LA MÉMOIRE

On memory (electronic or otherwise)

V I L È M F L U S S E R

ARS ELECTRONICA, le festival de l'art électronique qui se tenait à Linz, en septembre 1988, m'a invité à parler de la mémoire électronique. Je défendrai l'hypothèse selon laquelle cette nouvelle forme de mémoire constitue une véritable révolution culturelle. Et cela, pour trois raisons :

1 - Si, par "histoire", on entend le processus cumulatif d'emmagasinement d'informations acquises, les nouvelles mémoires vont transformer la structure de l'histoire, car elles permettent un stockage discipliné, la permutation des informations stockées et la récupération des informations désirées.

2 - Si, par "créativité", on entend la production d'informations nouvelles, les nouvelles mémoires vont déclencher une explosion de la créativité, car elles débarrassent le cerveau de la nécessité de stocker des informations, et le libèrent pour la manipulation des informations *(data processing)*.

3 - La mémoire est un des concepts fondamentaux de notre culture, et les mémoires nouvelles bouleverseront ce concept (et, par là, la base même de notre culture), car elles nous proportionnent une distance critique par rapport au processus mémoratif.

La "dignité humaine" – trait qui permet la distinction entre notre espèce et les autres êtres vivants – réside dans le fait que nous transmettons aux générations à venir non seulement des informations héréditaires, mais aussi des informations acquises. Que nous ne disposons pas seulement d'une mémoire géné-

Our species transmits acquired information (and not only inherited information) from generation to generation. By doing so, it doubly contradicts nature .The second Principle of Thermodynamics states that information contained within nature tends to be forgotten. Living organisms contradict that Principle by preserving and transmitting genetic information. They constitute a memory in defiance of the entropy of nature. There is a biological law (Mendel's), which states that acquired information cannot be transmitted from organism to organism. Our species contradicts that law by having elaborated a cultural memory which progressively stores acquired information to which successive generation have access. This double negation of ours is only apparent: in the long run, all the informations we have stored will of necessity return into the general entropy: they will be forgotten. Still: this double negation of nature (although only temporary), constitutes our position. Human 'dignity' (that aspect which distinguishes us from all the other known beings) may be defined as the fact that we have both a genetic and a cultural memory: that we are 'historical beings'. Electronic memories are about to radically transform our cultural memory, and the term 'human dignity' will thus acquire a new meaning. The purpose of this contribution is to consider some of the aspects of that transformation.

If 'memory' is defined as a store for information, (which is a definition open to serious objections), then we may find

tique, mais aussi d'une mémoire culturelle. Il y a dans cette "dignité" nôtre quelque chose de mystérieux (de "sacré"), et il est inutile de vouloir le nier. Préserver des informations (les garder dans une mémoire pour pouvoir les transmettre) est contraire au deuxième principe de la thermo-dynamique, et, dans ce sens, tous les êtres vivants se trouvent en opposition à la nature physique. Et préserver des informations acquises pour les transmettre aux générations futures est contraire à la biologie (aux lois de Mendel) ; en ce sens, nous, les hommes, sommes des êtres antibiologiques. Bien sûr, on peut "expliquer" ce mystère qu'est la vie, et plus encore l'homme, mais plus on l'explique, plus le mystère s'accroît.
Les explications qu'on nous offre quant à la "dignité humaine" sont de deux types : il y a des explications dites "scientifiques" et des explications idéologiques. Le permier type d'explication est de beaucoup le plus récent, mais il n'est aucunement plus satisfaisant que le second. Voici, à peu près, ce qu'on nous explique. Nous disposons de deux mémoires, la génétique et la culturelle, et si la mémoire génétique a une influence certaine sur la mémoire culturelle, l'inverse n'est pas vrai. En d'autres termes : c'est grâce aux informations génétiques que nous pouvons acquérir d'autres informations, mais ces informations-là n'ont aucun effet sur la mémoire génétique. (Nos spermes et ovules passent par notre histoire culturelle avec un dédain souverain). Il faut donc faire la distinction entre nos deux mémoires.

La mémoire génétique est très durable, mais elle est peu fiable. La biomasse (le support de notre mémoire génétique) préservera les informations pour la durée de la vie sur terre, mais elle les

memories all over nature. They float like islands within the general stream toward entropy, islands which preserve some information for some time, before they dissolve within the tendency toward entropy from which the have emerged by accident. Hydrogen atoms and galaxies may serve as examples. They constitute negatively entropic epicycles which sit upon the linear entropic tendency of nature. The most impressive example for such negatively entropic epicycles is constituted by the biomass which has recently emerged on the surface of our planet (a mere few thousands of millions years ago), and of which we ourselves are protuberances. The biomass consists of tiny drops wherein informations are encoded within complex molecules which are being progressively recopied. Errors occur during this process. Most of them are eliminated from the biomass (from the 'genetic memory') thanks to very complex devices. They are called 'unfeasable mutations'. A few of those errors escape those devices, and they constitute what is called 'biological evolution'. Although our optimistic forefathers considered them to be a 'positive thing', because, due to them, ever new informations are created within the biomass, from the point of view of 'memory' they must be considered a serious drawback. They show that the biomass is not a trustworthy memory: instead of preserving information it 'reprocesses' it. This has become important for future technical projects. Genetic engineering may be defined as an attempt to store acquired information within the biomass, to transform the biomass into a cultural memory. It must take into account that every information stored there is subject to errors of transmission. (If genetic engineering were considered an 'art', and if the artificial organisms it produces were consi-

conserve très mal. Ces informations sont codifiées dans des molécules complexes, et elles sont constamment recopiées. Or, de nombreuses erreurs (des "mutations") se produisent pendant ce recopiage. La plupart de ces erreurs sont éliminées de la mémoire grâce à des dispositifs très compliqués (ce sont des "mutations biologiquement non-viables"). Mais une partie des erreurs échappe à ces dispositifs, et elle constitue l'"évolution de la vie". Par conséquent, l'information originelle a été très probablement oubliée, et même si elle se conserve dans certains protozoaires toujours vivants, elle est difficilement récupérable. Le fait que la biomasse soit un support de mémoire aussi peu fiable pose problème pour la technique génétique, laquelle a précisément pour but d'ouvrir la biomasse à des informations acquises, de transformer la biomasse en support de mémoire culturelle ("créer des êtres vivants artificiels").

Quant à la mémoire culturelle, elle est à la fois peu durable et peu fiable. Elle n'est pas très ancienne (elle ne dépasse pas les quatre millions d'années), mais, malgré cela, la plupart des informations acquises par l'humanité sont tombées dans l'oubli, et celles qui se sont préservées ont été largement déformées. La "dignité humaine", quoique mystérieuse, n'est pas très imposante. C'est pourquoi la recherche de la dignité humaine passe par la recherche de supports de mémoire culturelle qui soient plus durables et plus fiables *(aere perennius)*. Les mémoires électroniques sont, peut-être, un pas décisif dans cette démarche.

Ce qu'on a fait jusqu'ici peut être résumé de la façon suivante. On a codifié les informations acquises de diverses manières, et on a imprimé ces

dered 'works of art', this is both a limitation and a challenge for future artists).

Cultural memory is very much shorter than even the genetic one, and it is even less trustworthy. (Which is to say that 'human dignity' is not a thing which merits limitless admiration). Most of the informations we have acquired during our relatively short presence here, have been obliterated from memory: not only documents have fallen into ashes, and buildings into ruin, but very probably whole cultures of the past have been forgotten. When people started to build a cultural memory (when they began to become humans) they seem to have had recourse to two types of memory supports (to two types of hardware). On the one hand to air waves, and on the other hand to stones, bones, and other hard objects. There may have been other memory supports in use (like body gestures) but they will not be considered here. A memory support is an object which permits information to be stored there (which permits it to be 'informed').

Air waves have the advantage that air is easily accessible, and that the human organism is equipped with organs which permit informing them (organs which may transform air waves into phonemes). Speaking comes almost naturally to us, although each individual language must be learned (acquired). This poses the question of the dubious relation between inherited and acquired information. But air waves have the disadvantage of being unstable and open to noise which deforms the information stored there. Thus, information stored within air waves, ('oral information'), must be recovered quickly by a receiver and stored within his brain, in the hope that it be transmitted from there to other receivers.

codes sur des supports durs (par exemple des pierres et des os) et sur des ondes sonores (le cas des langues parlées). Dans l'attente que ces codes soient déchiffrés par d'autres hommes, et les informations stockées dans leurs cerveaux. Les objets durs et les vibrations de l'air constituaient des canaux pour transmettre de cerveau à cerveau les informations acquises, c'était des "média". Mais ce n'était pas des média très efficaces pour les raisons suivantes.

Les objets durs porteurs d'informations sont relativement durables, mais ils ne sont pas fiables, parce qu'ils ne sont pas seulement des supports de mémoire, mais aussi des instruments pour changer le monde. Or, en tant qu'instruments, ils sont soumis à la consommation (un couteau en pierre perd l'information qu'il porte dans la mesure où on coupe avec). C'est pourquoi on a décidé de faire des objets durs qui ne soient que supports d'information (des "monuments"'). Il s'avère que les monuments (par exemple, les Vénus de Willendorf ou les peintures de Lascaux) ne sont pas commodes en tant que supports de mémoire : ils sont d'accès difficile, et l'information qu'ils portent est donc difficilement récupérable. Quant aux vibrations de l'air, elles sont très peu durables, et elles sont ouvertes à des bruits qui déforment l'information qu'elles portent. Par contre : l'air est d'accès facile, et il est facilement codifiable (on parle presque "naturellement"). C'est pourquoi la plupart des informations acquises ont été presque toujours confiées à des ondes sonores. La mémoire culturelle n'est pas une "success story".

Très récemment (il y a à peine trois mille cinq cents ans), on a cru avoir trouvé la solution : on a transcodifié les informations imprimées sur les ondes sonores dans un code visuel imprimable sur des objets durs, on a transcodifié les phonèmes en lettres. Avec l'invention de l'alphabet on a cru avoir enfin établi une mémoire culturelle durable et fiable : la bibliothèque. L'histoire, au sens strict de ce terme, pouvait commencer. Le code des lettres peut être facilement imprimé sur la boue, et la boue peut être facilement brûlée en brique. La bibliothèque est donc un support durable, les informations stockées sont copiables, et elles sont facilement récupérables. Grâce à la bibliothèque, l'homme peut donc effectivement vaincre sa condition physique et biologique, il peut devenir un être historique, il peut atteindre à sa dignité. Mais il y a un curieux problème en cela.

Jusqu'à l'invention de l'alphabet, les supports de la mémoire culturelle (les objets durs et les ondes sonores) étaient censés constituer des média entre le cerveau du producteur de l'information et celui du récepteur. La vraie mémoire culturelle était censée se trouver "dans l'homme". Avec l'invention de l'alphabet, la relation s'est renversée : c'est la bibliothèque qui devient le siège de la mémoire culturelle, et l'homme individuel n'est que la source de l'information destinée à y être stockée. La raison de ce renversement est évidente : la bibliothèque est un support de mémoire beaucoup plus durable et fiable que ne l'est l'homme individuel, lequel ne dure que quatre-vingts ans, et lequel oublie. Mais la conséquence de ce renversement est bouleversante : la mémoire culturelle est perçue en tant que mémoire trans-humaine, sur-humaine,

Such a process ('oral culture') is subject to numerous errors of transmission, due both to noise during the transmission, and to errors within the brains of the transmittors. Thus, 'oral cultures' are not, strictly speaking, historical ones.

Hard objects (like stones and bones) have the advantage of being relatively stable. A stone knife will preserve the information 'how to cut' for tens of thousands of years. Information thus stored within hard objects, constitutes our 'material culture'. But there is this disadvantage: informed objects (tools) are used not only as memory supports, but also as data banks: the knife does not only keep the information 'how to cut', but it is also used for cutting. The use of the tool will wear out the information it carries.This is the problem of waste which is at present at the center of ecological preoccupations. Dis-informed objects constitute a pernicious type of memory failure. This is why objects came into use which were meant to be exclusively memory supports, and not also tools. Such 'monuments' (for example the Venuses of Willendorf) were meant to avoid the problem of waste, but were of course subject to the Second Principle of Thermodynamics .And this is how far we got with cultural memory almost up to the present.

However, a very ingenious invention was made relatively lately (some three thousand five hundred years ago): the alphabet was invented. It is a code which transcodes the phonemes of spoken language into visual symbols. Those symbols may be impressed upon hard objects. This code was meant to somehow unite the advantages of oral culture with those of the material culture. It became possible to elaborate 'monuments' (texts) which stored the information of spoken language within hard objects, and which permitted it to be re-copied. This proved to be a very powerful method. A cultural memory was established (the 'library') which permitted cumulative storage of acquired information. This was the beginning of history proper. And it meant a radical transformation of human thinking and acting. The linear structure of alphabetic writing produced a progressive, causal, 'scientific' way of reasoning and of action. The acquisition and the storage of information became a disciplined, self-conscious process. The invention of the alphabet may be considered to be a decisive step toward humanisation.

As literal and literate culture thus slowly emerged from oral and material culture, (slowly, because it had to struggle against previous oral – mythical – and against material – magic – culture, and is still doing so), and as cultural memory became ever more closely identified with the library, a curious process of reification and sacralisation of the library developed. The library was not taken to be a store of acquired information into which we may feed informations acquired by ourselves (through writing), and from which we may recover informations acquired by others (through reading). It was rather taken to be a super-human memory which transcends individual men, which hovers over them, and to which they must aspire. Thus, the role of cultural memory was inverted: instead of serving men to store acquired information for the use of future generations, it now demanded that men serve it. This had profound effects on all commitments to culture (on all systems of values). Two examples for this reification and sacralisation of the library (of literal memory) must be presented, because they continue

et le propos de la vie humaine (sa "dignité") devient celui de "devenir immortel" dans cette mémoire surhumaine. Grâce à l'invention de l'alphabet, toute une série d'explications idéologiques de la "dignité humaine" furent formulées, et ce sont ces explications-là qui soutiennent notre culture jusqu'à présent (jusqu'à l'invention des mémoires électroniques). Au moins : c'est cela l'hypothèse que j'avance.

Deux de ces explications idéologiques de la mémoire trans-humaine et de la "dignité humaine" sont décisives pour notre culture, et elles se trouvent explicitement dans les dialogues platoniciens et le Talmud. Voici la première : la mémoire trans-humaine est un espace *(topos uranikos)* où des informations éternelles (des idées, des formes) sont stockées ; cet espace est notre patrie, mais nous sommes tombés de ce ciel dans le monde des apparences trompeuses (dans la nature), et nous avons traversé la rivière de l'oubli au cours de notre chute ; or, la rivière n'a pas effacé en nous les informations, elle les a seulement recouvertes, et nous pouvons les redécouvrir *(A-lethicia)* ; la méthode de cette redécouverte est la philosophie, elle est la "dignité humaine", et, grâce à elle, nous pouvons retourner dans la mémoire trans-humaine, nous pouvons devenir immortels. Et voici la deuxième explication : la mémoire trans-humaine est un réseau de relations inter-subjectives dans lequel nous nous reconnaissons les uns les autres ; dans la mesure où nous reconnaissons les autres (où nous nous ouvrons), nous les rendons immortels (nous sommes responsables de l'immortalité des autres), et dans le mesure où nous sommes reconnus par les autres, nous sommes immortels ; or, reconnaître l'autre, c'est reconnaître dans lui ce qui est totalement et entièrement Autre, c'est reconnaître Dieu dans l'autre ; c'est pourquoi la mémoire trans-humaine est Dieu, et la méthode pour devenir immortel, pour être gardé et préservé dans la mémoire, c'est la reconnaissance de Dieu dans l'autre, et c'est cela la "dignité humaine".

Ces deux explications ont été synthétisées dans le christianisme, elles ont été reformulées de façons divergentes et convergentes, et elles constituent toujours la base même de notre anthropologie. Ce qui frappe, quand on considère ces idéologies, c'est qu'elles confondent la mémoire avec le support, et qu'elles réifient la mémoire : l'opération de stockage des informations devient "chose". Ce n'est pas qu'on ait la faculté (mystérieuse) de stocker des informations acquises : on a "une mémoire". Par exemple : on a une "âme immortelle", on a un "esprit immortel", on a une "partie divine". Cette confusion entre mémoire et support, cette réification de la mémoire (en l'identifiant, par exemple, avec le cerveau) s'explique assez facilement. L'alphabet est la transcodification de vibrations sonores, donc de support aérien en support dur. Or, l'air est un support insaisissable et les termes qui désignent l'air (comme *pneuma, rouakh ou spiritus*) désignent aussi l'insaisissable. C'est pourquoi il est facile, il est même inévitable, de supposer que la bibliothèque (la mémoire trans-humaine), a un support "spirituel", que les informations stockées sont "inspirées", de confondre ce support "spirituel" avec la mémoire elle-même. Or, cette confusion entre mémoire et support (entre software et hardware) n'est plus soutenable lorsqu'il s'agit des mémoires électro-

to inspire most of what is called 'western values'.

The first example is Platonic: The library (transhuman memory) is a space (topos uranikos) within which immutable, eternal informations ('ideas', 'forms') are stored according to the rules of logic. This heavenly store is where we originally come from, but from which we have fallen into this world of mere appearances wherein all informations we may acquire are wrong informations (doxai). While falling, we have crossed the river of oblivion (lethe), but those waters did not obliterate the heavenly, true informations: they only covered them up, and we must re-discover them (a-letheia). To know, therefore, is not to acquire new information, but to remember forgotten eternal information. We can do so thanks to 'theory' (which is disciplined contemplation of the heavenly library), and if we do so, we become immortal.

The second example is Talmudic: the library (transhuman memory) is a meeting place where we can dialogue with each other. To be able to dialogue with somebody, we have to open ourselves up to him: we have to recognize ourselves within him, and to recognize him as our 'other'. We have to 'love our neighbour'. In fact: to the extent to which we recognize our neighbour, he will be kept within our memory, (will become eternal within us), and to the extend to which we ourselves are recognized by our neighbours, to that extent we shall become immortal within them. Within that transhuman memory which is the recognition of otherness, we are responsible for the immortality of our others. This is why memory is blessing (zikhranah lebrakha), and why the dead live on (khayeh hamessim). Now, to recognize somebody as our other implies the recognition of Otherness, of Him who is entirely different from us (JHVH). To love one's neighbour implies love of the Entirely Other. Our neighbour is the only image of God, and through that image (through that medium) we may contemplate God Himself in all His splendor. Thus, the transhuman memory, (the library which is the Holy script) is in fact God himself wherein we meet to become immortal through the love of each other.

If we follow the development of those two ideologies which are at the root of western civilization, we find that they are responsible for our existential identification. We identify ourselves as 'subjects' (underlings) of that transhuman memory and thus as subjects of an objective world. That identification is due to the fact that we reify our ability to store acquired information (as if that ability were a thing which we, somehow, carry within us) and that we assume this thing within us to be a kind of emanation from the superhuman library which hovers above us. Thus, concepts like 'soul', or 'spirit' (or even 'ego') acquire their typically occidental meaning, namely: that part of ourselves which is not subject to entropy, but subject to eternal information storage. As 'bodies' we are part of the biological world, but as 'spirits' we are opposed to it, we may know it, manipulate it, and submit it to our desires. All the 'eternal' problems of occidental ontology and epistemology, (like the problem of the relation between body and spirit, and the problem of the adequation of the 'thinking thing' to the 'extended thing') result from this reification. There are however symptoms at present which suggest that we are about to overcome this sort of existential identification; that we no longer adhere to the belief in a

niques. C'est pourquoi l'invention de ce nouveau type de mémoire va bouleverser nos idéologies traditionnelles (notre anthropologie traditionnelle), et pourquoi elle va nous obliger à élaborer des valeurs nouvelles. Nous aurons à faire face à une nouvelle interprétation de la "dignité humaine".

Ce qui arrive, avec l'invention des mémoires électroniques, c'est le phénomène suivant. La faculté mémorative humaine (cette faculté de stocker des informations acquises) est transférée du cerveau à des objets inanimés et elle peut être observée, contrôlée et manipulée du dehors. Bien sûr : les informations à stocker doivent être transcodifiées (par exemple digitalement), et ceci est important pour comprendre la nouvelle mémoire culturelle. Mais ce n'est pas décisif pour mon argument. Ce qui compte ici, c'est que, grâce aux nouvelles mémoires, nous dépassons, dans notre pratique des ordinateurs, la faculté mémorative (tous les concepts du type "âme", "esprit", etc.) devient de ce fait aussi primitive que le sont des réifications ou personnifications d'autres facultés (comme la "vertu", "le courage", "l'honneur" ou "l'amour") et le problème de la mémoire culturelle cesse d'être transcendant pour devenir stratégique. Le problème n'est plus : "Qu'est-ce que l'immortalité ?", mais "Comment sauvegarder les information acquises de façon durable et fiable ?".

A travers cette reformulation du problème de la mémoire à laquelle la pratique des ordinateurs nous oblige, toute notre attitude existentielle va changer. La préoccupation de notre vie ne sera plus de "sauver notre âme", ou de "devenir immortel dans le transcendant", mais elle sera plutôt de créer des

transcendental core within us. If this were indeed happening, it would imply a profound revolution in all our categories of thought and action.

Electronic memories are simulations of the memory functions of the brain within inanimate objects. (A simulation here means an imitation which exaggerates a few aspects of the original while disregarding all the other aspects. Thus, a lever is a simulation of the arm: it exaggerates its power to lift while disregarding all the other aspects of the arm). In electronic memories the memory function of the brain is being transferred out of the skull into the external world. This permits us to watch and to manipulate the process of storage of acquired information from the outside. To be sure what we thus watch and manipulate is a very simplified form of brain memory, in which however a few aspects are much more performant than within our cerebral organisation. Still electronic memories provide us with a critical distance with regard to our faculty to store acquired information. And this critical distance will permit us, in the long run, to emancipate ourselves from the ideological belief that we are 'spiritual beings', subjects which face an objective world.

The fact that electronic memories exaggerate some of our memory functions and thus render them far more performant than before, will have no doubt profound effects on future civilization. Let me briefly mention a few of these changes: electronic memories may be informed more easily than cerebral memories, they keep those informations stored for a much longer period, and they permit an easy recopying of those informations. This implies that we shall no longer attempt to store those informations within our

informations qui puissent être stockées dans des mémoires électroniques durables et fiables, et ainsi, de continuer à informer les générations à venir après notre mort. C'est pourquoi notre engagement dans la programmation des nouvelles mémoires équivaut à l'engagement philosophique et religieux de nos ancêtres.

Or, cette nouvelle vision de la faculté mémorative humaine, de la "dignité humaine", n'est nullement une profanation du mystère "homme". Tout au contraire : la distance critique dont nous disposons à présent par rapport à l'acte de mémoriser nous permet de mieux voir combien cet engagement contre l'oubli (contre la nature physique et biologique) est inexplicable. Le vécu du mystère (du "sacré") est caractérisé par l'expérience de l'épouvante. Or, la pratique des ordinateurs nous montre combien les nouvelles mémoires sont épouvantables, épatantes. Avec les nouvelles mémoires, nous voici face à l'immortalité de l'être humain sous une lumière plus pénétrante : il nous est devenu possible de nous rendre immortels par un acte conscient (celui d'alimenter les mémoires) et donc aussi de refuser de devenir immortels. L'immortalité est devenue choix. Et c'est peut-être cela la véritable liberté : pouvoir choisir entre l'immortalité et l'oubli.

L'invention des mémoires électroniques aura, sans aucun doute, des conséquences profondes sur notre attitude existentielle future, dont quelques-unes sont encore entièrement imprévisibles. Il en va ainsi avec toutes les révolutions culturelles : elles sont déclenchées par des inventions techniques (céramique, bronze, fer, révolution industrielle), mais les consé-

brain, (a hopeless endeavour if we consider the amount of available informations at present), but that we shall instead feed those informations into the electronic memories. By this means, our brain will be freed for other tasks, such as the processing of informations. This processing of informations is called 'creativity': we may expect a veritable explosion of human creativity, once we have freed ourselves from all the mecanizable aspects of thinking. Another change to be expected is this: electronic memories may be coupled with robots, so that the informations contained within them may be transcoded into gestures. 'To work' is a gesture which imposes information upon an object. (For instance: a stone knife is the result of an imposition of the information 'how to cut' upon a stone). Thus, the gesture of working will be transferred from ourselves on to automated machines, and we shall become free to 'program' it, which means to elaborate the information to be fed into an electronic memory and then transcoded into the actual gesture. Man will no longer be a 'worker' (homo faber), but rather an information processor, a player with information (homo ludens). The last change to be expected (and to be mentioned here) is this: it is possible to obliterate easily informations from electronic memories: they forget much better than does our brain. Now the validity of informations is limited in time, and that time is becoming ever shorter. (For instance most informations concerning the physical sciences which were valid a generation ago, are no longer useful). Our brains are burdened with this sort of no longer valid informations, and this inhibits us from processing valid informations. Electronic memories permit a progressive critical elimination of information waste, and thus a disciplined pro-

quences dépassent de loin le domaine de la technicité. Cette fois, le bouleversement sera encore plus troublant : la pratique des mémoires électroniques nous oblige à faire la distinction entre l'élaboration des informations acquises *(data processing)* et l'impression de ces informations sur un support (le travail). Or, il s'avère que le travail est mécanisable (les machines peuvent le faire mieux que nous). C'est pourquoi le travail (l'engagement pour transformer le monde) ne sera plus considéré comme digne de l'homme, et la dignité humaine sera perçue comme faculté de programmer le travail (d'élaborer des informations destinées à être imprimées sur le monde). Peut-être, avec l'invention des mémoires électroniques, l'homme s'humanisera-t-il pour la première fois, au sens strict du terme : il dépassera sa condition naturelle.

Bien sûr, ce ne sont là que visions utopiques. Mais elles sont inscrites, en tant que virtualités, dans cette nouvelle technique.

gressive information accumulation. It may be said that this opens the way to 'historical thought and action' in a new and more radical sense of that term. And accidentally it shows that to forget is just as important a function of memory as to remember.

But all these changes to be expected (and most of them have not been mentioned here), although they are very profound, do not go to the root of the present cultural revolution. The really revolutionary event is the fact that electronic memories provide us with a critical distance with regard to our capacity to acquire, to store and to transmit informations, to what used to be called our 'spirit'. Our praxis with electronic memories forces us into admitting that memory is not a thing, but a process, although that process involves a thing like computer hardware or our body. This praxis forces us into admitting that there is no hard core within us which somehow mysteriously governs that process, and which we might call our 'soul', or 'spirit', (or even our 'ego'), but that the process of acquiring, storing and transmitting informations is one that flows through us and involves not only the whole of present and past society, but in fact the whole of what we call 'the world'. It forces us into admitting that we are knots within a universal network of information flux, that those knots receive, process and transmit information, and that they are nothing at all if and when the relations which constitute them are un-knotted. In fact our praxis with electronic memories forces us into admitting that what we call 'I' is a knot of relations which, when unpeeled, reveals itself to have no hook on which those relations may hang (like the proverbial onion).

Now of course, this breaking out from the shell of individuality (of subjectivity), as it announces itself in our praxis with electronic memories, is not a sudden event, but has been preparing itself for many years in numerous fields of research. To quote a few examples: analytic psychology is able to show that what we call an individual psyche is nothing but the tip of an iceberg of what might be called a collective psyche. Ecological studies are able to show that individual organisms must be understood to be functions of a relational context best called an ecosystem. Politological studies can show that 'individual man' and 'society' are abstract terms, (there is no man outside society, and no society without men), and that the concrete fact is intersubjective relations. This relational (topological) vision of our position coincides with the relational vision the physical and biological sciences propose to us with regard to the physical world. The physical objects are now seen to be knots within relational fields, and the living organisms are now seen to be provisional protuberances out from the flow of genetic information. Husserl's phenomenology is possibly the most adequate articulation of this relational vision, and it is becoming ever more adequate as our knowledge advances. It states (to put it in a nutshell) that what is concrete in the world we live in, are relations, and that what we call 'subjects' and 'objects', are abstract extrapolations from these concrete relations. Still although this abandoning of the ideology of a 'self' may have been a long process, it is our praxis with electronic memories which forces it upon us.

It is quite impossible to try and foresee the consequences of such an existential revolution. One thing however is certain: if we abandon the idea of possessing (or being) some identifiable hard core, and if

we assume ourselves to be embedded in a relational network, then the classical distinction between the sciences and the arts will no longer be valid. Because, then, the distinction between 'objective knowledge' and 'subjective experience' will become nonsense. If intersubjectivity becomes the fundamental category of thinking and action, then science will be seen as a kind of art (as an intersubjective fiction), and art will be seen as a kind of science (as an intersubjective source of knowledge). The consequences of such a fusion are beyond imagination.

Let me try to resume what I intended to argue in this contribution: Mankind is different from all other known beings by the fact that it acquires information, stores it, processes it, and tranmits it to future generations. Mankind is anti-natural in this sense, that it is committed to going against the entropy of nature. This unique human quality has been covered up, during history, by dense ideological fogs which prevented men from making full use of it. The most pernicious ideology was the one which reified that quality and led men to believe that they have (or are) a thing which is opposed to nature. With the invention of electronic memories, a critical distance with regard to that quality has become possible, and we may now expect a more conscious use of it. That (partial) removal of ideological fogs will not render this quality of ours less mysterious, it will not 'profane' it. On the contrary: the mystery of this anti-entropic commitment of ours will become even deeper.

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Note :

Nous avons respecté la traduction faite par Vilèm Flusser lui-même.

Note:

References which might help the reader to localize this contribution within the context of the present discussion , and to triticize it:
I have tried to collect informations from heterogeneous sources. My arguments are based on readings in the physical sciences, in biology, in psychology, in neuro-physiology, and of course in what are now called 'the sciences of communication'. But my point is one of polemics with the French 'philosophers of culture'. The reader will find that I argue against some points advanced by Roland Barthes, by Jean Baudrillard, by Abraham Moles, by Michel Serres, and many others. The reader should also keep in mind that this contribution was part of a round table at ARS ELECTRONICA at Linz, Austria, at which the following partners were present: Heinz Von Foerster (biophysician), Friedrich Kittler (semiologist), Jean Baudrillard (philosopher), Hannes Boehringer (linguist), and Peter Weibel (computer artist). To resume this attempt to localize this contribution: what I attempted to do was to oppose to the prevailing pessimism an alternative view of the possible future of our civilization, more as an hypothesis than as a thesis to be defended.