and movies. One could learn very well the story of the Roman Empire through movies, provided that movies were historically correct. The fault of Hollywood is not to have opposed its movies to the books of Tacitus or of Gibbon, but rather to have imposed a pulp- and romance-like version on both Tacitus and Gibbon.

A good educational tv program (not to speak of a CD-ROM) can explain genetics better than a book.

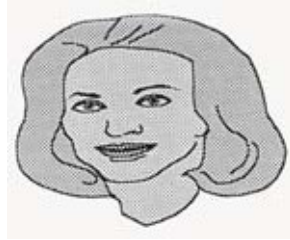
Today the concept of literacy comprises many media. An enlightened policy of literacy must take into account the possibilities of all of these media. Educational preoccupation must be extended to the whole of media. Responsibilities and tasks must be carefully balanced. If for learning languages, tapes are better than books, take care of cassettes. If a presentation of Chopin, with commentary on compact disks, helps people to understand Chopin, don't worry if people do not buy five volumes of the history of music.

Even if it were true that today visual communication overwhelms written communication, the problem is not to oppose written to visual communication. The problem is how to improve both. In the Middle Ages visual communication was, for the masses, more important than writing. But Chartres Cathedral was not culturally inferior to the Imago Mundi of Honorius of Autun. Cathedrals were the TV of those times, and the difference from our TV was that the directors of the medieval TV --read: good books-- had a lot of imagination, and worked for the public profit (or, at least, for what they believed to be public profit).

The real problems lay elsewhere. Visual communication has to be balanced with the verbal one, and mainly with the written one for a precise reason. Once, a semiotician, Sol Worth, wrote a

paper, "Images cannot say Ain' t". I can verbally say "Unicorns do not exist" but if I show the image of a unicorn the unicorn is there. Moreover, is the unicorn I see a unicorn or the unicorn, that is, does it stand for a given unicorn or for the unicorns in general?

This problem is not as immaterial as it can seem, and many many pages have been written by logicians and semioticians on the difference between such expressions as a child, the child, this child, all children, childhood as a general idea. Such distinctions are not so easy to display through images. Nelson Goodman in his *Languages of Art* wondered if a picture representing a



woman

is the representation of Women in general, the portrait of a given woman, the example of the general characteristics of a woman, the equivalent of the statement there is a woman looking at me.

One can say that in a poster or on an illustrated book, the caption or other forms of written material can help to understand what the image means. But I want to remind you about a rhetorical device called **example**, on which Aristotle spent some interesting pages. In order to convince somebody about a given matter, the most convincing is a proof by induction. In induction I provide many cases and then I infer that probably they instantiate a general law.

Suppose I want to demonstrate that dogs are friendly and love their masters: I provided many cases in which a dog has proved to be friendly and helpful and I suggest that there must be a general law by which every animal belonging to the species of dogs is friendly.

Suppose now I want to persuade you that dogs are dangerous. I can do this by providing you with an example: "Once, a dog killed its master...." As you easily understand, a single case does not prove anything, but if the example is shocking I can surreptitiously suggest that dogs can even be unfriendly, and once you are convinced that it can be so, I can unduly extrapolate a law from a single case and conclude: "this means that dogs cannot be trusted." With the rhetorical use of the example I shift from a dog to all dogs.

If you have a critical mind you can realize that I have manipulated a verbal expression (a dog was bad) so to transform it into another one (all dogs are bad) which does not mean the same thing. But if the example is a visual rather than a verbal one, the critical reaction is made more difficult. If I show you the poignant image of a given dog biting its master it is very difficult to discriminate between a particular and a general statement. It is easy to take that dog as the representative of its species. Images have, so to speak, a sort of Platonic power: they transform individuals into general ideas.

Thus by a purely visual communication and education it is easier to implement persuasive strategies that reduce our critical power. If I read on a newspaper that a given man said "we want mister X as president" I am aware that I was given the opinion of a given man. But if I watch on the TV screen a man saying enthusiastically "we want mister X as president" it is easier to take the will of that individual as the example of the general will.

Frequently I think that our societies will be split in a short time (or they are already split) into two classes of citizens: those who only watch TV, who will receive pre-fabricated images and therefore pre-fabricated definitions of the world, without any power to critically choose the kind of information they receive, and those who know how to deal with the computer, who will be able to select and to elaborate information. This will re-establish the cultural division which existed at the time of Claude Frolo, between those who were able to read manuscripts, and therefore to critically deal with religious, scientific or philosophical matters, and those who were only educated by the images of the cathedral, selected and produced by their masters, the literate few.

A science fiction writer could elaborate a lot on a future world where a majority of proletarians will receive only visual communication planned by an élite of computer-literate people. There are two sorts of books: these to be read and these to be consulted.

As far as books-to-read are concerned (they can be a novel, or a philosophical treatise, or a sociological analysis, and so on) the normal way of reading them is the one that I would call the *detective-like story*. You start from page 1, where the author tells you that a crime has been committed, you follow every path of the detection until the end, and finally you discover that the guilty one was the butler. End of the book and end of your reading experience. Remark that the same happens even if you read, let us say, Descartes' *Discourse de la methode*. The author wanted you to open the book at its first page, to follow the series of questions he proposed, to see how he reaches certain final conclusions. Certainly, a scholar, who already knows that book, can re-read it by jumping from one page to another, trying to isolate a possible link between a statement of the first chapter and one of the last one... A scholar can also decide to isolate, let us say, every occurrence of the word Jerusalem in the immense opus of Thomas Aquinas, thus skipping thousands of pages in order to focus his or her own attention on the only passages dealing with Jerusalem... But these are ways of reading that the layman would consider as unnatural.

Then there are the books to be consulted, like handbooks and encyclopedias. Sometimes handbooks must be read from the beginning to the end; but when one knows the matter enough, one can consult them, so selecting also certain chapters or passages. When I was in high-school I had to read entirely, in a linear way, my handbook on mathematics; today, if I need a precise definition of logarithm, I only consult it. I keep it on my shelves not to read and re-read it every day, but in order to keep it up once in ten years, to find the item I need to consult it about.

Encyclopedias are conceived in order to be always consulted and never read from the first to the last page. Usually one pick up a given volume of one' s encyclopedia to know or to remember when

Napoleon died or what is the formula of sulfuric acid. Scholars use encyclopedias in a more sophisticated way. For instance, if I want to know whether it was possible or not that Napoleon met Kant, I have to pick up the volume K and the volume N of my encyclopedia: I discover that Napoleon was born in 1769 and died in 1821, Kant was born in 1724 and died in 1804, when Napoleon was already emperor. It is not impossible that the two met. I have probably to consult a biography of Kant, or of Napoleon - but in a short biography of Napoleon, who met so many persons in his life, this possible meeting with Kant can be disregarded, while in a biography of Kant a meeting with Napoleon should be recorded. In brief, I must leaf through many books in many shelves of my library, I must take notes in order to compare later all the data I collected, and so on. In short, all this will cost to me a painful physical labor.

With a hypertext, instead, I can navigate through the whole encyclopedia. I can connect an event registered at the beginning with a series of similar events disseminated all along the text, I can compare the beginning with the end, I can ask for the list of all the words beginning by A, I can ask for all the cases in which the name of Napoleon is linked with the one of Kant, I can compare the dates of their birth and death - in short, I can do my job in few seconds or few minutes.

Hypertexts will certainly render obsolete encyclopedias and handbooks. In few Cd-roms (probably soon in a single one) it is possible to store more information than in the whole Encyclopedia Britannica, with the advantage that it permits crossed references and non-linear retrieval of information. The whole of the compact disks, plus the computer, will occupy one fifth of the space occupied by an encyclopedia. The encyclopedia cannot be transported as the CD-ROM can, the encyclopedia cannot be easily updated. The shelves today occupied, at my home as well as in public libraries, by meters and meters of encyclopedia could be eliminated in the next future, and there will be no reasons to complain for their disappearance.

Can a hypertextual disk replace the books to be read? This question conceals in fact two different problems and could be rephrased as two different questions.

(I) First, a practical one: Can some electronic support replace the books-to-read?

(II) Second an theoretical and an esthetical one: Can a hypertextual and multimedial CD-ROM transform the very nature of a book-to-read, such as a novel or a collection of poems?

Let me first answer the first question. Books will remain indispensable not only for literature, but for any circumstance in which one needs to read carefully, not only to receive information but also to speculate and to reflect about it. To read a computer screen is not the same as to read a book. Think to the process of learning a new computer program. Usually the program is able to display on the screen all the instructions you need. But usually the users who want to learn the program either print the instructions and read them as if they were in book form, or they buy a printed manual (let me underevaluate the fact that presently all the computer's Helps are clearly written by irresponsible and tautological idiots, while commercial handbooks are written by smart people). It is possible to conceive of a visual program that explains very well how to print and bind a book, but in order to get instructions on how to write (or how to use) a computer program, we need a printed handbook.

After having spent no more than 12 hours at a computer console, my eyes are like two tennis balls, and

I feel the need of sitting comfortably down in an armchair and reading a newspaper, and maybe a good poem. I think that computers are diffusing a new form of literacy but are incapable of satisfying all the intellectual needs they are stimulating.

In my hours of optimism I dream of a computer generation which, compelled to read a computer screen, gets acquainted with reading, but at a certain moment feels unsatisfied and looks for a different, more relaxed and differently-committing form of reading.

During a symposium on the future of books held at the university of San Marino (the proceedings are now published by Brepols), Régis Debray has observed that the fact that Hebrew civilization was a civilization based upon a Book is not independent on the fact that it was a nomadic civilization. I think that this remark is very important. Egyptians could carve their records on stone obelisks, Moses could not. If you want to cross the Red Sea, a scroll is a more practical instrument for recording wisdom. By the way, another nomadic civilization, the Arabic one, was based upon a book, and privileged writing over images.

But books also have an advantage in respect to computers. Even if printed in modern acid paper, which lasts only 70 years or so, they are more durable than magnetic supports. Moreover, they do not suffer of power shortage and black outs, and are more resistant to shocks. Up to now, books still represent the more economical, flexible, wash-and-wear way to transport information at a very low cost. Computers communication travels ahead of you, books travel with you and at your speed, but if you shipwreck in a desert island, a book can serve you, while you don' t have any chance to plug a computer anywhere. And even though your computer has solar batteries you cannot easily read it while laying on a hammock. Books are still the best companions for a shipwreck, or for the Day After.

For scholarly purposes a book-to-read can be transformed into a hypertextual CD-ROM. A scholar may need to know, let us say, how many times the word *good* appears in the *Paradise Lost*. However there are today new hypertextual poetics according to which even a book-to-read, even a poem can be transformed into a hypertext. At this point we are shifting to question two, since the problem is no more a practical one: it concern the very nature of the reading process.

Conceived in a hypertextual way even a detective story can be structured in a open way, so that its readers can even select a given reading-path, that is, to build up their own personal story - even to decide that the guilty one can and must be the detective instead of the butler.

Such an idea is not a new one. Before the invention of the computer, poets and narrators have dreamt of a totally open text that the readers could infinitely re-write in different ways. Such was the idea of *Le Livre*, as extolled by Mallarmé; Joyce thought of his *Finnegans Wake* as a text that could be read by an ideal reader affected by an ideal insomnia. In the sixties Max Saporta wrote and published a novel whose pages could be displaced so as to compose different stories. Nanni Balestrini gave one of the early computers a disconnected list of verses that the machine put together in different ways so to compose different poems; Raymond Queneau invented a combinatorial algorithm by virtue of which it was possible to compose, from a finite set of lines, billions of poems. Many contemporary musicians have produced musical movable scores, and by manipulating them one can compose different musical performances.



As you have probably realized, even here one is dealing with two different problems. (I) The first is the idea of a text which is physically movable. Such a text should give the impression of the absolute freedom on the part of the reader; but this is only an impression, an illusion of freedom. The only machinery that allows one to produce infinite texts already existed from millennia, and it is the alphabet. With a reduced number of letters one can produce, really, billions of texts, and this is exactly what has been done from Homer to the present days. A stimulus-text which provides us not with letters, or words, but with pre-established sequences of words, or of pages, does not set us free to invent anything we want. We are only free to move in a finite number of ways pre-established textual chunks.

But I, as a reader, do have this freedom even when I read a traditional detective novel. Nobody forbids me from imagining a different end. Given a novel where two lovers die I, as a reader, can either cry on their fate, or to try to imagine a different end in which they survive and live happy forever. In a way I, as a reader, feel more free with a physically finite text, on which I can muse for years, than with a movable one where only some manipulations are permitted.

(ii) This possibility leads us to the second problem which concerns a text which is physically finite and limited but that can be interpreted in infinite, or at least in many ways. This has been in fact the aim of every poet or narrator. But a text which can support many interpretations is not a text which can support every interpretation.

I think that we are confronted with three different ideas of hypertext. First of all, we should make a careful distinction between systems and texts. A system (for instance a linguistic system) is the whole of the possibilities displayed by a given natural language. Every linguistic item can be interpreted in terms of other linguistic or other semiotic items, a word by a definition, an event by an example, a natural kind by an image, and so on and so forth. The system is perhaps finite but unlimited. You go in a spiral-like movement ad infinitum. In this sense certainly all the conceivable books are comprised by and within a good dictionary and a good grammar. If you are able to use the Webster you can write both the *Paradise Lost* and *Ulysses*.

Certainly, if conceived in such a way, a hypertext can transform every reader into an author. Give the same hypertextual system to Shakespeare and a schoolboy, and they have the same odds of producing *Romeo and Juliet*.

However a text is not a linguistic or an encyclopedic system. A given text reduces the infinite or indefinite possibilities of a system to make up a closed universe. *Finnegans Wake* is certainly open to many interpretations, but it is sure that it will never provide you the demonstration of Fermat's theorem, or the complete bibliography of Woody Allen. This seems trivial, but the radical mistake of irresponsible deconstructionists was to believe that you can do everything you want with a text. This is blatantly false. A textual hypertext is finite and limited, even though open to innumerable and original inquiries.

Hypertext can work very well with systems, they cannot work with texts. Systems are limited but infinite. Texts are limited and finite, even they can allow for a high number of possible interpretations (but they do not justify every possible interpretation).

There is however a third possibility. We may conceive of hypertexts which are unlimited and infinite.

Every user can add something, and you can implement a sort of jazz-like unending story. At this point the classical notion of authorship certainly disappears, and we have a new way to implement free creativity. Being the author of the *Open Work* I cannot but hail such a possibility. However there is a difference between implementing the activity of producing texts and the existence of produced texts. We shall have a new culture in which there will be a difference between producing infinite texts and interpreting precise and finite texts. That is what happens in our present culture, in which we evaluate differently a recorded performance of Beethoven's Fifth and a new instance of a New Orleans Jam Session.

We are marching towards a more liberated society in which free creativity will co-exist with textual interpretation. I like this. But we must not say that we have substituted a old thing with another one. We have both, thanks God. TV zapping is a kind of activity which has nothing to do with watching a movie. A hypertextual device that allows us to invent new texts has nothing to do with our ability to interpret pre-existing texts. There is still another confusion between and about two different questions: (a) will computers make books obsolete? and (b) will computers make written and printed material obsolete?

Let us suppose that computers will make books to disappear. This would not mean the disappearance of printed material.

The computer creates new modes of production and diffusion of printed documents. In order to re-read a text, and to correct it properly, if it is not simply a short letter, one needs to print it, then to re-read it, then to correct it at the computer and to reprint it again. I do not think that one is able to write a text of hundreds of pages and to correct it without printing it at least once.

We have seen that - if by chance one hoped that computers, and specially word processors, would have contributed to save trees - that was a wishful thinking. Computers encourage the production of printed material. We can think of a culture in which there will be no books, and people will go around with tons and tons of unbound sheets of paper. This will be pretty difficult, and will pose a new problem for libraries.

People desire to communicate with each other. In ancient communities they did it orally; in a more complex society they tried to do it by printing. Most of the books which are displayed in a bookstore should be defined as products of Vanity Presses, even if they are published by a university press. But with computer technology we are entering a new Samisdazt Era. People can communicate directly without the mediation of publishing houses. Lot of people do not want to publish, they simply want to communicate each other. Today they do it by E-mail or Internet, will result in being a great advantage for books, books' civilization and books' market. Look at a bookstore. There are too many books. I receive too many books every week. If the computer network will succeed in reducing the quantity of published books, it would be a paramount cultural improvement. One of the most common objections against the pseudo-literacy of computers is that young people get more and more accustomed to speak through cryptic short formulas: dir, help, diskcopy, error 67, and so on. One of the closing formulas used in the networks is cul&r. Is that still literacy?

I am a rare-books collector, and I feel delighted when I read the seventeenth-century titles that took one page and sometimes more. They look like the titles of Lina Wertmuller' s movies. The introductions were several pages long. They started with elaborate courtesy formulas praising the ideal Addressee, usually an Emperor or a Pope, and lasted for pages and pages explaining in a very baroque style the purposes and the virtues of the text to follow.

If Baroque writers read our contemporary scholarly books they would be horrified. Introductions are one page long, briefly outline the subject matter of the book, thank some National or International Endowment for a generous grant, shortly explain that the book has been made possible by the love and understanding of a wife or husband and of some children, and credit a secretary for having patiently typed the manuscript. We understand perfectly the whole of human and academic ordeals revealed by those few lines, the hundreds of nights spent underlining photocopies, the innumerable frozen hamburgers eaten in a hurry..

But let me guess that in the near future we will have three lines saying: "W/c, Smith, Rockefeller," (to be read as: I thank my wife and my children; this book was patiently revised by Professor Smith, and was made possible by the Rockefeller Foundation.")

That would be as eloquent as a Baroque introduction. It is a problem of rhetoric and of acquaintance with a given rhetoric. I think that in the coming years passionate love messages will be sent in the form of a short instruction in Basic language, under the form "if... then", so to obtain, as an input, messages like "I love you, therefore I cannot live with you," (beautiful verse from Emily Dickinson).

Besides, the best of English mannerist literature was listed --as far as I remember-- in some program language: 2B OR/NOT 2B "

There is a curious idea according to which the more you say in verbal language, the more you are profound and perceptive. Mallarmé told us that it is sufficient to spell out "*une fleur*" to evoke a universe of perfumes, shapes, and thoughts. Frequently for poetry, the fewer the words, the more the things. Three lines of Pascal say more than 300 pages of a long and boring treatise on morals and metaphysics. The quest for a new and surviving literacy ought not to be the quest for a pre-informatic quantity. The enemies of literacy are hiding elsewhere.

Until now I have tried to show that the arrival of new technological devices does not necessarily made previous device obsolete. The car is goes faster than the bicycle, but cars have not rendered bicycles obsolete and no new technological improvement can make a bicycle better than it was before. The idea that a new technology abolishes a previous role is too much simplistic. After the invention of Daguerre painters did not feel obliged to serve any longer as craftsmen obliged to reproduce reality such as we believe to see it. But it does not mean that Daguerre' s invention only encouraged abstract painting. There is a whole tradition in modern painting that could not exist without the photographic model, think for instance of hyper-realism. Reality is seen by the painter' s eye through the photographic eye.

Certainly the advent of cinema or of comic strips has made literature free from certain narrative tasks it traditionally had to perform. But if there is something like post-modern literature, it exists just because it has been largely influenced by comic strips or cinema. For the same reason today I do not need any longer a heavy portrait painted by a modest artist and I can send my sweetheart a glossy and faithful photograph, but such a change in the social functions of painting has not made painting obsolete, except that today painted portraits do not fulfill the same practical function of portraying a person (which can be done better and less expensively by a photograph), but of celebrating important personalities, so that the command, the purchasing and the exhibition of such portraits acquire aristocratic connotations.

This means that in the history of culture it has never happened that something has simply killed something else. Something has profoundly changed something else. I have quoted McLuhan, according to which the Visual Galaxy had substituted the Gutenberg Galaxy. We have seen that few decades later this was no longer true. McLuhan stated that we are living in a new electronic Global Village. We are certainly living in a new electronic community, which is global enough, but this is not a Village - if by village one means a human settlement where people are directly interacting each other.

The real problems of an electronic community are the following: (1) Solitude. The new citizen of this new community is free to invent new texts, to cancel the traditional notion of authorship, to delete the traditional divisions between author and reader, but the risk is that - being in touch with the entire world by means of a galactic network - one feels alone.... (2) Excess of information and inability to choose and to discriminate. I am used to saying that certainly the Sunday NYT is the kind of newspaper where you can find everything fit to print. Its 500 hundred pages tell you everything you need to know about the events of the past week and the ideas for the new one. However, a single week is not enough to read the whole Sunday NYT. Is there a difference between a newspaper which says everything you cannot read, and a newspaper which says nothing, is there a difference between NYT and Pravda?

Notwithstanding this, the NYT reader can still distinguish between the book review, the pages devoted to the tv programs, the Real Estate supplement, and so on. The user of Internet has not the same skill. We are today unable to discriminate, at least at first glance, between a reliable source and a mad one. We need a new form of critical competence, an as yet unknown art of selection and decimation of information, in short, a new wisdom. We need a new kind of educational training.

Let me say that in this perspective books will still have a paramount function. As well as you need a printed handbook in order to surf on Internet, so we will need new printed manuals in order to cope critically with the World Wide Web.

Let me conclude with a praise of the finite and limited world that books provide us. Suppose you are reading Tolstoj' *War and Peace*: you are desperately wishing that Natasha will not accept the courtship of that miserable scoundrel who is Anatolij; you

desperately wish that that marvellous person who is prince Andrej will not die, and that he and Natasha could live together happy forever. If you had *War and Peace* in a hypertextual and interactive CD-rom you could rewrite your own story, according to your desires, you could invent innumerable War and Peaces, where Pierre Besuchov succeeds in killing Napoleon or, according to your penchants, Napoleon definitely defeats General Kutusov.

Alas, with a book you cannot. You are obliged to accept the laws of Fate, and to realise that you cannot change Destiny. A hypertextual and interactive novel allows us to practice freedom and creativity, and I hope that such a kind of inventive activity will be practised in the schools of the future. But the written War and Peace does not confront us with the unlimited possibilities of Freedom, but with the severe law of Necessity. In order to be free persons we also need to learn this lesson about Life and Death, and only books can still provide us with such a wisdom.