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Culture and technology thought anew.

(Encounter "Computer culture", Villeneuve, July 8, 83)

Our encounters have informatics for their central subject. It is however impossible to separate the influence which informatics wil exerce upon present and future culture from the influence exerced by other technological development, be they parallel or diverging. This is why a vaster title has been chosen for this our first meeting: "culture and technology". This choice is an effort to question the cultural revolution, which obviously is in progress, from the more general point of vue of technical development. I shall therefore attempt to sketch the outlines of that event as I see them, and I shall then accentuate those three aspects which seem to me to be among the most disturbing ones. But let me begin by a brief consideration of informatics, in order to insert this contribution within its context.

Informatics may be defined as a discipline the purpose of which is to discipline our commitment against the natural tendency toward entropy. Nature as a whole is see as a tendency toward increasing probability, toward progressive loss of information, toward what is called "thermic death". It is true that improbably, highly informativ situations do arise by chance within nature, (for instance planetary systems, the living cell, or the human brain), but those situations must return of necessity into the general tendency toward information loss, to be there "forgotten". Man is a creature (possibly the only one), which deliberately opposes this tendecy toward "thermic deat toward death "tout court", by deliberately creating improbable situations, and by sto ing them to prevent them to be forgotten. An example of such an improbable and store information is a shoe, (an improbable form of an animal hide). Another example is a book, (a memory which stores improbable combinations of letters, of words, of thought The sum total of improbable situations thus established may be called "culture", and the sum total of the stores which preserve such situations may be called "history". Now informatics as I understand it is a discipline meant to discipline culture and history. It is thus located, in a murky fashion, beyond culture and history, to be able to, out of such a "transcendence", analyze and synthetize, criticize and manage, in a word "program", culture and history. The ontological position of informatics is an uncomfortable one.

The mothod by which man establishes improbable situation is called "work". Its purpose is to change the form of a given object such that the object keep that new form. It is to "inform" the object. Now one may sustain that work changes the object into what it ought to be. That it impresses a value upon the object. The shoe is valuable, because it is an animal hide such as that hide ought to be. The value is deeply inscribed within the shoe, it has been impressed into it. It is only by using the shoe up, by consuming it, that its value, its information, can be obliterated. This is why work is held to be value production, and why consumption is held to be value destruction. Or: the worker is taken to materialize values, and the consumer to obliterate values. One can show that all cultural categories, (like ownership, division of work, justice, value scales, creation, the so-called "ultimate values), are founded on such an analysis of work and consumption. "Who owns shoes and

who should own them?". "Who produces shoes and for whom?". "How to distribute shoes?". "Is it better to own a shoe or to save one's soul?". "How are new forms of shoes invented?". "Is there an ideal shoe?".

Now the recent development of technology, in part sustained by informatics has rendered inoperative this sort of analysis of work. And has thus rendered dubious all our cultural categories. The reason is this: in traditional work to establish and improbable situation and to store it away in an objett are two aspects of one single gesture, while in the new form of work they are two clearly distinct gestures. The shoemaker "finds" his shoe form not only in his memory, but he also "finds it out" during his struggle against the resistence which is offered him by the leather and the human foot. This is "dialectics between theory and praxis". True: ever since the first Industrial revolution those two aspects of work began to fall apart. Thus the form of the industrial shoe was elaborated by an ingeneer or a designer, it was impressed into a tool which impressed this information in its turn upon the leather. This is why, from that point on, information, value, was being stored within the machine rather then within the shoe itself, (the shoe became cheaper). And this is also why the industrial question is rather "who should own the machine?", instead of "who should own the shoe?". Still: the value, the information, continued to be stored away in some object, and thus work continued to be held to produce value.

The second and third Industrial revolution, however, has severed the link between the establishment and the storing of information in objects. An intelligent tool has a program which contains various forms of shoes, and it impresses those forms automatically upon the leather, according to the consumer's chice. The gesture of impressing information upon an object has thus become a non-human one. Thus man is being emancipated from the necessity to "work" in the strict sense of the term, and he can concentrate upon the elaboration of information. It has been discovered, however, that even the gesture of information elaboration by be programmed and automated. In any case: from now on the value of the shoe, its information, no longer sits within the shoe nor within the tool, but is inscribed in a program. It is no longer the result of work in the strict sense, but of a combination game with information elements, with "bits". This is why the post-industrial question will no longer be: "who should own a shoe or a tool?", but rather: "who should program the tool, and is he not himself programmed to do so?".

Ours is a true cultural revolution which implies trans-evaluation of all the values. For instance: not he who owns raw materials and energies, but he who progra holds the power of decisions. (Not he who has petrol but he who has got ideas, e.g. Japan.) Or: not the worker but the programmer produces values, and the worker is a creature menaced by extinction, a born "chomeur". Or: the problem of division of labor and of class struggle is substituted by the problem of the relation between human decisions and decisions taken automatically by apparatus which are becoming ever more autonomous of human interference. Again: the problem is no longer to distinguish between good and bad actions, (all action may be automated and programmed), but between good and bad intentions, (good and bad programs). Again: the prob

lem is no longer how to produce beautiful objects, ("art works"), but how to elaborate models for new and exciting experiences. Finally: the problem of the "ultimate values", or of "ever more adequate models" has become meaningless where man may program every conceivable form with the aid of his apparatus: "God is dead".

I suggest that we chose, out of this flood of mutations, three aspects only, and that we consider them together: (1) The devaluation of objects, as a consequence of the devaluation of work. (2) The trans-evaluation of the artistic act, as a consequence of the devaluation of objects. (3) The reformulation of the question of freedom, as a consequence of the new evaluation of the artistic act.

(1) Objects are valuable if they store an information. A shoe from which information has been obliterated by consumption is worthless. In fact: such a shoe is an anti-value, inasmuch as it is a shoe as it ought not to be. Now Industrial revolution has accumulated such types of anti-values, they pollute our surroundings and they form a menace. The reason for this anti-value accumulation is that Industrial revolution produces an ever growing mass of ever cheaper objects, (of objects containing less and less value), and that this mass requires a corresponding mass of producers and consumers, (demographic explosion). It also requires a corresponding mass of raw material and energy, (colonialism), which again menaces to exhaust the material and energy resources. In sum: industrial progress pollutes, it massifies, and it exhausts the world.

This is one of the reasons why post-industry will make a U-turn. It will abandon growth, and it will shrink. The objects will continue to grow ever cheaper, their value will shrink as everybody will be able to produce them himself at home with intelligent tools. Nobody will want to store those objects: their information is stored away in the tool program anyhow. No sense in wanting to own more than one pair of shoes, if I can make myself any quantity of shoes I desire. Furthermore: the intelligent tool, by disciplining and des-humanizing work, reduces the amount of space, time, material and energy required to make a shoe. Thus everything will shrink: the mass of objects, their value, and the amount of time, space, material and energy required to make them.

<u>But this will change the entire climate of life: it will tend toward smallness</u>. Village instead of town, the small house, the small intensely cultivated garden, the individual car, the miniaturized kitchen. The giant organisations like the State, the political Party, the Trade union, will be substituted by small pressure groups, terrorist gangs, cooperatives, families in the new sense. These small units will be linked to each other by information media which will be global. Those units will be motivated by this global information exchange, and no longer economically. If a minimum of available objects is achieved, (of the order of $ 6.000 per capita consumption, beyond which the law of diminishing returns begins to apply), it is sociology, and no longer economy which constitutes the social infra-structure.

Now this transfer of interest from objects to information, (no longer one more pair of shoes, but one more new experience is the aim), will have as a result

an as yet inimaginable quantity of "supportless" information. An early example of such a "non-objective objett" is the photo. Its objective support, paper, is devoid of interest, because the information it carries can easily be transferred from one support to another. Such type of objects will become ever less objective: like films, videos, videotexts, holograms. A whole universe of ungraspable objects, (of texts, images, volumes which are "not out there") will come about, and an early example of this can be seen on the computer screen. This spectral universe will concentrate all experience, all knowledge, every action. And in such a universe all questions concerning ontology, (is this true, is this false?), will become meaningless, because this entire universe will be a mockery, it will be almost artificial.

(2) It is in such a context that we must think anew about the artistic act. Prior to the victory of the bourgeoisie in the 15th century, (which constituted the basis for Industrial revolution), "art" and "technique" were synonymous, and both meant know-how. Our subject today, "culture and technology", would have been then synonymous with "culture and art". During the Modern age art as we use the term now divorced itself from technique, and it was imprisoned in a glorified ghetto. Technique became "ethical" know-how, it produced objects which were good for something. Art became "aesthetic" know-how, it produced beautiful objects. Or, the other way round: technique produced ugly objects, (like the industrial towns), and art objects good for nothing, (which were marginalized in everyday life). This pernicious schizophrenia is being overcome by the second Industrial revolution. Industrial design and publicity show how art is being re-absorbed by technique for its "ethical" purposes.

But this is not what is essential. The clear division between information elaboration, (the human task), and information impression upon objects, (the automated task), has rendered the artistic act producing "works" absurd. Man will no longer be a producer of objects, (homo faber), but a composer of information, (homo ludens). His activity will be dedicated to the elaboration of information devoid of an objective support. Of models which may be automatically impressed upon objects, in order to program, through those objects, the lives of mankind. But those models may just as well broadcast through the media, in order to program directly the experience, behavior and knowledge of society. This shows that with the programming activity there is no sense in distinguishing between technique, art and science. If art is defined as elaboration of new models of experience, every information elaboration has an artistic aspect. Each and every post-industrial man will be, quite spontaneously, an "artist" in this sense of the term.

Everybody will build his own models of experience with the aid of intelligent tools. He will build his own texts, images, volumes devoid of an objective support. No matter whether those models be later applied automatically to objects to become "works of art", or whether they be broadcast through the media which will link everybody to everybody, in a visual, auditive, haptic or olfactive form. We cannot escape from the necessity to think this radical democratisation of the artistic act over, because this is what must come about. Now the models elaborated by such an

"individual artist", (by that future "uomo qualunque"), will be nothing but variations upon the models which that artist will be receiving every day at home through the media. This will no doubt debase the general cultural standard. And the result of such an artistic activity will be the steady growth and consolidation of that spectral universe which permits no ontological critique, and which I have mentioned.

(3) Now this poses the fundamental and decisive question concerning freedom within information society. At the beginning of this talk I suggested that freedom is that mysterious human faculty to elaborate and to store information, in order to resist the stupid natural tendency toward oblivion, toward death. The second Industrial revolution will emancipate man from the necessity to work, and it will liberate him for information elaboration. For the first time, ever since man is man, freedom will become possible, not in the sense of "freedom from", but in the sense of "freedom to". But, at the same time, informatics, that liberating force, shows us that information elaboration is a game which combines virtualities, and that the game may be automated. The virtualities may combine by chance, and they do so indeed within nature. This automated chance explains why the word processor will wri of necessity, but by accident, the "Divina Commedia", if it is given the time neces sary to do so.

Are we free in the same way the word processor is free, or are we more free than it is, because we can write the "Divina Commedia" a little bit early than it does so? Are we free, because, for the time being at least, we are a little bit more intelligent than are the intelligent tools, and is that greater intelligence of ours all there is to human dignity? Are we capable of submitting the intelligence of our tools to our free purposes, even if we no longer know what freedom is about? Thus freedom is no longer a problem of inter-human relations, (homo homini lupus), but it is a problem of the relation between our own intelligence and artificial intelligences.

Technological development, sustained by informatics, has opend up unprecedente visions of human freedom, but at the same time it suggests that freedom may be an empty concept.