INTELLECTUAL TECHNIQUES AND INFORMATION TECHNOLOGIES IN THE TRANSITION TO THE KNOWLEDGE SOCIETY

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La diversité des techniques utilisées dans tous les types d'action humaine est montrée et la présence d'une infrastructure technique dans les activités intellectuelles les plus abstraites est demontrée. Les techniques cognitives spécifiques pour la science et la philosophie contemporaines sont identifiées et de nouvelles formes de pensée associées sont signalées. Le type actuel de conceptualization et quelques caractéristiques du modèle conceptuel dominant sont distingués. Les principaux composants et l'étendu du milieu intellectuel technique artificiel sont présentés. Les techniques intellectuelles adéquates pour travailler dans le milieu virtuel du web et pour les groupes de travail occuppés avec la génération collaborative des connaissances dans les communautés virtuelles sont mises en évidence au niveau informatif, formatif et créatif de l'activité intellectuelle. La réorganisation actuelle complète du système des valeurs est accompagnée, conditionnée et suivie par le développement des techniques informatiques, dans leurs formes instrumentales et intellectuelles. La conclusion de l'article selon notre vision sur le passé et particulièrement sur l'avenir intellectuel: seules l'association entre le traitement technique des données et l'utilisation (cognitive et réflexive) humaine de l'information peuvent faciliter le maximum d'efficacité de l'activité informationnelle, en tant que base de l'activité intellectuelle.

I. THE TECHNICAL INFRASTRUCTURE OF THE INTELLECTUAL ACTIVITY

Before analyzing the role of information technologies (I.T.) and that of intellectual techniques (*I.T.)* in the value-oriented modeling of the future society, we propose to study the main *I.T.* used in various cultural activities and to show the way in which the present I.T. change and generate new *I.T.* Our working hypothesis is that today I.T. become more and more *I.T.*

Diversity of techniques used in any types of human action

Techniques applied in all kind of social processes and activities	– Information processing techniques
Techniques concerning (in)directly any forms of social activity	– Banking operations and bookkeeping
Organizing and leading techniques	– Intelligent process control Managerial techniques
Manufacturing techniques and technologies	– Virtual factory, Robotics

Man himself is object and subject of diverse techniques

Techniques applied to the human being as:

Spiritual being – artistic writing, painting techniques, music composing

Political being – technologies of power

Being in < difficulty or conflict – judicial techniques

Social being in formation < learning techniques / educational techniques

Psychical being – psychological techniques

Biotical being – transfusion technique

– anthropotechniques – the art to develop harmoniously the human being < spiritually (culture building) / bodily (bodybuilding)

In the philosophical field of culture there always were used intellectual techniques constituting its technical infrastructure.

Technical infrastructure of the philosophical activity

Explanatory techniques (nomologic, genetic, functional, teleological, probabilistic)
Metaphysics – explanatory technique by (first) principles (Heidegger)

Constructive techniques (reasoning techniques, mental models, ideal experiments, computer simulation, interpolation/extrapolation, value measurement

Evaluative techniques (quantitative, qualitative)

Interpretative techniques (analysis-synthesis, comparison, symbol de-codification)

Projective techniques (morphological, explorative, normative, intuitive, theoretical)

Creative techniques (dialogical, analytical, aggregate)

Various intellectual techniques

Learning techniques – reading techniques
– computing techniques

– technique of PCA (personal coefficient of assimilation) establishing
– techniques of counteracting the fast forgetting phenomenon etc.

Informing techniques – searching, organizing, managing, storing, communicating techniques
– translating techniques (from "computer assisted" to "author assisted" translation)

Forming techniques – teaching, training, tutoring, orienting, evaluating techniques

Action centered techniques – techniques which support, improve or re-create life: work as "vital technique" (Freud); the "art of living" founded by social sciences (Janaro, Altshuler); genetics and genetic engineering
– decision techniques
– organization techniques
– persuading techniques which determine man to action: language is conceived in the philosophy of language as the technique of techniques
– "techniques of happiness" (Ellul) in the technological society

Cognitive techniques

Intellectual techniques are not reducible to cognitive ones and, how it is observable, some practical activities have powerful intellectual components.

Cognitive techniques in

- natural sciences – (truth) discovery techniques
- social sciences – (motives) understanding
- sciences of cognition – mental models, ideal experiments
- sciences of the spirit – (values) inventing
- philosophy of science – re-constructive, phenomenological logic – reasoning techniques
- computer science – program verification, modeling, simulating

The technical culture, that generates inclusively the philosophy of technique, also imposes a set of new intellectual techniques in all fields of activity, from the industrial to the social and cultural activities, including philosophical activities.

Specific philosophical techniques are now renewed or changed with computing techniques which permit the perception of information in its different forms, show new resources of scientific cognition as the genuine nonverbal human reasoning or,

on the contrary, the high formalized representation and manipulation of information as data and offers new instruments for analysis, for modeling and simulation of theoretical constructs, for e-activities in group and at distance, facilitates new forms of scientific information exchange in the philosophical community.

Using computers in philosophical research we gain new opportunities such as access to reference bases, bibliographies, eventually with the assistance of intelligent agents or even multi-agent systems, direct link to www for the information environment interrogation, the possibility to use hypertext techniques and specific communication techniques on the Internet, which create a new intellectual environment for philosophical activities.

Computer work allows the integral representation of the "map" of a net of knowledge or the reconstitution of the line of a search by recording the successive links achieved, can help to place "reading marks" and offers unprecedented means to structure, edit, multiply and transmit messages containing information or even new knowledge.

We can say that these changes in the elementary levels of intellectual activity of formation, information and communication influence the entire structure and dynamics of the intellectual activity. Can we efficiently and adequately use the information means for specific philosophical activities, methods and goals? Creation in these domains needs primarily philosophical culture and specific aptitudes and methods.

Some successes are presented in the literature for the domains of logic, ethics and aesthetics. Philosophers are specialized in technical logic, artificial ethics, information aesthetics, in philosophy of digital politics.

The bringing up of the artificial philosophy is studied by Laruelle (**15**) from the perspective of logic and mathematics; these domains of science which are conditioning the development of computer aided decision techniques also can transform the speculative philosophy of thinking into an artificial philosophy.

Some elements for a philosophy of thinking (formulated from other perspectives than those logical or philosophical) were emphasized by Bohm (**5**) from a systemic viewpoint.

Other aspects resulted from the study of a few present new forms of thinking generated in our information age especially by the scientific and philosophical use of the *information machine* will be presented in the second part of this article.

The term "information machine" was coined by Pană in a dedicated paragraph of the book concerning the technical culture (**27**, 430–438).

Artificial philosophy is also studied by Pană (**26**), starting from the philosophy of the artificial. Other sources of the artificial philosophy shown by Pană are:

a) computer aided accomplishment of some activities in various traditional philosophical fields and thus the emergence of information aesthetics, computer ethics or digital politics;

b) the setting up of some new fields of philosophical reflection in which not only the methods and means but also the subject matter of research are changed; the domain of the philosophy of computer is a good example from this standpoint. As research tracks in this philosophical field we can consider the *philosophy of computing*, the *philosophy of computer building*, the *philosophy of computer aided creation*, the *philosophy of cyber-culture*, the *philosophy of computer mediated communication*, the *philosophy of computer environment* etc.
   At the basis of this research domain the *philosophy of cognitive sciences,* the *philosophy of mind* and the *philosophy of consciousness* are situated.
   The *philosophy of intellectual technologies*, promoted in the chapter "Intellectics and Inventics" of our book *Philosophy of Technical Culture* (**27**, 288–377) is also implied here.
c) the philosophical study of some fields of scientific research and technical design such as *philosophy of artificial intelligence, philosophy of virtual reality* or *philosophy of artificial life*;
d) individual attempts to create a synthetic philosophy by adopting or elaborating new theoretical and methodological instruments which are bringing nearer philosophy to science and technique as in the already mentioned book of Laruelle about the artificial philosophy.

This new form of philosophy seems to be subordinated to the digital metaphysics, which is born by cooptation of computers in philosophical activities, and which uses this technical creation not only as an instrument of work, but also as a subject of research, as a model of activity for exploring realities (like mind) or for interpreting the whole reality as an universal computing machine – Steinhardt (**36**, 117).

All these new concerns and activities generate a new intellectual environment which is mainly a technical artificial intellectual environment.

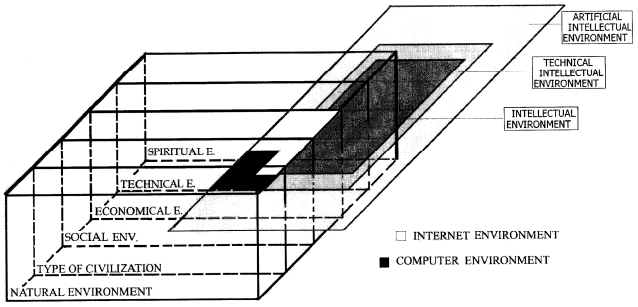

Fig. 1. – The technical intellectual environment among other cultural environments.

This new cultural environment with its various aspects is emerging by some professional (intellectual) activities which also produce new domains of spiritual culture. All these are evolving from scientific computing but today problem solving, theorem demonstrating or computer experiencing are surpassed by forms of educational computing, by research fields such as artificial life or artificial intelligence or even by artistic or philosophical computer works.

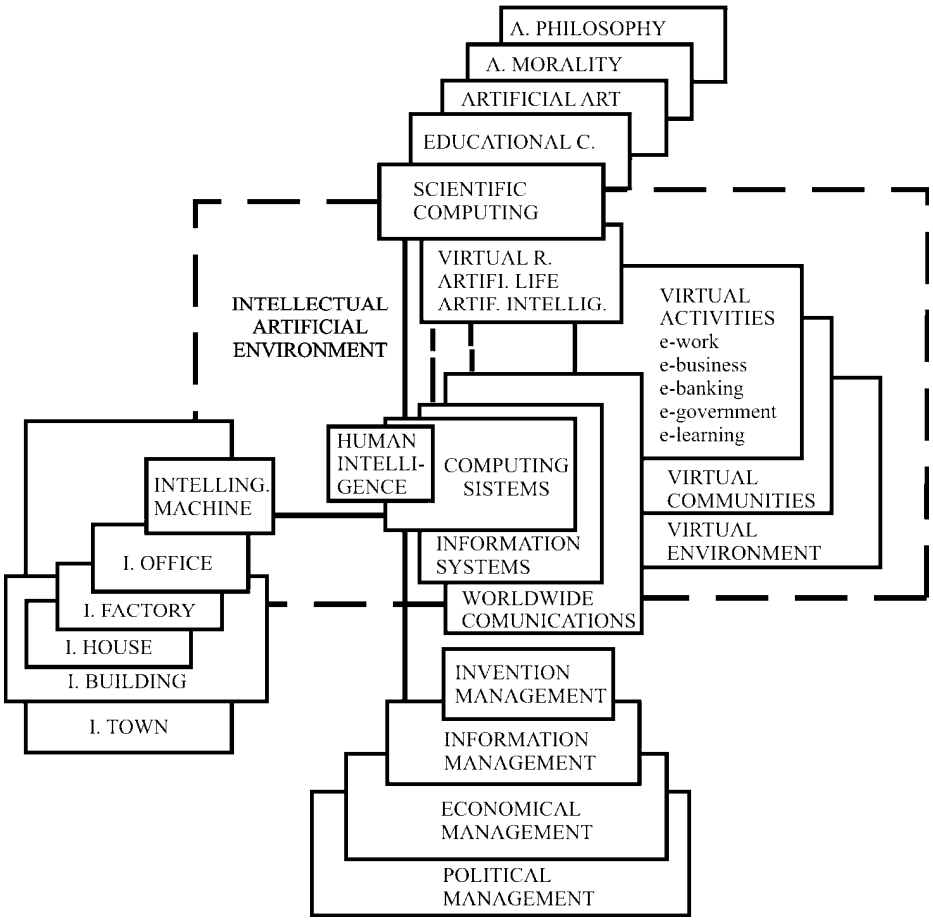

Fig. 2. – New domains of activity and culture.

Computer and computer culture become central themes for more and more specific fields of philosophical reflection and as a new intellectual instrument, the *information machine* (among other information systems) is also a means of amplification and diversification of the intellectual activity and environment.

II. INFORMATION TECHNOLOGIES (I. T.) AND INFORMATION THINKING (i.t.) IN THE SCIENTIFIC AND PHILOSOPHICAL FORMS OF THE INTELLECTUAL ACTIVITY (SOME ELEMENTS FOR A PHILOSOPHY OF THINKING)

The new domains, forms and instruments of activity determine the rising of new forms of thinking, with some unprecedented characteristics. In fact we have an entirely new human being and very new forms of social organization and management, a new information culture.

It is asserted sometimes that action is vanishing in the computer culture and thinking is extracted from action. The truth is that action is transformed, becomes an informational action and often almost totally an intellectual activity. Also, though thinking is not separated from action, forms of thinking multiply even more than domains of action. We can mark out some new forms of thinking.

New forms of scientific and philosophical thinking:

meta-theoretic thinking
inter-theoretic thinking
information thinking
network thinking
integrative thinking
global thinking
projective thinking and even
artificial thinking

We can add already used but today unprecedented developed forms of thinking as:

systemic thinking
algorithmic thinking
probabilistic thinking
heuristic thinking

involved in some above mentioned new forms of thinking, by the influence of *information machine* using, developing and studying.

Other forms or varieties of thinking, born as logical or mathematical theories, and used as scientific, artistic or philosophical methods and techniques are the

fuzzy thinking
fractal thinking and fractal network thinking as well as the
small world thinking

The fractal network structures were studied in some recent books (see **2**, 97), and we can presuppose that some corresponding forms of thinking are resulting from their analysis and application.

It is also necessary to mention that what we name here *information thinking is a generic form and component of intellectual activity*, related especially to information technology creating and information techniques using; moreover, all present or past forms of thinking are ways of information processing.

Not all these forms of thinking are generated by I.T.; some of them can be results of new evolutions in mathematical or philosophical thinking, or manifestations of general kinds of scientific thinking as systemic, probabilistic or formal thinking.

Characteristics of information thinking result also from the intertwined influences of many kinds of thinking. *Information thinking is determined by the development of information activities, information machine and information environment*. Because these are now the most influent social factors, information thinking is the dominant form of thinking.

A new technique and the associated technological science (techno-logy) always represent more than efficient use of some instruments and application of some techniques in one or more fields of activity: it means, even meanly, *conception and projection* of the new devices and procedures.

I.T. particularly drives man's representations, ideas and conceptions to new structuring and evolution forms. Focusing our attention at the conceptual level of the intellectual activity, we find out that I.T. *facilitate and even impose a new conceptual thinking.*

This **conceptual ensemble** presents some characteristic features, includes several forms of thinking and determines privileged positions for some groups of values.

The most general traits and trends of this conceptual ensemble are:

- the information centered character of all aspects of human structures, relations and actions
- the development of the intellectual level of diverse forms of activities and
- the essence searching attitude growing in all forms of intellectual activity.

Information searching, processing and distributing activities, present in all domains of knowledge, generates information thinking with subsumed new ways of thinking such as diagrammatic reasoning (Barwise and Etchemendy) or statistic reasoning (Hinton, Clelland and Rumelhart).

Information activity becomes the basis of intellectual activity. This one, in its turn, becomes a more and more consistent part or even a distinct level of almost each present form of activity. Thus, we assist to a process of intellectualization of various forms of activity.

New forms and methods of abstracting which permit automatic processing of information are generated. Such kind of methods and techniques use logical and mathematical thinking but also lead to invention of the *artificial thinking.*

Operation and instrument centered concern is another present characteristic of the intellectual activity; by connections between biological, psychological,

social, linguistic and technical sciences, this traits and trend encourages development of the systemic thinking and pragmatic thinking.

The development of abstract and formal methods (axiomatic and formal systems construction as well as modeling and simulation), the use of intuitive and creative methods and the mastering of the new technical means lead to the raising of the degree of essentiality of thinking. Present spreading of systemic, structural, functional, relation and network thinking also contributes to increase this tendency.

New ways of thinking such as *network thinking* or global thinking appear together with their opposite ones, as small world thinking or *local thinking*. Cultural studies are particularly interested in such kinds of ways of thinking.

In this complex intellectual and spiritual life knowledge is no more only the aim of a specific human activity. It becomes the new social resource and the most efficient means of management. Knowledge is also the subject matter for a new management field, the knowledge management.

The informational vision dominates the intellectual and spiritual life of our period and the information domain is now represented by the entire society and, in a philosophical view, by existence as a whole. This dominant information view about human activity is not yet conceptualized, but may be the object of a renewed philosophical concern for what we formerly named the *philosophy of thinking*. This domain of philosophical reflection can revaluate and develop logical, epistemological, psychological, psycho-sociological, anthropological and even sociological knowledge about human thinking

In this new vision about intellectual history and especially about intellectual future, it becomes necessary to remodel the present conception about the forms and use of thinking, because *only the association between technical processing and human (cognitive and reflexive) use of information ensures the maximal efficiency of informational activity as a basis of intellectual activity.*

We have to teach our students less about "things that think" and more about successful reflexive ways of thinking. We can use even various non-sentential types of reasoning according to the view (proposed by Dertouzos, 2001) that knowledge is not a stored treasure of abstract assertions; it is consisting of all kind of valuable things. But it is good to know that humans work the most efficiently at the intellectual level, they own the ontological level, as shown by Pană (**24**).

New graphical possibilities of the information machine help us represent and handle all sorts of information, virtual reality makes us able to perform experiments and to replace arguments by evidence, but do they develop thinking? Electronic proximity makes virtual art and instruction possible, and multimedia functions and devices "bless us" with *edutraction*.

Should these means and methods encourage the future designing and modeling and other creative activities in universities? These new and pleasant facilities are in fact ambivalent. Learning and using of some express and explicitly

heuristic methods and techniques are really efficient; they prepare professionals for any kind of future creative activities.

Reading assisted by computer is an informing technique which allows the scientific knowledge management by documents selection, consultation and creation, including texts, sound sequences, static or moving images. Efficient reading is a selective, active and functional reading, oriented by a purpose and finalized by the re-organization of information or even by the production of new knowledge.

Translation, another necessary technique of knowledge transfer is now changed by new technologies and techniques. Computer assisted translation is developed at different levels, from the brute automatic translations (available for meteorological or medical aims) to the translation programs integrated in applications as "Web Translator" or "Intergraph" and to the interactive translation, in which the author himself is consulted for the elimination of some insolvable ambiguities (the author-assisted translation).

Hypertext, which is dealing with any text types (the Bible, for example, was edited in hypertext format) is not only a reading technique, but also a writing technique: the text must be decomposed into knowledge units and rules and techniques of re-composition must be provided and observed. Hypertext is a form of management which permits organization and re-organization of some relative homogeneous regions of the infinite and un-ordered hyperspace of the web.

This technique offers the possibility to organize the text according to diverse sets of criteria and at different levels of accessibility. This new possibility to use the same text for several different purposes implies the mastering of some new techniques of reformulation, reconfiguration, and modularization of knowledge units.

Personalized web pages can be generated for diverse knowledge interests. Specialists in computer sciences (see S. Trausan-Matu, 2005) have implemented the GenWeb system, using a common search engine but based on a specific ontology, correlated with the user's interests. The result is a specialized semantic editor, efficient even for metaphor identification and annotation.

The collaborative generation of knowledge by virtual groups and by new intellectual techniques is now studied. The integration of different techniques for knowledge processing by multi-agent systems and with the communication facilities offered by the global hypertext of the WWW and with the techniques of text processing by languages derived from XML is also attempted.

Interactive and distributed learning processes assisted by knowledge-based, intelligent and flexible systems are managed by specific techniques, particularly at the high level of the education processes. These techniques, using the results of artificial intelligence researches, are capable of modelling the evolution of knowledge performances of those instructed or to take intelligent decisions regarding the instructive process.

Used for data analysis and knowledge extraction, Data Mining (DM) technologies are integrated or developed in Knowledge Discovery (KD) techniques or in Knowledge Discovery in Data bases (KDD). It is important to show that their aim is, in fact, the extraction of *knowledge models* from data bases, deposits or even storehouses of data, by special techniques as OLAP or OLTP.

DM supposes the use of many components: the *model* (which is represented through a function obtained by different algorithms, as those of classification or clusters formation), the *preference criteria* (which can be based on ordering, interpolation or approximation), the *selection algorithms* (implied in the choosing of models and criteria).

Knowledge society can be characterized by a specific infrastructure, using knowledge representation techniques at the level of the web, and by specialized e-activities based on ontology and metadata for applications implemented with purposes as e-work, e-business and even e-government or e-learning.

III. VALUE UNDERSTANDING AND CULTURE LEARNING BY I.T. AND *I.T.* INFORMATION THINKING (i.t.) IN STUDIES ON VALUE

New kinds of activities and new forms of thinking generate new cultural attitudes. These attitudes are expressed by the way in which people experience, practice, understand and explain values. Often we just experience values, but this situation is preferable to many other explicit cultural attitudes.

Computer ethics, informational aesthetics, digital politics or artificial philosophy – studied by us in a recent volume – (**26**) can help to understand the specific of these cultural domains, the topicality of the characteristic issues, the history and structure of the corresponding disciplines, and permit to exercise and cultivate some innate aptitudes and intellectual skills.

These personal qualities and acquired abilities are equally important; many of the new emerging domains of philosophical studies represent proofs of both intellectual ingenuity and professional virtuosity.

Human understanding has some *levels* and *degrees* as well as some not yet fully studied *forms*, even an evaluative form: the *value-understanding*.

Levels of understanding can be:

- syntactic understanding, due to the formal structure of the discourse
- semantic understanding, by the representation, explanation or anticipation of some deterministic relations
- pragmatic understanding, that make attainments or values ready to put in action.

Value-understanding is a kind of meta-meta-understanding, because it presupposes and subordinates not only ethical, aesthetical or other theoretic understanding forms but also practical (moral, artistic, technical and religious) understanding. Even global (social and historical) understanding forms are needed. In fact we have to deal with a multi-leveled evaluative knowledge in each cultural field.

Levels of value-processing are mainly:

- value experiencing
- value understanding
- value explaining and
- value creation or inventing

Value experiencing can represent value sharing, value choosing and evaluative attitudes building. Value understanding may be realized at practical, theoretical and meta-theoretical levels. Value explaining needs specific knowledge forms in each cultural field but scientific and philosophical or even technical and artificial components can also be implicated (see the debate about the "artificial morality"). Different historical, social and cultural aspects can also be involved at this level. Value creation occurs generally at the spiritual level of the human activity; if it takes place in practical forms of action, we actually assist to the growth of the spiritual content of these levels of activity. More accurately understood, creativity means just the superactivity of the whole psychic, not exclusively a spiritual activity.

Degrees of value understanding are depending on cultural environment, personal qualities and skills, level of instruction and education. Now, these levels, degrees and forms of understanding are completed by new technical attitudes, methods and means that can occasionally create themselves new problems, while the solved problems are not always specific (moral, aesthetic or political) problems but only technical ones.

An efficient informational perspective on culture understanding and learning implies, as an adequate intellectual approach, identification of the appropriate internal and invariant elements of the studied value systems as well as clarification of present and future relevant relations of the different cultural systems in co-evolution or in collision. The cultural future presupposes competing cultural models invention. At the same time, as start points of successful social projects, these models should be integrative, modular and evolving ones.

I.T. use and i.t. practice in the study of human conduct and their influence in educative contexts tend now to generalize operational and pragmatic forms of thinking in this specific "humanist" area and are going to maximize the development of a technical infrastructure of sociological, educational or cultural

research areas. Thus educational processes and strategies appear that excel by reduction to concrete, self-identification by common traits, projection in the past, which all represent ways to make the bird fall from the sky, according to Kant's metaphor of the "lead wing". The alternative cultural attitude is to open mind to

intellectual – visions
– constructs – conceptions
– theories
– ideas
– models

Adequately and efficiently used information technologies and techniques are leading social behavior and cognition to opposite directions too: cultivation of virtual identities and communities, modification of human relations and forms of communication, spreading of virtual work and development of virtual creativity and creation. All these are often associated with elements of virtual life, and some critics of this life-style invite the *netizens*: "Get a life!" (**40**,65).

Humans have means to efficiently deal with complex or high level problems by adequate intellectual techniques. Some concrete proposals can be made for an integrative, creative and prospective intellectual formation in the following few distinct domains of culture: scientific culture, artistic culture and technical culture. Desirable and possible effect: avoidance of the foreseeable association between super-civilization and subculture. In our future studies we will use results of some concrete researches entered upon in the intellectual environment of future oriented and technically educated young population

Information technologies constitute the main infrastructure of contemporary technological culture. Their creation and use generate information activities, information thinking and their products compose an information environment in which the information need is super-satisfied, but in which information is often un- or badly structured and in which the access to the meaningful information becomes equally difficult as its renewal.

Elaboration of cultural models presupposes cognition of constituting value systems, analysis of actual values and anticipation of future cultural trends. To emphasize all these cultural characteristics we can use our already accomplished studies (**25**), results of other conceptual and global researches (**34**), or prospective studies. Even if these studies are regarding un-happened events, states or processes, they can map out realistic views of the future and can reveal possible problems.

Some recent studies offer different foreseeable variants for the future evolution of Europe. In the prospective approach made by Bertrand, Michalski and Pench (**4**), even if we select the most optimistic variant, we are faced with complex situations. Although a "virtuous circle" of the European economy is considered,

some economic aspects (such as decrease of investments in infrastructure), many social aspects (such as general "deregulation" of social processes) or political tendencies (for example, costs as main criteria for public politics evaluation), are seen as sources of predictable troubles.

Turning now from such general models to the analysis of the value systems that can describe different previously considered cultural fields which constitute the ensemble of Cultural Europe, from our axiosophical perspective and with some ecosophical reserves (caused by prospectotechnical openness and by unfinished research), we can approximate several cultural tendencies.

We observe the reduction of the number of orientating values, the polarization of the values in often opposite groups and the concentration of the value-options around some fundamental but elemental needs. Also evident is the appearance of some new needs, strongly related to the present information, communication and power needs.

As we have already demonstrated, among other factors, the technical artificial intellectual environment, which results from the development of the technical infrastructure of any activity (including the intellectual one) facilitates the complete restructuring of the human needs hierarchy (**21,** 69–74).

Some aspects are relevant for these changes in the needs hierarchy. Thus, the gravity center of this structure is a group of relative new needs and is situated, apparently, in the highest needs zone, but these needs are often manifested in primitive or even dangerous forms. Other new needs are nonfundamental but intensely felt and widely shared. Even the information need, that tends to be situated at the top of present-day needs, is primitive in relation to the cognition need; the very significant performance need is, on the contrary, superior faced to the activity need but is often manifested as records need. (We use, as can be observed, a wider scale of human needs, corresponding to the contemporary phenomenon of diversification, de-construction and re-construction of the system of human needs.)

Some higher needs (like self-expression, cognition and aesthetical needs) as other human needs (association or communication needs), are now concentrated in the entertainment need. The process of degradation of traditionally highly evaluated needs to the entertainment or record need is complemented by the highest satisfaction of some elementary needs in conditions of supreme civilization; at the same time, some natural human needs are often turned to artificiality or are even virtualized.

By such convergent processes, some natural needs, un-sublimated by artistic means and uncensored by moral imperatives, sometimes even un-translated into social forms, tend to focalize the concern of (social) majority. Thus there results the prevailing of a mono-criterion type of evaluation and the supremacy of a single kind of values.

Another significant tendency is that of polarization of the new coagulated need groups. Paradoxically, the two poles become the information need and the creation need. The paradox itself is generated by a double source: natural needs are now expressed by other, superior needs and higher needs appear or are reduced to the level of some elementary needs. We can identify, as a result of this tendency, the natural needs as the gravity center of the system of needs.

The information need is situated at the top of needs hierarchy and is satisfied, generally, at the highest level. This situation involves yet some problems and can even inhibit the creation need, which is placed, at the social level, today, in the lowest position, even if the two needs seem to be kindred. Hunger of information annihilates the thirst for creation. Another maybe less recognized but nevertheless important opposition is observed between the power need, realized at the absolute degree and exercised in discretionary forms, and the complementary generated and exacerbated security need.

The present complete restructuring of the value system is accompanied, conditioned, sometimes even generated and certainly followed mainly by the development of information techniques, in their instrumental and intellectual forms. If the synthetically presented cultural tendencies continue in the foreseeable future, major changes become probable in the human self-conception and self-achievement.

The future man has been described in suggestive ways from different perspectives. We ourselves wrote about the "information man" and "artificial man" as new forms of evolution in the human condition (**26)**, (**27**). But from the perspective of the apparently lost struggle for value understanding and value learning, the future man will be, probably, a cultural man in a culture society, born by intellectual techniques, after the knowledge society, built by information technologies.

Cultural models are generative structures integrated and manifested in human (practical, intellectual or affective) conduct by social learning and individual invention and constitute the certain and recognized foundation for both social stability and development. But cultural models are too the probabilistic, prospective, global and long-term elaborated conceptual constructions which approximate the real structure and anticipate the future framework of value systems by predictable consequences of actual basic cultural attitudes.

Prospective cultural studies and strategies are then equally important as actual cultural activities for a successful assimilation of the entire potential value diversity of a strong information culture. *Information values* as *information permeability, information competence* or *information performance* can be completed by artistic, moral or philosophical competences, by a deep use of the "informativeness" of these fields of culture. In all these domains specific forms of information and all types of information are produced and consumed – artistic, moral, philosophical, politic, technical or scientific –needed for the invention and development of the information culture.

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