COMEST SUB-COMMISSION ON "THE ETHICS OF THE INFORMATION SOCIETY"

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REPORT

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I. INTRODUCTION

1. The rapid technological progress, the globalization of information, the proliferation of information sources, and the competition between them may certainly help to sustain democratic governance, but are nonetheless instrumental in making societies more fragile. This makes it urgent to thoroughly examine the profound social impact - and the consequent ethical issues - of an Information Society characterized by an increasingly fast, and often uncontrollable, flow of multimedia information. In this context, the mental representations brought into play and, more broadly, the social significance of the communication practices produced by the technological progress must be looked into. It is also necessary not to overlook how to strengthen social links, which have often been severed in the industrialized metropolis by the development of the new information and communication technologies. It is in the light of these concerns that UNESCO asked the World Commission on the Ethics of Scientific Knowledge and Technology (COMEST) to focus its attention on the ethical problems posed by the development of the Information Society, with its considerable educational, scientific and cultural implications.

2. In conformity with the conclusions drawn at the end of the First Session of the World Commission on the Ethics of Scientific Knowledge and Technology (COMEST), held in Oslo, Norway, in April 1999, a number of Sub-Commissions were set up. This was to enable the members of COMEST to meet in small dynamic groups between the statutory sessions, in order to properly focus on the elaboration of ethical principles in the issues under examination. A Sub-Commission on the Ethics of the Information Society was accordingly created, chaired by Chancellor M.R.C. Greenwood (United States of America), Mrs Pilar Armanet Armanet (Chile) being the Rapporteur.

3. Welcoming the members of the Sub-Commission, H. E. Mrs. Vigdís Finnbogadóttir, Chairperson of COMEST, recalled that the creation of the World Commission on the Ethics of Scientific Knowledge and Technology (COMEST) reflects the increasing importance of ethical reflection in the light of the cultural and social effects of the rapid advance of scientific knowledge and technology, which is necessary for the future development of humanity. Under the terms of its mandate, COMEST has an advisory role for decision-makers, in the public and private sectors, who have to make choices based on an ethical approach. The main task of the COMEST is then to promote values, which would permit better and broader co-operation throughout the world at scientific, technological, cultural and social levels. In this regard, as the Chairperson of COMEST recalled, the Information Society may undoubtedly broaden the horizons of individuals and societies, but it could also weaken societies and alienate individuals. The Sub-Commission on the Ethics of the Information

Society is specifically requested to focus its analysis on the definition of ethical principles, which could help in addressing dysfunctional effects of the Information Society, advise policy-makers and stimulate awareness of the public and the media.

4. Taking the floor in his capacity as Executive Secretary of COMEST, Mr. Georges B. Kutukdjian pointed out that the ethical issues pertaining to the Information Society are much broader than those merely connected with new information and communication technologies and cyberspace. This broader scope should always be present, as the Sub-Commission's role is to address a wide range of issues of social, educational, cultural, and psychological relevance. It was specifically mentioned that the prevalence of images is creating a virtual world, which is having a tremendous impact on young people. Also important is the fragmentation of knowledge. Indeed, children are tending less and less to focus their attention for long periods of time. This has severe educational implications. The work of the Sub-Commission should place reflection on the Information Society in a global perspective, also clarifying how to make use of such reflection to improve modern educational systems.(See Programme in Annex 1 and List of Participants in Annex 2)

5. In her introductory remarks as Chair of the Sub-Commission, Mrs. M. R. C. Greenwood stressed again the importance of focussing on the impact of the Information Society on young people. The role of the Sub-Commission is to examine the social impact of the globalization of information and of its increased overwhelming flow, in text, images and sound. The issues of social interaction need special focus, and the way the shift in language structure determines changes in the structure of thoughts should not be overlooked. One of the challenges of the present century is to determine how communication and information technologies can be used to empower the world's inhabitants in a way that preserves and protects social, economic and civil rights.

II. GENERAL DISCUSSION

a. Ethics and information technology: the place of human and social values in the Information Society

6. In her presentation, Mrs Helen Nissenbaum offered a general map of the area of social, ethical, and political dimensions of information technology (IT), with an analysis focussing on its social impacts and the social values embodied in it. As for the social impacts of IT, two categories are identified. In one category the reflection is centred on values that, though being the fundamental motivation for the work, are not in themselves the main focus of attention. In practice, when researchers call attention to the digital divide, they are not questioning the value of justice or focussing on justice itself as the subject of their study. Rather,

they are concerned about the possibility that IT will cause greater social injustice. In the other category, IT values form part of the controversy. IT has so profoundly affected intellectual production that it strikes at the heart of previously set ideas and values of intellectual property. As for the social values embodied, it is clear that IT changes the world, and some of these changes challenge previous commitments to values and principles. Values affect the shape of technologies and thus, even when describing technical features of systems and devices, one needs to pay attention to values. Accepting that systems may have moral or political properties has an immediate practical consequence: humanists and social scientists can no longer bracket technical details - leaving them to someone else - as they focus on the social effects of technology. Some cases, such as the Intel Pentium III processor chip with its embedded personal serial number (intended for security, but utilized for surveillance), can demonstrate why a tight link between values and design has to be maintained. Scientists and engineers can learn from these events and expand the set of criteria they would normally use to evaluate systems, to incorporate social, ethical, and political criteria. In both the technical and non-technical worlds, an ideal meeting ground would be to join forces in order to uncover crucial keys to systematic relationships between systems features on the one hand, and values on the other. In turn, this approach might reveal possibilities of incorporating a broader spectrum of perspectives into the design process itself.

7. As for the place of human and social values in the Information Society, the following question should be asked: if we are interested in discovering the effects of technology on human and social values and if we are concerned about maintaining an ongoing commitment to important values, where should we focus attention and effort? Three important points of focus are proposed. The “collective”: governments have had to legislate on many issues relating to the governance of the Information Society. How many of these issues are settled has a bearing on values: privacy, intellectual property, governance, speech and censorship are just a few. There are important economic and political dimensions to these problems, and collectives should keep a clear focus on the values at stake. The “engineering enterprise”: those who design and build information systems need to be sensitive to the value dimensions of their work. It will be important to develop a methodology both to guide engineering practice and to enlighten human understanding in order to live with technologies that are compatible with our value commitments. Another venue for the consideration of values is within professional guidelines that articulate the responsibilities of the engineers and designers of information technology. The “individual”: what are the duties and responsibilities of the individual in an Information Society? What should our expectations and hopes be? When designing information

systems and devising policy, it is important to think realistically about the actions and principles guiding the actions of people. We must articulate what comprises good and bad behaviour in a computerized world. We should encourage deliberation on these subjects in such a way that individual quality of life is respected and not overly influenced by vested interests. Important questions for us will be how to balance individual needs for freedom, autonomy and responsibility with institutional needs for order and compliance. Many of the controversial issues involving property rights, privacy, autonomy, and security involve a quest for such balancing. And afterwards, we can explore questions about information technology and quality of life.

8. During the discussion, the issue of the digital divide was also touched upon, pointing out its paradoxical character. As a matter of fact, some sources fix the cost of the digital divide in Africa at 80 billion US$. This amount is not as enormous as one may think, in as much as it is equivalent to the yearly amount spent on ice creams by the United States of America and the European Union. Bridging the digital divide seems more a problem of sustainability, since connecting the whole planet would determine a hyperbolic increase in energy consumption demand, which today does not appear to be ecologically sustainable.

b. Disempowerment and self-empowerment in the Information Society

9. Mr Cees J. Hamelink introduced his paper noting that “Information Society” is one of the grand ideas of our time, comparable to “New Economy”, “Knowledge Society” or “Global Village”, ideas that are rarely correct and mainly serve to provide public debate with simple answers to complex questions. Intellectually, the concept of “Information Society” is very unsatisfactory, as it does not offer an adequate scientific description of current social and economic developments. Whatever breathtaking advances technological innovations offer, they are never trouble-free. Technology inevitably brings great benefits and awesome risks. This essential ambivalence raises the challenging question about human governance of technological development. Can a balance be struck between disempowering and empowering potential? How should social choices be made to shape technology towards the aspiration of human empowerment? To address these issues, two scenarios for the Information Society are put forth: the “utopian” and the “dystopian”. The former, characterized by such terms as “new civilization” and “information revolution”, shows an emphasis on historical discontinuity as a major consequence of technological developments. New social values will evolve and new social relations will develop. The “utopian” scenario forecasts radical changes in economics, politics and culture. As for economics, ICTs will expand productivity and improve chances for

employment, upgrade the quality of work, and offer new opportunities for small-scale, independent and decentralized forms of production. As for politics, decentralized and increased access to unprecedented volumes of information will improve the process of democratization, and all people will be empowered to participate in public decision-making. As for culture, new and creative lifestyles will emerge as well as vastly extended opportunities for different cultures to meet and understand each other. New virtual communities will be created that easily cross all the traditional borderlines of age, gender, race and religion. The dystopian scenario, on the other hand, stresses the incorporation of ICTs in the historical continuity of socio-economic disparities, inequalities in political power, and gaps between knowledge *élites* and knowledge disenfranchised. At the economic level, this scenario forecasts a perpetuation of the capitalist mode of production with a further refinement of managerial control over production processes. It foresees in most countries massive job displacement and "deskilling". In politics the expectation is that a pseudo-democracy emerges that allows all people to participate in marginal decisions only. ICTs enable governments to exercise surveillance over their citizens more effectively than before. The proliferation of ICTs in the home will individualize information consumption to such an extent that a democratic, public opinion will become an illusion. Cultural developments will be characterized by the divergent and antagonistic processes of a forceful cultural "globalization", thus homogenizing lifestyles, versus an aggressive cultural "tribalization" (fragmenting cultural communities into fundamentalist cells with little or no understanding of different "tribes").

10. The Information Society is heralded as a social arrangement that promises new forms of power to people. Against such promising perspectives we also need to be reminded that strong disempowering effects are a realistic possibility, where people lose the capacity to control decisions affecting their lives. Disempowerment is the reduction of people's ability to define themselves and to construct their own identities. Human disempowerment in the Information Society can be caused by (among other variables) the following factors: a) exclusion; b) digital dependency; c) surveillance; d) censorship and, e) non-necessity of the human species. ICTs have extraordinary potential for human empowerment. However the realization of this potential will not depend upon features of the technology itself, but upon the political decisions and the institutional arrangements governing their deployment. At present, the dominant global governance structures do not augur well for an equitable accessibility of technology and a deployment thereof inspired by public interest motives. Self-empowerment needs knowledge about decisions affecting people's lives and information on what they can do about these decisions. Human self-empowerment requires the availability of public

spaces for social dialogue and the accessibility of information and knowledge. Therefore, the core of the matter does not rest with ICTs, but with the quality of governance in a responsible society.

11. In the subsequent debate, the question was put whether the electromagnetic spectrum is to be declared as a “common good”, thus escaping from current regulatory trends. Attention was also focused on the Information Society being more and more a “global billboard society”, where children are trained to become better consumers rather than better citizens. Questions were then raised on how to set a structure for the Information Society to become more democratic and to foresee a strong participation conducive to bottom-up changes. The key question here seems to be not so much how to provide participation channels, but rather how to prepare people to participate in a meaningful way. It was pointed out that curricula should, for instance, make people learn how to ask questions about computers rather than how to get answers from them. An optimistic point of view was proposed, as the digital divide seems less dramatic than the literacy divide of past centuries, and technologies seem flexible enough to be adapted to various human needs. The idea was proposed that the Information Society does not actually raise new ethical issues, but rather makes more crucial those which were already there decades ago (e.g. pervasiveness of the media). The concern for subtle manipulation was also expressed, as in the modern Information Society people are often not in a position to make a wide range of personal choices in a serene voluntary way. Others stressed globalization as a new important dimension, which could render inadequate concepts that have already been developed: indeed, although issues are the same, the scale of proportion is different. New media also appear to be more interactive and ‘ad-hoc tailored’ vis-à-vis end users than before. There might be an actual need for a redefinition of conceptual tools to be utilized on old problems, which become transformed when inserted in a new dimension. It was also suggested that, although the present digital divide is less profound than the former literacy divide, its effects might be more profound for contemporary people.

c. Individual expectations, democratic participation and social exclusion in the Information Society

12. Mr David Konzevik organized his presentation around a number of theses. At the dawn of the new millennium, the most important economic political and social phenomenon in emerging countries is the so-called "expectations revolution". No other indicator is growing at the same pace as individual expectations. This is having dramatic consequences all over the world. Besides, governments and international institutions have not been adequately addressing the distinction between "absolute poverty" (material poor, below the line of subsistence) and "relative poverty"

(distressed, lower and middle classes). As the information revolution is the cause of both globalization and expectations revolution, these phenomena have to be jointly analyzed. The information revolution, actual engine of the knowledge society, is confronted in most emerging countries with structural deficiencies, which will need time to get solved. The question is whether these countries will have enough time to do so. Indeed, the virtual world is producing a radical change in the dimensions of time and space of the physical world, thus determining a deep existential confusion in the present generation. A consequence of this confusion and disorientation, which is by no means confined to the emerging countries, is the so-called "contemporary schizophrenia". In entering the knowledge society, the emerging countries are facing an increasing gap *vis-à-vis* the “first world”. These emerging countries are in dire need of making a qualitative leap, as the minute advances currently observed will not prevent an inevitable breakdown in their social contracts. Extremist unification of economic models is leading to worrying social tensions, as the cultures and sub-cultures of each country are not being taken into due account. Instead, these ought to be the starting point and the focus of any analysis of individual expectations, social exclusion and democratic participation. In its history, each country experiences a series of positive and negative phases of economic growth. But individual expectations increase constantly. The information revolution with its progeny - globalization, knowledge explosion, and expectation revolution - has cracked the traditional paradigms of democracy, economy, education, etc. showing their deficiencies. The Information Society is actually increasing the number of socially excluded people, who find themselves incapable of coping with the new languages it imposes. Today the issue to be addressed is no longer whether each country is going in the right direction or not, but rather whether it is doing it at the necessary speed. The Information Society transforms the conditions of empowerment, and so far most of the emerging countries have not understood who is playing the main role. In the present situation, material infrastructures are not the root of the problem, but talent. Talent is the raw material of the knowledge society. And this talent, to which only very scarce resources are being devoted, is going to be concentrated in a few countries, thus increasing the gap, which already exists.

13. During the discussion it was noted that the so-called anti-globalization movements are not against the idea of globalization as such, rather in favour of a bottom-up movement towards globalization. The issue to be addressed is whether all the conceivable alternatives are also viable.

d. Risks and vulnerability for democracy in the Information Society

14. Mr. Jacques Berleur noted that some precautions should be taken in respect of the term “Information Society”; it would be more prudent to speak of “societies”, not only because of cultural, social or political differences, but also because of the different interpretations which might originate within the same cultural, social or political sphere. In this regard, it may be noted that the 1994 European Report on the Information Society does not use the term “democracy” at all. “Culture” is mentioned only seven times - essentially to discuss language industries - while the term “market” occurs a hundred and ten times. A series of events in the past twenty years revealed the increasing dependence of our societies on computers and means of communication. The difficulty for politicians to retain their legitimacy at a time when this seems to have been transferred to the business world must also be stressed. A cause/effect relationship has appeared between such a situation and the development of NICTs over the last decades: terms like “virtual cities”, “online government”, “electronic democracy” and “networked citizens” are all part of a politically correct rhetoric. A question arises: are there topics which, in the name of democracy and ethics, must escape self-regulation and remain the responsibility of the guarantors of public interest? The question seems indeed opportune, as the Internet, guided hitherto by the invisible hand of the market, is becoming more and more a matter of international policy; States are trying to master the expansion of the Web, and problems of politics are becoming more important than purely technical concerns. Today there are indications that the advent of the information and communication society coincides with a change in political sensitivity, with the frequent comparison of democracy and the Internet with the Athenian *Agora* (overlooking the fact that neither was this open to everyone). The public space is certainly the key to modern democracy, but the horizon of universality must also remain an imperative requirement.

15. Democracy means the creation and institution of political freedom, conceived as the link between individual freedom and the desire to live together in a universal approach in which everyone has an opportunity to participate. Here the primary function of the institutions is to guarantee the existence and preservation of the public space. Inasmuch as democratic space is to be regarded as the scene of a vast practical discussion in which all arguments must be listened to, it is essential to agree on the procedures governing the debate, with a view to the management of the common destiny of humanity. Democracy is in danger not because of the problems with which it is confronted but because of the way in which they are or are not dealt with. Hence the search for new approaches, through the concepts of co-regulation, multi-regulation or plural regulation. It is by no means certain, however, that the present attempts to create new State

legitimacy will not have as a consequence the tendency for the State discourse to adopt the logic of the business world. At the ethical level, and in view of the proliferation of ethical codes, a distinction can be drawn between issues concerning protection of the individual (as citizen or consumer) and those relating to the collective organization of society. Issues presenting a more ethical content include the reduction of people vulnerability and the capacity to maintain sustainable social development. The adoption of a "procedural ethic of discussion" could be envisaged, creating a discussion arena with established rules from which certain principles might emerge out of the diversity of the convictions shared by the persons concerned. In the globalized spaces of information societies, unanimous solutions leading to a consensus are becoming increasingly difficult to find. However such a consensus would certainly be desirable if social and cultural diversity are to be fully respected. Re-opening and organizing the public space and discussion arenas are urgent needs. Such spaces have been for the most part the preserve of lobbying specialists and activists. It is a necessity today for all citizens to reacquire a taste for shared words and exchange of views, to reinvent procedures which enable the interests of everyone, and not just those of the few, to be negotiated. The creation of spaces of discussion having universal scope and being conducive to a procedural ethics based on local cultures is a clear role for UNESCO today.

16. The discussion centred immediately on the importance of ICTs in allowing people to communicate, associate and get together. The relationship between the Information Society and Democracy remains the fundamental point. When it appears evident that business is setting the agenda, it is the moral responsibility of the citizens to mobilize themselves to make ICTs reflect the values of people. The question was also raised as to whether values of democracy have changed, or whether what we apply to them has changed. It was recognized that more and more international reports are highlighting a widespread lack of faith in democracy. The concern for increasing individualism was also expressed, noting that business is taking advantage of this situation. In this regard, it was made clear that there is a widespread need not for more information, but for more knowledge. More information is not better information. More information as such, without a corresponding capacity to make good use of its positive aspects, produces more problems as it increases confusion and disorientation. The possibility of not being exposed to the information flow should be guaranteed as a part of democratic freedom. Opening new channels does not increase the level of understanding if there is no discourse on values. In the Information Society, rather than an ethics of communication, there is a profound need for an ethics of discussion.

e. The cultural and socio-economic impact of the Information Society in the developing countries

17. Mr Kweku Appiah briefly reviewed the impact that information and communications technologies (ICTs), have had in developing countries, acknowledging their tremendous potential for promoting and facilitating socio-economic development. Attention was also called to the digital divide and its associated problems, restraining the use of ICTs by developing countries, which hampers their ability to participate in, and contribute to, the development of the Information Society. Concerns exist as to how countries lacking education, infrastructure and institutions - the most needed resources to fully benefit from ICTs - can become further marginalized by the networking revolution. This is referred to as the "digital divide" - the gap between those who have access to, and use of, ICTs and those who do not. Digital divides exist both within and between countries and regions, also encompassing the disparities between the way different nations are using ICTs as a tool for social and economic development. Unequal access to ICTs is clearly visible within countries according to such criteria as income, education, race, gender, etc. The wealthier, better educated and men are typically those with greater access to ICTs, regardless of the country. In terms of institutions, many developing countries lack a sufficiently well-established culture of sharing and dissemination of information to adequately support and foster the promotion of ICTs. The inadequate facilities and difficulties of accessing information have led to low expectations and the consequent under-utilization of existing information resources. Although the level of awareness of electronic communication has increased dramatically in recent years in many developing countries, it is still primarily confined to the urban elite. Without improvements to the underlying conditions that create disparities in access to knowledge, technology and human capital, the benefits that could accrue from the knowledge-based society will remain concentrated within the industrialized countries, with other countries and regions running the risk of being further marginalized from emerging economic trends.

18. The ongoing ICTs revolution - and the social and economic transformations it is engendering - may presage a closer and more productive integration of developed and developing countries. However, this outcome is not inevitable, as is suggested by the current "digital divide". While the potential certainly exists for developing countries to use ICTs to leapfrog to a higher stage of development, those groups at basic levels of literacy and living standards face substantial prerequisites which have to be satisfied before being able to share any benefits of the knowledge-based society. In the light of these considerations, there is considerable concern that those developing countries which fail to keep up with the accelerating pace of ICTs' innovation may not have the

opportunity to participate fully in the Information Society and economy. This is particularly so where the existing gaps in basic economic and social infrastructure, such as electricity, telecommunications and education, constrain or deter the diffusion of ICTs. Indeed, the costs involved in setting up and maintaining ICTs infrastructures are substantial and must be considered against the pressing day-to-day education, health and other social needs of the majority of the population in developing countries. Given the magnitude of the social, economic and political challenges facing many developing countries, the issue of priority for Internet connectivity has to be seen in the context of other pressing needs. This is not easy, as the introduction of any new technology requires a degree of vision and risk-taking on the part of decision-makers, who in return have to justify and account for their decisions to the public. This is particularly true when the benefits of having access to the Information Society are not easy to quantify in cost terms and when the potential of the Internet is still an unknown entity for many decision-makers. While the Internet is still in its infancy, its social and cultural implications are significant. Indeed, the Internet is enabling linkages to be established among previously unconnected communities and is fostering the emergence of global commons and a global civil society. But while the information revolution - many believe - has the potential to promote social cohesion both within societies as well as between them, others maintain that this very phenomenon is serving further to fragment societies and the global community, thus contributing to cultural homogenization.

19. During the discussion, it was noted that in places where there are no libraries, it might be more convenient to provide access to worldwide information networks rather than a fully-fledged printing infrastructure. Also noted was the importance for educated professionals in developing countries to take advantage of real-time communication channels. The advantage of new media to stimulate the visual capacities of the learner was also noted. In this regard, a plea was issued for the identification of clear parameters to evaluate the proficient use of the Internet besides mere statistics on connectivity. Another open question was to find out which factors make ICTs more successful in some countries than in others. It was suggested that cultural discrepancies might account for impermeability. A further question raised was how to prevent the digital divide from being exploited as a mere business affair, while still recognizing that this could present some advantages. Also stressed was the important role teachers can play in creating a culture in which ICTs are perceived as useful. This should go together with making available contents truly beneficial to the people.

f. Individual freedom and social responsibility in the Information Society

20. Mrs Christiane Féral-Schuhl began her presentation by recalling that freedom of expression is a fundamental principle of any democratic society. Of course, the exercise of this principle should not undermine respect for others and human dignity, nor disregard law and order. Furthermore, the meaning of freedom of expression and personal freedom is not at all firmly established among different nations. The question is then how the Internet can cope, and maybe reconcile notions, which vary so much from one State to another. Internet does not create new issues as such but, through its transnational character, makes cultural, social, philosophical and religious differences more evident. As a consequence, Internet users are indeed citizens who each have a different perception of freedom of expression. The notion of freedom of expression can be considered from two distinct points of view: as a principle widely recognized as one of the foundations of the democratic functioning of society - thus taking into account the Universal Declaration of Human Rights, the European Convention for the Protection of Human Rights and Fundamental Freedoms, and the First Amendment of the Constitution of the United States of America - and a notion of changeable policies. In the latter sense, its links with the values of each society have to be revealed, as well as the corresponding difficulties in establishing an international standard because of the disparities in recognized values. Addressing the issue of freedom of expression and the Internet, the need to protect the principle is a must to be secured. This falls under the jurisdiction of the judicial order which, as guardian of this fundamental freedom, can also decide when to restrict it according to particular hypotheses and according to rigorously determined circumstances. The penalty of the abuse of the freedom of expression is clearly an issue of parallel importance. Such a penalty is at present foreseen for infringement of personal freedoms (e.g., through defamation, insult, infringement of private life, racial hatred, revisionism, negativism) as well as threat for law and order (e.g., protection of minors, terrorism, trafficking, gambling). The limits of freedom of expression for employees, through the employer's power of control of the means of communication used, is also a matter of concern, as in the case of infringement of employees' private correspondence. It appears clear that in such a field penalization is sometimes difficult to put into practice. Such is the case with regard to technical obstacles, for instance when the use of filtering-software in personal computers makes identification of the persons more difficult or even impossible. Furthermore, an obvious question remains open concerning how to legally act when authors of malpractice live abroad, or when their actions (e.g., posting specific materials on a web site) are totally legal in their own countries but illegal in those from where access is

possible. The fundamental issue is thus to overcome the paradoxical situation in which each national authority wishes to limit access according to its own rules, while at the same time the freedom of expression and the right to personal privacy for each individual should be maintained.

21. The debate focussed on the possibility, in the future, to have a generalized preference for delocalizing Internet providers, which make the user automatically "belonging" to the geographical location of the provider. A plea was voiced for technological standardization, to make it easier for different countries to apply to one single rule. The need for transparency of users' identity was also recalled in order to prevent abuses in cases of anonymous communication. There is a need to insist on the adoption of a technological design, which allows for regulation and control. Indeed an instrument of freedom, when used in unlimited and unrestricted ways, may become a tool of oppression. Also highlighted was the parallel situation occurring with similar problems with regard to more conventional media (e.g. radio): this may show that there is no need for totally different legislation based on new concepts, as the issues at stake are basically the same among different media.

g. The future of the Information Society: the society of knowledge

22. Making a preliminary distinction between knowledge and information, Mr. Kristóf J.C. Nyíri set out some central ideas: knowledge being lost in information; the world being drowned in information, but starved for knowledge; the transformation of information into knowledge as one of the greatest challenges of modern society and contemporary civilization; the need for educational institutions to provide not just information, but its distillation: knowledge. Information being somehow inferior to knowledge is not a recent notion. The former concept stemming from the Latin word *informare* - meaning the action of "forming matter"- took on the meaning of instructing, educating, forming an idea, and kept the original connotation of conveying merely particular knowledge. Daniel Bell made an effort of clarification in 1979, writing: "By information I mean data processing in the broadest sense (...). By knowledge, I mean an organized set of statements of facts or ideas, presenting a reasoned judgement or an experimental result (...)". Information is not yet knowledge. Specific efforts are needed if the future Information Society is to become a knowledge society. As has been said, there is a long way to go, in the evolution of mentalities, to properly draw the line of development, which passes from information to knowledge, and from communication to understanding. The main obstacle appears to be the phenomenon of information overload: there is too much information inadequately organized. Instead, access to information has to be the way for individuals and communities to reach authentic self-determination.

People do not need to be overwhelmed and alienated by the uncontrolled plethora of information. It is important to guarantee the right for people to make a responsible adaptation of the information, to make information appropriate to one's own needs and ways of life. This is a right to “sustainable information”. Without countering information overload, the vast universe of knowledge becomes impossible to navigate. Decades before the advent of PCs and the Internet, it was already a philosophically trivial thesis that the world of knowledge was too immense to permit any kind of overall grasp. Consequently, the supposition of a single coherent reality was meaningless. The present task of overcoming the difficulties of information overload is just a new chapter in the ongoing struggle against knowledge overload. In the future Information Society, knowledge is most likely to be operational rather than theoretical; concrete rather than abstract; embodied not merely in texts but also in sounds and images; and becoming alive in interactions within the community rather than in individual minds. The emergence of mobile access to information networks, by allowing real-time access to information and people, thus overcoming information alienation, constitutes an important new development of the Information Society.

23. There are many barriers to meaningful participation: linguistic barriers but also textuality itself, the difficulties of conveying multisensorial knowledge via abstract, linear, written language. The Web seems to protect, rather than endanger, disadvantaged cultures and, in particular, minority languages. Through the web, immigrants, ethnic minorities, etc. can all maintain intensive virtual contacts. Keeping a wide diversity of languages on the Net is not just a question of linguistic rights. It is also a necessity in terms of making available linguistic frameworks for well-informed and logically coherent thinking. It is a cognitive necessity. Linguistic diversity is indispensable if the Net is to become an organic learning environment or, in other words, if virtual education is to succeed. The advent of computer graphics has also given new impetus to the construction of iconic languages, designed to complement textual languages. In this regard, the future knowledge society is likely to be a multimedia-networking environment with pictures acting as extensions of textual languages, and themselves constituting a kind of global language. Furthermore, a new betrayal of the intellectuals looms through a series of questions: to what extent and in what ways can pictures usefully supplement or even supplant texts? Can digital texts supplant hardcopy documents? Are thought processes influenced by the specific organization of digital texts? Must a knowledge society rely on local knowledge (particular facts and traditions), as contrasted with global knowledge (general trends and connections)? Does mobility in a global world need to be supplemented by local “rootedness”? Can, or should, virtual connections supplant personal encounters? All these psychological

and philosophical open questions constitute the new responsibility of the intellectuals in the knowledge society to come. The knowledge society should in future be perceived as a knowledge community.

24. The debate started around the question of whether a new global language would arise. This reflection should take into account whether thinking is purely textual or whether it is heavily based on perceptual symbols. Speech has an evolutionary advantage (e.g. being performable at the same time as other tasks) that written language has not. Communication in the future will become more and more multimedia, taking on again the ancient character of the *Biblia Pauperum*. Nonetheless, it was noted how a fundamental part of the work in Western science is carried out in written form. But, as F. de Saussure made clear in linguistics, communication and expression are the two facets of any language. Both of them are to be fully developed and taken into account. In this sense, an analysis of the surrounding multimedia environment shows the enormous importance of forms of expression such as music and cartoons in characterizing education and shaping the decisional process of young people. A plea was also issued to relativize the American English "monster". Indeed, social anthropology indicates that local languages are not in decline in the Information Society, but instead are gaining strength, even in the diaspora. It has been taken for granted that the language chosen for international communication would become the sole spoken language. But it is a fact that today young people are far more multilingual than before, in the same way that all of us are able to master more than one discipline. Hegemony of one single language in the world of global communication seems to be an unreliable assumption. Indeed, it was also noted that language is how we express ourselves. It was recalled that Finnish people say: "I can say anything in my own language, but only something I master in another language". The proposal of the European Community to systematically teach one or more foreign languages in schools, in order to increase mutual understanding and work towards peace was also recalled and welcomed. It was suggested that COMEST submit to the Director-General a proposal endorsing multi-language teaching and learning.

h. Proposals for the future activities of the Sub-Commission

25. The debate continued with the Sub-Commission examining a series of proposals for its future activities. Also stressed was the need to focus on other multimedia communication means to better understand the transition from an Information Society to a knowledge society. Also the issue of multi-language learning is to be focussed upon, with its corresponding ethical issues. Another crucial question is whether there is a need for totally new rules and new ethics to be applied to the Information Society (e.g. Internet), or whether traditional concepts still

stand. The role of democracy in the “Information Age” is to be explored more and more thoroughly, specifically focussing on the ethical aspects of its socio-political-economic issues. There is a need for a state-of-the-art analysis to be carried out to fully evaluate the achievements of other instances working in the same or similar fields. An existing “Report on Innovation” was brought to the attention of the Sub-Commission. Philosophy of technology seems to be an especially fertile ground for research, in order to explore the ethical use of technological tools, as well as the dialectical issue of technology being shaped by and, at the same time, shaping humans. The need for a continuous interaction among Sub-Commission members was pointed out, to cope with the rapidly evolving pace of the issues being dealt with. Everyone one should contribute to the preparation of periodical state-of-the-art reports, with information being shared among members through electronic means. Technological determinism was put on the table as a crucial issue to receive special attention, by putting technological change in a social context. The importance of analyzing the impact of real-time communication devices (e.g. mobile phones) was also recalled. It was suggested that a collective effort could be put in place by producing, in this as in other similar analyses, joint studies with the Sub-Commission on the Ethics of Outer Space. The cognitive aspects of technology in education (e.g. problems of textual coherence in a display, as well as those of multiple intelligences and multi-level learning) are fundamental on the path towards a knowledge society. The phenomenal educational impact of multiple converging media is to be exploited to the full. Here, as well, there is ground for substantial interdisciplinary collaboration. Setting international rules for Internet access providers is also an area on which it is important to focus. The point of view was again expressed that legal rules for the Internet are linked with other existing systems of rules. The Internet environment is just emphasizing issues already on the table. In this regard, an in-depth analysis of the ways in which the Internet is either creating or deepening a social fracture should be undertaken. This would also shed light on whether it is possible to apply the ‘old ethics’, or if there is a need to define new conceptual tools. Modern societies also call for the relationship between ethics and economics to be fully worked out, together with some dialectical poles (e.g., democracy and governance, citizens and users). Multiple dimensions of the digital divide between and within countries, as well as differences and grey areas among developing countries need to be better spelled out in order to produce coherent and effective studies. A final suggestion was also made not to limit the reflection only to freedom, but to strengthen the analysis on Human Rights as a whole, so as to identify new ways to reinforce and promote them in the Information Society.

III. CONCLUSION

26. In conclusion, the Chairperson of the Sub-Commission, the President of the COMEST and the Executive Secretary stressed the on-going nature of the work of the Sub-Commission. A collaboration with the Sub-Commission on the Ethics of Outer Space on issues of common concern (e.g., fundamental freedoms, surveillance, privacy, mobile communication) has been envisaged so as to create synergies among the Sub-Commissions and a strategy for interaction. Hearings could be held during future meetings, as to receive inputs from various guest speakers on the state-of-the-art in their own field. A first state-of-the-art report will be prepared, indicating various elements of reflection pertaining to the Ethics of the Information Society at large, and also taking into account what has already been accomplished by UNESCO, the United Nations and other international organizations.

ANNEXES

Annex I

PROGRAMME

Monday 18 June 2001

10:00 a.m. - 10:15 a.m.	Opening of the Meeting *by H. E. Mrs Vigdís FINNBOGADÓTTIR, Chairperson of the COMEST*
10:15 a.m. - 11:00 a.m.	The Ethics of the Information Society - Introductory remarks *by: Mrs M. R. C. GREENWOOD, Chairperson of the Sub-Commission on the Ethics of the Information Society*
11:00 a.m. - 11:30 a.m.	Break
11:30 a.m. - 12:00 a.m.	The place of human and social values in the Information Society *by: Ms Helen NISSENBAUM*
12:00 a.m. - 12:30 p.m.	Disempowerment and self-empowerment in the Information Society *by: Mr Cees J. HAMELINK*
12:30 a.m. - 13:00 p.m.	Discussion
1:00 p.m. - 3:00 p.m.	Break
3:00 p.m. - 3:30 p.m.	Individual expectations, democratic participation and social exclusion in the Information Society *by: Mr David KONZEVIK*
3:30 p.m. - 4:00 p.m.	Risks and vulnerability for democracy in the Information Society *by: Mr Jacques BERLEUR*
4:00 p.m. - 4:30 p.m.	Discussion
4:30 p.m. - 5:00 p.m.	Break
5:00 p.m. - 5:30 p.m.	The cultural, social and economic impact of the Information Society in the developing countries *by: Mr Kweku APPIAH*
5:30 p.m. - 6:00 p.m.	Discussion

Tuesday 19 June 2001

10:00 a.m. - 10:30 a.m.	Individual freedom and social responsibility in the Information Society *by: Ms Christiane FÉRAL-SCHUHL*
10:30 a.m. - 11:00 a.m.	The future of the Information Society: the society of knowledge *by: Mr Kristóf J.C. NYÍRI*
11:00 a.m. - 11:30 a.m.	Discussion
11:30 a.m. - 2:30 p.m.	Break
2:30 p.m. - 4:00 p.m.	Proposals for the future activities of the Sub-Commission
4:00 p.m. - 5:00 p.m.	Synthesis by the Rapporteur *Mrs Pilar ARMANET ARMANET*
5:00 p.m. - 5:30 p.m.	Break
5:30 p.m. - 6:00 p.m.	Closure of the Meeting

Annex 2

LIST OF PARTICIPANTS

I. SUB-COMMISSION MEMBERS

H. E. Mrs Vigdís FINNBOGADOTTIR
President, Republic of Iceland, 1980 - 1996
Chairperson of the World Commission on the Ethics of Scientific Knowledge and Technology (COMEST)

Mrs M. R. C. GREENWOOD (United States of America)
Chairperson of the Sub-Commission on "The Ethics of the Information Society"
Chancellor of the University of California, Santa Cruz
Member of the National Science Board
Former President of the Board of Directors of the Board of Directors of the American Association for the Advancement of Science (AAAS)

Mrs Pilar ARMANET ARMANET (Chile)
Rapporteur
Member of COMEST
Director for Higher Education, Ministry of Education
Former President of the National Television Council

Mrs Dagmar SCHIPANSKI (Germany)
Member of COMEST
Minister for Science, Research and Arts of Thüringia
Former Rector of the Technical University of Illmenau
Former President of the Federal Scientific Council

Mr Kurt PAWLIK (Germany)
Ex Officio Member of COMEST
Chairperson of the International Social Science Council (ISSC)

Mr Kweku APPIAH (Ghana)
Chairman, Ghana Group for the Promotion
of the Global Information Society,
Former Director, Social Policy Division of
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Team Leader Information Systems for Strategic Planning
of the Department of Labour Pretoria

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Professor, Computer Science Faculty of
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Chairman of the Technical Committee
"Relationship between Computers and Society"
of the International Federation for Information Processing (IFIP)
Co-founder of the European Association for Society,
Science and Technology (ESST)

Mrs Christiane FERAL-SCHUHL (France)
Partner of Salans, Hertzfeld & Heilbronn International Firm
President of the Board of the *Association*
du Droit de l'Informatique Juridique
Vice-President of the *Comité français du commerce électronique*
of the International Chamber of Commerce

Mr Cees J. HAMELINK (The Netherlands)
Professor of International Communication at the University of Amsterdam
Editor in Chief, Gazette, International Journal for Communication Studies
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Mr David KONZEVIK (Mexico)
President, Chief Executive Officer of *Konzevik y Asociados*

Mrs Helen NISSENBAUM (United States of America)
Research Associate, Center for Human Values, Princeton University
Member, School of Social Science, Institute for Advanced Study,
Princeton University

Mr Kristóf NYIRI (Hungary)
Professor of Philosophy, *Eötvös Loránd* University, Budapest
Director, Institute for Philosophical Research,
Hungarian Academy of Sciences

II. INVITED EXPERTS

Mr Luciano FLORIDI (Italy)
Research fellow and lecturer at Wolfson College
University of Oxford (United Kingdom)

Mr Mark FRANKEL (United States of America)
Director of the Scientific Freedom, Responsibility and Law Program
of the American Association for the Advancement of Sciences (AAAS)

III. OBSERVERS

Mrs Christiane DEUSSEN (Germany)
Deputy Secretary-General,
German Commission to UNESCO

IV. UNESCO

Mr Georges B. KUTUKDJIAN
Executive Secretary of COMEST
Director, Division of Human Sciences, Philosophy,
and the Ethics of Science and Technology

Mrs Chantal RALAIMIHOATRA
Programme Specialist
Division of Human Sciences, Philosophy,
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Mr Massimiliano LATTANZI
Programme Specialist
Division of Human Sciences, Philosophy,
and the Ethics of Science and Technology

Mrs Nicole LORIN
Division of Human Sciences, Philosophy,
and the Ethics of Science and Technology

CONTRIBUTIONS

THE CULTURAL AND SOCIO-ECONOMIC IMPACT OF THE INFORMATION SOCIETY IN THE DEVELOPING COUNTRIES

by Mr Kweku APPIAH (Ghana)
Chair, Ghana Group "Promotion of the Global Information Society"
Former Director, Social Policy Division,
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Abstract

This paper briefly reviews the impact that information and communications technologies (IT) have had in developing countries. It acknowledges the tremendous potential that IT has for promoting and facilitating development. On the other hand, the paper also calls attention to the digital divide and its associated problems that constrain the use of IT by developing countries and their ability to participate in and contribute to the development of the Information Society.

INTRODUCTION

The information and communication technologies (IT) that form the technological foundations of the Information Society are tools that are recognized as possessing the capability to facilitate socio-economic development, especially in developing countries. These technologies include: television and radio services, which reach a huge proportion of the global population; satellite systems that provide international voice circuits to virtually every country on earth; cellular mobile services; and the Internet or the World Wide Web.

Of all the various dimensions of IT, the Internet has probably generated the most interest and hope. This is because it presents exciting opportunities for both industrialized and developing countries to develop and progress.[1] The Internet is particularly relevant to the developing world

1. There is cross-country evidence to show that use of telecommunications facilitates economic growth. See, for example, Analysis 2000.

because of its characteristics of accessibility, affordability, usability and flexibility. Another important characteristic is that it has virtually no geographic dimension and makes location and distance practically irrelevant.

In March 2000 the user population of the Internet was estimated to be about 276 million with a growth rate of about 150,000 persons per day.[2] As impressive as these figures are, they reflect activity by less than 5% of the world's population. Significantly, about 93% of the world market for IT are within the Organization for Economic Cupertino and Development (OECD) member states with the remaining 7% in the developing world. Reflecting this disparity, there are more hosts in New York City and Finland than there are in the whole of the African continent and Latin America and the Caribbean, respectively. Also, notwithstanding the impressive progress that India has made in the application of IT, many of its villages lack telephones. Indeed, there are only 600 million telephone numbers for the 6 billion people in the world. Of these phones, 75% are in North America, Western Europe and Japan even though these regions account for only 15% of the global population.

From 1991 to 1998, in countries outside the OECD, average annual growth levels of telephone lines, mobile subscribers, and leased lines were 14%, 83%, and 27%, respectively. This growth hides a wide disparity between rich and poor in provision, however. In Africa, with 739 million people, there are only 14 million phone lines - less than in Manhattan or Tokyo. 80% of those lines are in only six countries. Moreover, according to the latest UN Human Development Report, industrialized countries, with only 15% of the world's population, are home to 88% of all Internet users. The geographical distribution of Internet hosts further illustrates the wide differences in connectivity between industrialized and developing countries. There were only one million Internet subscribers on the entire African continent compared with 15 million in the United-Kingdom in 1999. The average OECD country has roughly 40 times the per capita number of computers of a Sub-Saharan African country (South Africa excluded), 110 times as many mobile phones, and 1,600 times as many Internet hosts.

The Information Society therefore is currently global in scope but not in reach. Without improvements to the underlying conditions that create disparities in access to knowledge, technology and human capital, the benefits that can accrue from the knowledge-based society will remain concentrated within the OECD, with other countries and regions at risk of being further marginalized from emerging economic trends. These issues have been firmly placed on the international agenda, as indicated by the

2. United Nations Report of the Meeting of the High-Level Panel of Experts on Information and Communication Technology (New York, 17-20 April 2000).

various ongoing initiatives and international conferences aimed at developing and increasing the participation of developing countries in the Global Information Society. These are intended to develop a shared vision of the knowledge-based society and to ensure that the developing world is better positioned to reap the benefits.

INFORMATION AND COMMUNICATION TECHNOLOGIES AND DEVELOPMENT

The essence of the Internet's power and attraction lies in its ability to help achieving economic and social growth and transformation through enabling individuals and societies, wherever they may be, to access and use knowledge and ideas. Thus, it is hypothesized that those developing countries that succeed in harnessing the potential of the Internet will be able to leapfrog over their development handicaps such as poor infrastructure and place themselves in a position to more effectively tackle critical development challenges such as poverty reduction and poor health, sanitation, and education services. In this connection, the Internet presents numerous opportunities to increase the efficiency and equity of government services and improve the lives of the poorest. In addition, use of the Internet will also offer opportunities for developing countries to participate in and benefit from the rapid growth of global e-commerce.

People around the world, including those in developing countries, are increasingly demanding access to the global information network. This demand arises because use of IT can provide benefits to all segments of society, ranging from policy-makers, educators, students, entrepreneurs, business leaders and the ordinary citizen in several areas.

Examples of benefits include:

- *Information availability*

  This is important because easy access to a wide range of information is an essential prerequisite for living in societies that are becoming increasingly complex. The benefits to educators and students in the developing world, for example, may include: research collaboration with off-site colleagues, access to journals, greater availability of reference materials for students, attendance at electronic conferences, access to interactive textbooks, access to experimental software for all academic fields, enhanced library services, and many more.

- *Tele-learning and education*

  This provides opportunities for learning through access to information or training materials. Distance learning is a valuable tool in the struggle to overcome resource constraints on education in many developing countries. Indeed, six of the largest distance-learning universities are located in developing

countries. Projects in Senegal and Kenya show that it is the interactive nature of Internet-based teaching resources, such as voice and data communications, that makes distance learning effective and more efficient.[3] Although set-up costs are relatively high, it is believed that the cost of distance learning will be cost effective in the long run.

- *Healthcare*

  Health services and hospitals can improve their effectiveness and efficiency through the Internet. IT tools provide a means for accessing healthcare data even at the village level in an electronic form, thereby providing healthcare workers with information that can help them provide more effective service to the villages within their responsibility. For example, an innovative IT pilot application, in Rajasthan, India substituted manual registers with client data stored on hand-held computers.

- *Social cohesion*

  Affordable voice, email and other media are especially beneficial in this area, particularly in societies with high levels of migrant labour, such as China or South Africa, where families and communities are strained by geographic separation.

- *Gender issues*

  Where women have access to networking in the home or workplace, IT can contribute to equalizing access to information, entertainment, education, as well as increased empowerment in the spheres of community and family.

- *Active citizenship*

  The Internet can facilitate ease of participation in political, administrative and other institutional life.

- *Entertainment*

  While it is difficult to quantify the social benefits of widespread access to entertainment through such media as television and radio, this should not undermine its importance, particularly in societies that are stressed by poverty, instability and social change.

- *Economic growth and* development

  The Internet can help to develop and grow the local economy by providing an electronic link between local businesses or consumers to exchange information and conduct business.

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3. Chale E (1997): *Distance Learning for Change in Africa: A Case Study of Senegal and Kenya*, http://www.idrc.ca/acacia/03230/04-dlear/index.html cited in Analysis 2000.

IMPACT AND USE OF IT IN DEVELOPING COUNTRIES

Examples of the use and impact of IT in developing countries include the following[4]:

In China, the Internet has been an important instrument of choice as the country moves from a rigid centrally planned economy to a socialist market economy. There are now about 35.6 million e-mail accounts. Distribution of Internet access, however, remains unsatisfactory with the 10 coastal provinces with 42% of the nation's population accounting for 71% of users whereas the 7 most Western provinces account for 20% of the population but only 5% of Internet use. Great efforts are currently under way to increase connectivity with the rural population.

Internet access is now widely available throughout India. Software development and expansion of the service industry have been impressive. Progress with the development of telecommunications has likewise been satisfactory. Over 200,000 professional jobs have been created in ICT-related activities. Exports from the software development and services sector earn approximately US$40 million a week. The service economy already contributes more than 60% to the economies of cities such as Mumbai. ICT-enabled services provide support to hundreds of other businesses elsewhere in the world, for example, in legal, accounting and insurance industries. Using IT for development is an essential motor for the growth of the Indian economy.

In Brazil, more than 110 sustainable and self-managed community-based "Computer Science and Citizenship Schools", using recycled technology, volunteer assistance, and very limited funds have been created in urban slums. In addition, social education on human rights, non-violence, environmental issues, health, and sexuality is provided. Also, more than 25,000 young students are trained annually in IT skills in order to give them better opportunities for jobs and education. Such examples are multiplying, as collaborative approaches and partnerships between the public and private sectors are demonstrating the broader value of advanced communications services.

Chile has been a leader in using advanced IT to improve educational outcomes and has linked almost all secondary schools and more than half of all primary schools to the Internet. Schools are provided with computers and technical support, as well as extensive technical training in order to make the programme equipment self-sustaining. The goals of this initiative are to:

4. See, United Nations Report of the Meeting of the High-Level Panel of Experts on Information and Communication Technology (New York, 17-20 April 2000).

- ensure equal access to information regardless of geography;
- modernize curricula and administration;
- develop collaborative projects across different schools; and
- enhance teacher training and education.

Cuba launched *INFOMED*, a national network of the public health system, at a time when there was no information infrastructure in the country. It began as a simple network approach to sharing knowledge and accessing to information via e-mail. Since its inception, the network has been expanded to enjoy nation-wide coverage with regional and provincial nodes; it has a virtual library component covering medical journals; and it has contributed to the building of national capacity to manage new information technologies and empower people.

In Ethiopia, the Commission for Disaster Prevention and Preparedness (CDPP) started to use computer networking in 1994 to integrate early warning, relief transport operations, air services and food-aid management in the implementation of the national strategy for disaster prevention and preparedness.[5] The Commission has been implementing a management information strategy based on a wide area network, integrating three independent networks based in Addis Ababa. The long-term objective is to develop a networking structure, which systematically integrates the ports, warehouses, and the various CDPP departments to enable access to data and information both by the CDPP and regional bureaux, partners in the UN system, donors and NGOs through establishing a common database. The medical community in Ethiopia also has access to health information via the HealthNet satellite. The HealthNet link assists communication between health professionals and further training will ensure that a larger number of rural areas are able to benefit from the information available. Finally, as a member state of the Preferential Trade Area (PTA) for Eastern and South African states, Ethiopia has a designated national "focal point" of TINET - the PTA Trade Information Network. The Information Processing and Analysis Division of the Ministry of Trade is the liaison office and has the TINET Databases which can be used by the business sector, trade associations and manufacturers for the purposes of accessing information on products, imports, exports and market opportunities.

Ghana was the first West African country to attain full connectivity to the Internet in 1994 through a private sector initiative and is providing technical support services to neighbouring countries. In terms of telecommunications, there are two national operators, four cellular operators, five ISPs, three television operators, and dozens of FM and

5. See Furzey, 1996.

community radio stations. An offshore knowledge industry is developing and targeting data entry, call-centre applications, and software development for export and design centre applications. There are now special programs for networking schools, for distance learning, and for tele-medicine applications under development in the national information plan. Although e-commerce is in its infancy, there is a growing industry with storefronts serving both the local and international markets.

Mali benefits from IT in applications such as tele-medicine, long-distance learning and e-commerce. Non-governmental organizations (NGOs) have become more active, including special initiatives for youth, and hotels offer Internet connectivity to their clients. The impact of IT on economic and social development has been so positive that current plans call for connecting the University as well as all 701 *communes* throughout Mali. The country has also taken steps to share its positive IT experience through "Bamako 2000" in March 2000, which brought together 2,000 participants from 48 countries.

In Mauritius over 5% of the population currently uses the Internet (compared to continental averages of 2% for Asia and South America and less than 1% for Africa). There is a plan to increase the number of IT professionals by 500% by 2005; a University of Technology is planned; training loans are available and student competitions have begun to raise IT sensitivity. All local government authorities and many government programmes (immigration, tax, courts, customs, health, etc.) have been fully computerized; computers have been installed in all private and state secondary schools; Internet access has been provided to centres dealing with social welfare, community affairs, women's programmes and citizens' advice offices. Finally, a series of aggressive steps have been taken to stimulate e-commerce.

IT was initially viewed in Morocco as an enabling mechanism that would help to liberalize the economy and enable the country to participate more effectively in the global economy. It was also seen as a tool that would help to slow the emigration of skilled workers, especially to Europe, and to create employment opportunities. In 2000, with a population of 28 million, over 50% of whom are under the age of 20 years, Morocco has 300 ISPs, 500 *cybercafés* and a reasonable communications infrastructure of 1.6 million fixed and 700,000 mobile telephones. The number of websites passed 1,000 during 1999 and most significantly the cost of a monthly Internet subscription is only about US$6 per month. Nonetheless, the costs of access and the costs of hardware and software continue to be major constraints to more rapid expansion of the Internet.

Although a detailed analysis of the impact of the IT campaign on the Moroccan economy has yet to be undertaken, there is sufficient evidence to suggest that it has contributed to stability and a growing sense of

confidence that Morocco can compete in the global economy. Tangible results include a positive impact on the country's tourism industry; the generation of employment opportunities, especially for young people, through the growth and development of ISPs and *cybercafés*; and curricula in engineering schools have been revised to give emphasis to the IT sector. An academic and research network has been set up and already connects over half of the universities and engineering schools. This network has had a profound impact on the interaction amongst teaching staff as well as students both within the country and overseas.

As encouraging as these examples are, Daly (1999) in a very interesting article refers to a number of "horror stories" of unused Internet connections in developing countries that are too frequent to be considered as "urban myths". He cites an example "of a developing country research institute that installed its only Internet connection in the Director's office to assure that it could never be used by anyone in the institute without the director's personal supervision and control". In conclusion, Daly wryly observes that "such connections are not used. Connectivity without utilization must limit the impact of the Internet dramatically". He continues "that not only is the penetration of computers into developing countries much less than into developed, but the utilization patterns are likely to be less intensive ... If this hypothesis is true, then the comparative impact may be even lower than the low penetration would suggest".

THE DIGITAL DIVIDE

Concerns exist about how countries that lack education, infrastructure and institutions - the resources most needed to fully benefit from IT - can become further marginalized by the networking revolution. This is referred to as the "digital divide" - that is, the gap between those who have access to and use of IT and those who do not. Digital divides exist both within countries and regions and between countries. Moreover, the concept of the digital divide extends to encompass the issue of the disparity between how different nations are using information and communication technologies as a tool for social and economic development. For example, the rate of investment in technological development and deployment in OECD countries is as much as 11 times the amount spent per capita in Sub-Saharan Africa. Unequal access to IT is also clearly visible within countries according to such characteristics as income, education, race, and gender.[6] Thus it is typically the affluent in society, the better educated and men who have greater access to IT, regardless of the country.

6. See, for example, Analysis 2000.

In terms of institutions, many developing countries lack, for example, a sufficiently well-established culture of information sharing and dissemination to adequately support and foster the promotion of IT. This can be attributed to a number of factors, including lack of library facilities, inadequate resources for journals and books, poor documentation and archive collections, and central resource sites. The inadequate facilities and difficulties of accessing information have led to low expectations and consequently under utilization of the existing information resources. Nonetheless, the level of awareness of electronic communication has been dramatically increasing in recent years in many developing countries, but is still primarily confined to the urban elite.

A number of factors have contributed to the growing awareness of the potential of e-mail and Internet access. For example, in many developing countries significant numbers of nationals living abroad are returning home. Also, international organizations and some corporations have set up or are expanding their offices in developing countries. For both groups, electronic communication is a familiar and essential tool in their professional activities and their awareness has sensitized colleagues. Also at senior government levels, there are frequently "champions" of electronic communication who sensitize ministerial colleagues about the importance of a national network with full Internet connectivity.

CONCLUSION

The ongoing IT revolution - and the social and economic transformations that it is engendering - may presage a closer and more productive integration of developed and developing countries. However, this outcome is not inevitable, as the current "digital divide" suggests it. Indeed, the global information and knowledge divide that exists in the world today cannot be overstated. While the potential certainly exists for developing countries to use IT to leapfrog to a higher stage of development, groups at basic levels of literacy and living standards face substantial prerequisites that they will have to satisfy before they will be able to share in the benefits of the knowledge-based society. Because of these considerations, there is considerable concern that those developing countries that fail to keep up with the accelerating pace of IT innovation may not have the opportunity to fully participate in the Information Society and economy. This is particularly so where the existing gaps in basic economic and social infrastructure, such as electricity, telecommunications and education, constrain or deter the diffusion of IT.

However, the costs involved in setting up and maintaining an IT infrastructure are substantial and must be considered against the pressing day-to-day education, health and other social needs of the majority of the

population in developing countries. Given the magnitude of the social, economic and political challenges facing many developing countries, the issue of priority for Internet connectivity has to be seen in the context of other pressing needs. This is not easy, as the introduction of any new technology requires a degree of vision and risk-taking on the part of decision-makers, who, in turn have to justify and account for their decisions to the public. This is particularly true when the benefits of having access to the Information Society are not easy to quantify in cost terms and when the potential of the Internet is still an unknown entity for many decision-makers.

While the Internet is almost certainly still in its infancy, its social and cultural implications are significant. Indeed, the Internet is enabling linkages to be established among previously unconnected communities and is fostering the emergence of a global commons and global civil society. Thus the utopian vision of the knowledge-based society holds that it will work to surmount barriers of language, culture and geography, reduce disparities of income and opportunity, promote universal values of democratic participation, facilitate a *rapprochement* between the developing and developed worlds, and enable indigenous and minority cultures to flourish. In short, the information revolution, many believe, has the potential to promote social cohesion both within societies as well as between them. However, others maintain that this same phenomenon is serving to further fragment societies and the global community, and that it is contributing to cultural homogenization. At present, the Internet remains primarily an American-dominated network with 63% of 3.2 million computer hosts originating from the United States of America, although this profile is changing daily.

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RISKS AND VULNERABILITY OF DEMOCRACY IN INFORMATION SOCIETIES

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I. INTRODUCTION

Each of the words suggested to me as the title of this presentation would no doubt merit a separate study on its own.

For computer scientists, reference to risks and vulnerabilities spontaneously evokes events like the Wall Street crash in October 1987 during which Alan Greenspan himself spoke of our dependence on computers and means of communication.[1] A more dramatic example is the accident affecting the Therac-25, a radiotherapy machine that administered excessive radiation doses, so causing the death of several patients, because of a defect in its computer control system.[2] I might also mention the accident of the Lufthansa Airbus A-320 at Warsaw Airport in September 1993. The automatic system on this aircraft prevented the pilot from regaining control in a case where the landing did not take place on

1. "Modern technology coupled with the greater presence of sophisticated institutional investors undoubtedly contributed to the suddenness of the October drop." (…) This crash pointed out "dramatically the many changes that have occurred in our market for equity products and the resulting vulnerabilities of the system. Some of those changes, such as the use of so-called portfolio insurance strategies based on the faulty premise of a high degree of market liquidity, have at least to a degree be corrected by the October experience. Other changes such as the heavier dependence of market participants on high speed computers and telecommunication devices and the growing role of institutions ... are here to stay", in: *Federal Reserve Bulletin,* July 1988, p. 446. *Our underlining.*

2. See Nancy G. Leveson & Clark S. Turner, An Investigation of the Therac-25 Accidents, in: Deborah G. Johnson and Helen Nissenbaum, *Computers, Ethics and Social Values*, Englewood Cliffs, NJ, Prentice Hall, 1995, pp. 474-514.

both wheels of the undercarriage.[3] Today, the dependability of networks is also being called into question and we are aware of all the security measures taken to prevent any impact on electronic commerce, in particular: cryptography, public and private codes, digital signatures and biometric identifications, protection by firewalls … have become routine for companies involved in globalization. These examples may be multiplied and certainly provide convincing evidence that our societies have become "more vulnerable".

But perhaps it would be more appropriate to define what we mean by the terms used. We should make it clear that the issue is more one of *measuring* vulnerability and risks which presupposes a spotlight on the notion of the system of legitimacy, and hence on relations between nature and culture, or on the artificiality of our societies and on the development of sciences, such as those dealing with probabilities and actuarial studies.[4] The nature of a risk changes when it becomes a "calculated" risk.

The same precautions should be taken in respect of the term "Information Society". Perhaps it would be more prudent to speak of "societies" in the plural, not simply because of cultural, social or political differences, for instance, but also because of the different interpretations which might be given in the same cultural, social or political sphere. Can we then discern a specifically European approach to the Information Society in the official speeches of Jacques Delors or Martin Bangemann? We are told that their observations reflect a desire to break away from the American approach, centring essentially on the infrastructures of this Information Society, without giving other dimensions their due weight. But that no doubt would be to underestimate the ideological and political aspects of such interpretations: the Bangemann Report does not use the term "democracy" and "culture" is mentioned only seven times - essentially to discuss language industries - while the term "market" occurs a hundred and ten times.[5] The same consideration would apply if we were to explore in more details the foundation of what some "Eurocrats" like to refer to as e-Europe, while others simply use the term "Europe Inc."[6] We

3. Klaus Brunnstein, Why a Discussion on Ethical Issues in Software Engineering Is Overdue, in: *Ethics of Computing: Codes, Spaces for Discussion and Law,* Jacques Berleur and Klaus Brunnstein, Eds., London: Chapman & Hall (now available at Kluwer Academic Publishers, Boston), 1996, pp. 52-55.

4. Romain Laufer, The social Construction of 'Major Risks', in: *Facing the Challenge of Risk and Vulnerability in an Information Society,* J. Berleur, C. Beardon & R. Laufer, Eds., Elsevier Science Publishers B.V. (North-Holland), 1993, pp. 39-57. By the same author: *L'entreprise face aux risques majeurs. A propos de l'incertitude des normes sociales*, Paris, L'Harmattan, 1993.

5. Commission of the European Communities, *Europe and the Planetary Information Society. Recommendations to the European Council*, Bangemann Report, 26 May 1994.

6. Bernard Cassen, Naissance de l'Europe SA, in: *Le Monde Diplomatique*, Paris, June 2000, pp. 14-15.

would also have to follow the arcane meandering of European hesitation between words like the Information Society or the knowledge society - we do not wish to venture here onto these shifting sands, although they do play a prominent role in social imagination.

More simply, but without losing sight of all these elements, let us try to discern the human, social and ethical challenges which arise over our societies that are invaded, or even dominated, by information and communication technologies, how attempts are made to regulate these systems and the place that ethics is able to play. This leads us on to the evocation of some domains which, in our view, in the very name of democracy and ethics, must escape from the systems of regulation that are tentatively taking shape.

II. HUMAN, SOCIAL AND ETHICAL CHALLENGES

An author who has long being reflecting on democracy in the electronic age, our colleague Stefano Rodotà, who is now the Italian Data Protection Commissioner, recently reminded us of some of the dangers to which democracy is exposed today.[7] He refers for example to the vicissitudes of sovereignty and the eclipse of the general interest. There are many who, like him, are marking time and trying to understand and evaluate in order to build new citizenships. Quite apart from any reference to technological aspects, we feel that Europe is distancing itself from the political establishment, while in the USA there seems to be a kind of political cynicism.[8] Others stress the difficulty for politicians to retain their legitimacy at a time when it seems to have been transferred to the business world.[9] Is there a cause and effect relationship between such a situation and development of the information and communication technologies in the past twenty years? Other events have marked our history, but we can safely say, with no fear of being mistaken, that terms like virtual cities, online government, electronic democracy and networked citizens, are all part of a “politically correct” rhetoric.

May I, however, now approach the matter differently than through the reflection that I have just outlined on some trends in democracy? I would like here to pragmatically raise a number of issues, which groups, associations, legislators and international bodies are seeking to answer; the tentative answers simply raise new problems of the Information

7. Stefano Rodotà, *La démocratie électronique. De nouveaux concepts et expériences politiques*, Editions Apogées, Coll. Médias et Nouvelles technologies, 1999.

8. John Gray, Does Democracy Have a Future?, in: *The New York Times Book Review*, January 22, 1995.

9. *Justice et marché, Entretien entre Michel Rocard et Paul Ricoeur*, in: *Esprit*, janvier 1991, pp. 5-22.

Society to which we must turn our attention. The question of democracy will arise again when we look into the way in which we must endeavour to confront the issue.

To illustrate my words with a rapid image, let me put the following question: should the issues of cyber-crime, which are being approached today in the Council of Europe, be left to the judgement of private cyber-courts in the name of more effective intervention?[10] Or is this privatization itself a threat to democracy?

I hope you will bear with me if I enumerate some topics in what may seem a rather fastidious and perhaps even repetitive manner, but this also helps us to understand just how important they are.

Computer crime

"Cyber-crime is part of the seamy side of the Information Society", Committee 29 of the European Commission recently declared.[11] The OECD defines computer crime as "any *illegal, unethical* or unauthorized conduct involving automatic data processing and/or data transmission"[12]. (*Our Italics*)

In a 1990 document, the Council of Europe classed the following elements in this category[13] - the draft convention clearly has the benefit of ten years of ongoing reflection, but has still not been adopted and has come in for a good deal of opposition[14]:

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10. Council of Europe, Draft Convention on Cyber-Crime (Version No. 25 Rev., Strasbourg 9 January 2001), http://conventions.coe.int/Treaty/EN/cadreprojets.htm

11. "Cyber-crime is part of the seamy side of the Information Society." The term " Committee 29 " is a reference to Article 29 of the European Directive 95/46/EEC of the European Parliament and Council of 24 October 1995 on the protection of natural persons in respect of the processing of personal data and the free movement of such data and on the protection of nominal data: http://europa.eu.int/comm/internal_market/en/media/dataprot/wpdocs/wp41en.htm

12. OECD, *La fraude liée à l'informatique: analyse des politiques juridiques*, Paris, 1986, p. 7. P. Galley, in a document entitled *Computer Terrorism: What are the Risks?* states that "if the computer is the target, we may cite the theft of information (confidential data about new products, customers lists...), blackmail, based upon the information obtained by the theft of computer files (medical information...), sabotage of data or of the system, unauthorized access to the files of the authorities to modify data (criminal records, driving license...), techno-vandalism (destruction without precise goal of data), browsing (Intrusion in a system just for the pleasure of going there, without the intention to steal anything there). The computer may be used as the tool of a conventional crime This category includes/understands the cases where the computer facilitates the work of the criminals, but is not essential to their activities: Embezzling, murder by modifying a patient's drug proportions in a hospital, servers providing illegal data (child pornography...). Finally, the computer generates new types of crimes. This category includes/understands " traditional " crimes, adapted to the computer: software piracy, hardware counterfeiting." http://home.worldcom.ch/pgalley/infosec/sts/index.html

13. Council of Europe, *Computer-Related Crime*, prefaced by Auguste Bequai, Strasbourg, 1990.

14. The eleven first articles list the infringements: illegal access, illegal interception, data interference, system interference, misuse of devices, computer-related forgery, computer-related

- ***Minimum list***
  - Computer fraud;
  - Computer forgery;
  - Damage to data or computer programs;
  - Computer sabotage;
  - Unauthorized access;
  - Unauthorized interception;
  - Unauthorized reproduction of a protected computer program;
  - Unauthorized reproduction of topography.
- ***Optional list***
  - Damaging data or computer programs;
  - Computer espionage;
  - Unauthorized use of a computer;
  - Unauthorized use of a protected computer program.

The recent Belgian law, which contains another list, condemns forgery in the computer field (falsification, counterfeiting, use of false data), fraud and fraudulent manipulation, unauthorized access with or without the intention of causing damage, theft, piracy and, lastly, computer sabotage as such.[15] That is merely an initial list of matters, which cause concern.

Professional codes

Computer professionals are, or should no doubt have been the first to recognize the implications of the impressive increase in the use of information technologies and communication. Their professional societies no doubt helped them to determine the questions to be dealt with. Examination of some thirty codes of the International Federation for Information Processing (IFIP) enabled us to identify five major areas:

- *Respectful general attitude:* respect for the interests or rights of the people involved, for the prestige of the profession, for the interests or rights of the public, for the welfare, health of the public, and for the quality of life;

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fraud, offences related to child pornography, offences related to infringements of copyright and related rights, attempt and aiding or abetting. For opposition to this proposal, see in particular the Global Internet Liberty Campaign (GILC) site http://www.gilc.org/privacy/coe-letter-1200.html

15. Law of 28 November 2000 on Computer Crime, *Moniteur Belge,* 3 February 2001, pp. 2909-2914.

- *Personal/institutional qualities:* conscientiousness and honesty, acceptance of responsibility and integrity, respect for requirements or contracts or agreements, conscientious work, professional development and training, competence, effectiveness and work quality;
- *Information privacy and data integrity:* confidentiality, privacy in general and respect for property rights;
- *Production and flow of information:* flow of information to involved parties, information to the public;
- *Attitude towards regulation:* respect for the code, for the laws, and for IT and professional standards …[16]

We are not convinced that these concerns are all specific to the profession of computer scientist, although the qualities promoted by this type of code are, in our view, eminently desirable.

Service providers and other Internet operators

What about the people who today play an important role in the area of communication, namely access and service providers? Analysis of seven European codes by associations belonging to EuroISPA, bringing together over five hundred service providers and a Canadian code revealed to us the topics which were of the greatest interest to them:

- All these associations (eight times) express their concern over illegal material (child pornography, racist propaganda), insist on the need to protect young people and especially those whose credulity is exploited, commit themselves to co-operate with the hotlines; at the same time, attention is called to the fact that service providers lack the resources to make their own systematic verification of the contents which they host or to which they give access;
- seven times, explicit mention is made of matters of protection of privacy, confidentiality and the secrecy of e-mail;
- four times reference is made to decency, opposition to violence, messages of hate, cruelty, and encouragement to commit crime or disseminate propaganda material for unconstitutional associations. A commitment is given to respect and enhance human dignity; ethnic, racial and religious discrimination is rejected as is discrimination based on any form of handicap or on expressed ideas;

16. Jacques Berleur and Marie d'Udekem-Gevers, Codes of Conduct within IFIP and other Computer Societies, in: *Ethics of Computing: Codes, Spaces for Discussion and Law,* op. cit., pp. 3-41.

- less frequently, we come across lists stipulating how business should be transacted with customers or consumers: clear information, correct prices, honesty etc.[17]

Analysis of other codes enabled us to identify various concerns that are summarized below (some of them overlap those mentioned earlier):[18]

- good behaviour, e.g. rules of Netiquette;[19]
- respect, honesty, competence, sincerity, correct information…;
- protection or private life (and related rights such as the right to know what use is made of personal data and arrange for it to be corrected…)
- fight against computer crime;
- respect for intellectual property rights, copyright, trademarks, and patents…;
- freedom of expression, right to information and communication;
- protection against illegal, dubious and harmful material;
- etc.[20]

17. Cf. our first analysis in: Jacques Berleur and Jean-Marc Dinant, 'Will Self-Regulation Improve the Internet Security?', in: *IFIP/SEC2000: Information Security. Information Security for Global Information Infrastructures*, Sihan Qing & Jan H.P. Eloff Eds., Proceedings of the IFIP-16th World Computer Congress, SEC2000, International Academic Publishers, Beijing 2000, pp. 306-309.

18. Jacques Berleur, *Ethique et autoroutes de l'information*, Académie Royale de Belgique, Groupe CAPAS - CAWET, September 1998, 23 p. Texte - Résumé - Recommandations. *Samenvatting, Aanbevelingen*, in: Académie Royale de Belgique, BACAS-CAWET-CAPAS, 'La société de l'information', 17 February 2000. (CD-Rom and Report). See: http://www.kvab.be/Cawet/CawetInfor/FHbT.htm

19. See for example, A. Rinaldi, *The Net: User Guidelines and Netiquette*, http://www.fau.edu/netiquette/net

20. We also have in mind the concerns expressed by France to the OECD which made little progress. France recommended the Member Countries to voluntarily establish a code of good conduct based on the seven following guiding principles (we quote) : principle of respect for human dignity and public order, possibly involving the provision of filter software to users, founded on the development of systems of classification and on the definition of a set of keywords; principle of protection of private life by which the signatory companies would undertake in particular to process personal data in compliance with the declared objectives; principle of honesty and loyalty notably in the context of relations with users and competing companies; principle of transparency by which the signatory companies would undertake to make known to the authorities designated by the States any illicit practice observed within their area of authority; principle of protection of consumers by virtue of which the signatory companies would undertake to assure that the services provided and the promotion of those services contain no contents liable to mislead users through their ambiguous, elliptical, exaggerated or untruthful nature; principle of protection of intellectual property rights notably in the context of the attribution of NICs at national level; principle of transaction security. (http://www.planete.net/code-internet/Charte.html).

Miscellany

To extend somewhat the list of concerns expressed here over our societies dominated by information and communication technologies, the reader may consult a number reference works on the subject or the classifications which seem to have become accepted today. A recent survey in some works on the ethics of information technology has highlighted the following list (in diminishing order of importance): private life and security, theory of ethics, legal responsibility in relation to defective programmes, professional codes of ethics, crime, software ownership, hacking and viruses, justice (division of labour, employment, third world), copyright, power, quality of life, legal problems, risks of information technology, whistle blowing, SDI (Strategic Defense Initiative)[21] … The bibliographic classification proposed by Herman Tavani may perhaps add some isolated new elements, but it tends to confuse all the "meta-technical" concerns. However, it does have the advantage of putting the concerns in an initial perspective if not in an appropriate ranking.[22] The striking feature of this miscellany is that the conventional problems of "information technology and society" are increasingly being oriented towards a field which some authors in the English-speaking world spontaneously classify under the terms of "information technology ethics". Some authors, however, prefer the term "social informatics".[23] How can this difference between social or societal and ethical concerns be appreciated? This distinction is not always easy to make and the law, deontology and ethics must no doubt be placed more clearly in context.

III. MEANS OF REGULATION

The threats and risks facing the Information Society, reflected in the concerns that we have just mentioned, seem to escape control by regulatory bodies. They are all trying in their own way to find an answer. The international authorities are turning their attention to this problem, the States are vigilant and sometimes adopting legislation, private groups are adopting codes while researchers are analyzing and proposing guidance. All this is being done in some confusion without really knowing who is supposed to do what. After all, democracy is perhaps somewhat chaotic. Things are even more complex when we see protests by those who do not

21. Put back on the agenda by the National Missile Defense (NMD) Project of President George W. Bush, http://www.fas.org/spp/starwars/program/nmd/index.html

22. Herman Tavani, *The Tavani Bibliography of Computing, Ethics, and Social Responsibility*, http://cyberethics.cbi.msstate.edu/biblio/

23. Rob Kling, Centre for Social Informatics, http://www.slis.indiana.edu/CSI/index.html

want any regulation of the Internet at all - which does not, however, signify a total absence of regulation of information societies.[24] Whether we like it or not, means of regulation already exist.[25]

As far as the Internet is concerned, we naturally have in mind technical means notably for standardization and bodies such as the WWW Consortium, the Internet Architecture Board (IAB), Internet Engineering Task Force (IETF), Internet Research Task Force (IRTF), etc.[26] Mention must of course also be made of the Internet Corporation for Assigned Names and Numbers (ICANN) which has been and remains the subject of bitter exchanges, discussions and sometimes even of controversy. As far as legal regulation is concerned, the Europeans have a head start in many fields, through their past or future directives or recommendations: establishment of the single market in telecommunication services, respect for the rules of competition, protection of private life, convergence between telecommunications and audio-visual, electronic commerce, digital signature, access to public information, intellectual property, protection of minors and human dignity, authorization, access, interconnection, universal service and rights of users …[27] But this is not the approach followed by our North American friends, as has been proved by long negotiations on the protection of private life, with reference to what have been called the "Safe Harbour Principles" where a textbook case of opposition between a purely legal approach and a self-regulatory approach occurred or, as some observers put it, an approach based on the market on the one hand and the State on the other.[28] This third method of regulation or control - governance if we prefer not to use the world control - of the Information Ssociety has returned in a sense by feedback to the European continent and has today been elevated to the status of a *credo* in many bodies. As we have just seen, matters look perfectly clear to the North Americans, and especially

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24. Vinton Cerf, *The Internet Is for Everyone*, in: *On the Internet*, July/August 1999: "As we move into a new century marked by the Internet's ubiquitous presence, we must dedicate ourselves to keeping the network unrestricted, unfettered, and unregulated."

25. Joel R. Reidenberg, *Governing Networks and Rule-Making* in Cyberspace, 45 Emory Law Journal 911 (1996), reprinted in: *Borders in Cyberspace*, Brian Kahin and Charles Nesson, Eds., MIT Press, 1997.

26. Most of them are hosts of the Internet Society: http://www.isoc.org/standards/ An interesting article: Regulating the Internet. The Consensus Machine, was published in: *The Economist*, June 10th, 2000, pp. 99-101. Another body "destined to direct a new world order"(!), Internet Lawyers Task Force (ILTF) (see http://www.networkcomputing.com/705/705hreportb.html) does not really seem to have got off the ground day and at all events is not recognized by ISOC which regards it as a confusion with IETF!

27. *Legal Issues of the Information Society*, http://europa.eu.int/ISPO/legal/en/lab/lablab.html; Répertoire de la législation communautaire en vigueur, http://europa.eu.int/eur-lex/fr/lif/

28. Richard S. Rosenberg, *Privacy Protection on the Internet*: *The Marketplace Versus the State*:http://www.ntia.doc.gov/ntiahome/privacy/files/studies.htm

to the USA, although the Federal Trade Commission in a report to Congress of May 2000 recommended that legal measures be taken to protect the private life of consumers.[29] The situation seems equally evident for the OECD which, in respect of the development of electronic commerce and surveillance of Internet contents, seems to have established a doctrine with its industrial expert, the Business and Industry Advisory Committee (BIAC).[30] The European Commission also seems to have become a convert to self-regulation in the matter of Internet content, including such sensitive areas as protection of children on the Internet (Safer Internet Action Plan)[31], where some judicial authorities are even regarded as undesirable.[32]

Face with these different methods of regulation of the Information Society, the following question arises: among all the challenges, problems and concerns that we have enumerated at such length, are there not subjects which in the name of democracy and ethics must escape self-regulation and remain the responsibility of the guarantors of the public interest? The question seems to be a timely one because, as though the pendulum had now swung the other way, the States are asking questions and finding - as a journalist recently wrote in *Le Monde* - that the "Internet guided hitherto by the invisible hand of the market is becoming a matter of international policy. States are trying to master or even control the expansion of the web…"[33] As the *Financial Times* also recently acknowledged, problems of politics are becoming more important than purely technical concerns.[34] But can the routes chosen, notably that of self-regulation as it is conceived in some quarters, be considered democratically and ethically satisfactory?

29. Federal Trade Commission, *Privacy Online: Fair Information Practices in the Electronic Marketplace*, May 2000 ('FTC gives up on Net self-regulation', in: Quicklinks 157, 28 May 2000, http://www.qlinks.net/)

30. Business Statement on the Impact of Telecommunications Liberalization on Electronic Commerce, http://www.oecd.org/dsti/sti/it/ec/; BIAC/OECD Forum: Internet Content Self-Regulation, Paris, 25 March 1998, http://www.oecd.org//dsti/sti/it/secur/act/self-reg.htm

31. http://www.cordis.lu/saferinternet/

32. This is the case of the INHOPE Association (Internet Hotline Providers in Europe Association) where public organizations can admittedly enjoy 'full membership' but not on the same basis as private organizations (they do not have the same 'voting rights') See: http://www.inhope.org/uk/mission/articles.html

33. Lucas Delattre, *Les Etats mettent en place une architecture mondiale du Net*, in: Le Monde, 12 February 2001, p. 2.

34. *Regulating the Internet. The Consensus Machine*, art. cit.

IV. DEMOCRATIC QUESTIONS WITH ETHICAL OVERTONES

The public space and its universal horizon

The question seems appropriate today, but at the same time all the indications are that the advent of the information and communication society coincides with a change in political sensitivity - hence the frequent comparison in literature on democracy and the Internet with the Athenian "Agora", forgetting that this too was not open to everyone. The *public* space is certainly the key to modern democracy, but the horizon of universality must also remain an imperative requirement.

Philosophers like Jean-Marc Ferry and Jürgen Habermas can, I believe, help us to rediscover essential aspects of democracy applicable to the specific features of our societies. I want to recall a few important elements briefly here.[35] Democracy means the creation and institution of political freedom, conceived as the link between individual freedom and the desire to live together in an universalist approach in which everyone has an opportunity to participate. The primary function of the institutions is to guarantee the existence and preservation of the public space. They must constantly refer to and lead back to this space, to enable the coherence of their policy to be evaluated in relation to the social consensus; otherwise their legitimacy will be called into question. In this public arena, this is the argument, which prevails according to an overriding criterion of justice in the universal view, in particular that of the minorities and the weakest members of society. According to this criterion, no action should be taken without having regard to the criticisms that might be voiced by all the persons or groups affected by the measure. We must therefore regard the democratic space as the scene of a vast practical discussion in which all arguments must be listened to. Therefore it is essential to agree on the procedures which will govern the debate with a view to the management of our common destiny, but the idea of acting on decision-making procedures by laying out general criteria of balance to respect the different groups in society defines the democratic struggle which has developed in interaction with the consolidation of the institutions of the modern State. We have progressively witnessed an enlargement of political representation in the constitutional State and a socialization of the public space, which

35. We have outlined some dimensions of our approach elsewhere: Jacques Berleur, *Fragiles démocraties? Une question pour l'Université*, in: *Des rôles et missions de l'Université*, Presses Universitaires de Namur, 1994, pp. 253-284, with reference to Jean-Marc Ferry, *Les puissances de l'agir*, Cerf, Paris, 1991 (2 Vols.) and Jürgen Habermas, *Morale et communication*, Cerf, Paris, 1986. See also Entretien avec Claude Lefort, *La Communication démocratique,* in: Esprit, Nos 9-10, September-October 1979, pp. 34-44; Janine Chêne, *Penser le Politique*, in: *Ethique et Philosophie Politique*, sous la direction de François Récanati, Paris, Ed. Odile Jacob, 1988, Coll. L'âge de la Science, Lectures Philosophiques, 1, pp. 133-150 (referring to *Essais sur le Politique, XIXe-XXe siècles* of Claude Lefort, Paris, Ed. Seuil, 1986. Coll. Esprit/Seuil).

culminated in the Keynesian model of the Welfare State. Democracy is therefore, strictly speaking, the process of struggle which accompanies the development of institutions of the constitutional State and seeks to enlarge access to the public space for concertation and decision-making, so as to enshrine the universality of representation established as a principle by the modern State. The condition for maintaining that process in the constitutional State resides in the activity of associations and movements of opinion in society which seek to establish a relationship between the expectations of the daily "world experience" (Jürgen Habermas) of citizens and the structures of the social order.[36]

This way of referring to democracy fits in well with our own approach and with the notion of self-regulation as it is developing today and whose applications we have seen in the field of information and communication technologies. Pierre Trudel defined self-regulation as "the use of standards deliberately developed and accepted by those who take part in an activity".[37] Pierre Van Ommeslaghe, for his part, regards it as "a juridical technique according to which the rules of law or behaviour are created by the persons to whom these rules are intended to apply, either because these persons draft the rules themselves or because they are represented for that purpose".[38] In the spirit of contemporary research, we must see to it that all the persons who are interested are able to take part in the debate on matters of concern to them in what Habermas calls their "world experience". The whole problem resides of course in maintaining the openness of the public space and in the clarity of the procedures.

This might in principle be seen as the application of the subsidiarity principle. Unfortunately, that ideal situation is contradicted by the facts. Some world groups active in the field of electronic commerce are currently preparing analyses and recommendations for action in the following domains: consumer confidence, convergence, cyber-security, building digital bridges, e-government, methods of payment over the Internet, intellectual property rights, trade and relations with the WTO and methods of taxation.[39] Members of this group are the Chief Executive Officers of some 60 big corporations drawn from all five continents, but one is hardly likely to encounter "all the persons to whom the rules are intended to apply" in such a body. Recently this group became associated with the

36. Cfr Jürgen Habermas, *Le discours philosophique de la modernité*, transl. by Chr. Bouchindhomme and R. Rochlitz, Gallimard, Paris, 1988, pp. 428-430.

37. Pierre Trudel, *Les effets juridiques de l'autoréglementation*, Revue de droit de l'université de Sherbrooke, 1989, Vol. 19, No. 2, p. 251.

38. Pierre Van Ommeslaghe, *L'autorégulation. Rapport de synthèse*, in: L'autorégulation, Actes du Colloque organisé par l'A.D.Br. et le Centre de droit privé de l'ULB, Bruxelles, Ed. Buylant, 1995, pp. 238.

39. Global Business Dialogue on Electronic Commerce, http://www.gbde.org

International Chamber of Commerce and the Business and Industry Advisory Committee (BIAC) (referred to above) and signed an agreement on problems of electronic commerce in virtue of which the members "undertook to promote their international co-operation on the full range of *public policy issues* (our italics) arising from the Internet such as intellectual property rights, consumer confidence, cyber-security and the questions of exclusion and the digital divide…". When it was created in 1998, this group had no hesitation in publishing on its site press cuttings, including one from the Associated Press, headed: "Global Companies form group to curb government regulation of Internet"[40], while L'Express of 14 January 1999 published the blunt title "The Net Parliament" with the implication that there would be no other. This is not an isolated example as suggested by a recent agreement between BBBOnline, Eurochambers and FEDMA.[41]

When it comes to the challenges posed to democracy, I think it appropriate to conclude - and this would in a sense be my thesis on the subject with which I have been asked to deal - that democracy is in danger not because of the problems with which it is confronted (i.e. the concerns I stated earlier) but because of the way in which they are or are not dealt with. Hence the search for new approaches, notably at the Summit of Regulators held in Paris at the end of 1999 under the aegis of the French High Council for the Audio-visual Sector and UNESCO[42]. A concept was promoted in that forum which is gaining acceptance today, that of co-regulation or multi-regulation which Prof. Michel Vivant preferred to call plural regulation in his outline statement. It is by no means certain, however, that attempts to create a new state legitimacy, which can be perceived here and there, will not have as a consequence the tendency for the State discourse to adopt the logic of the business world.

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40. *Global Companies form group to curb government regulation of Internet*, Associated Press, January 14, 1999, formerly on http://www.gbd.org/library.htm but no longer available today. But Nihon Keizai Shimbun of Japan announced on 20 August 1999 *Voluntary curbs on e-commerce to be proposed*, "The Global Business Dialogue on Electronic Commerce (GBDe) will propose business-led regulatory systems on key issues at its inaugural session in Paris September 13, its chairman Thomas Middelhoff said at a news conference in Tokyo, August 19." This text can still be consulted at http://www.gbde.org/nn/media/articles4.html

41. Recently "BBBOnLine, a Division of the Better Business Bureau of America, Eurochambers, the "Association of Chambers and Industry in Europe and European Direct Marketing Federation (FEDMA) have been working jointly on the development of a new international seal or trust mark programme to confirm the adoption of specific standards of business including the settlement of disputes across national borders by cyber-traders. This initiative seeks to encourage all companies all over the world to adopt the same norms for electronic transactions and use a single internationally recognized seal. These codes are also compatible with the standards recommended by the OECD and the Global Business Dialogue on e-commerce. The next stage will be to develop common directives to equip the international business community with an effective self-regulation tool ". (Centre francophone d'informatisation des organizations (CEFRIO), *Bulletin SISTech*, Canada P.Q., 27 April 2001).

42. http://www.unesco.org/webworld/news/csa_summit.shtml

An ethic of discussion

At the ethical level, clear distinctions must be made between the problems to be dealt with. Of course, everything might be regarded as a matter of ethics: hence the proliferation of ethical codes - is the word always appropriate? But it is better to fix an agenda of urgencies. Our Special Interest Group of IFIP (IFIP-SIG9.2.2, Framework on Ethics of Computing) drew up a first list of questions, which are already under review, and made a distinction between those concerning protection of the individual (as citizen or consumer) and those relating to the collective organization of society. A good many of the concerns referred to here are included. We went on to establish a second list which contains subjects with a "more ethical content". We include in this second list questions touching on the reduction of vulnerability of persons and the capacity to maintain sustainable social development. We mention, for example, equity in the right of access, respect for dignity of the person (with special attention to the protection of minors), the fight against injustice and social exclusion, digital divides notably North-South, respect for the interests and rights of persons, freedom of expression, quality of life, the right to information (and a degree of transparency), development of personal qualities, respect for cultural differences, the possibility of avoiding use of new technologies, the need to establish virtual life in a real physical space…[43]

At the procedural level, we suggest the adoption, in the sense to which we referred on the subject of democracy, of an approach which might be defined in the spirit of Jürgen Habermas and Marc Maesschalck as a procedural ethic, creating a discussion arena with established rules from which certain principles might emerge out of the diversity of the convictions shared by the persons concerned.[44]

In the globalized spaces of our information societies, we believe that unanimous solutions leading onto a consensus are becoming increasingly difficult to find - regulation of the Internet being a good example. However that consensus must certainly be desirable if we are to respect social and cultural diversity to the full.

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43. Jacques Berleur, Penny Duquenoy and Diane Whitehouse, Eds., *Ethics and the Governance of the Internet*, IFIP-SIG9.2.2, September 1999, IFIP Press, Laxenburg - Austria, ISBN 3-901882-03-0, 56 p. This monograph can be downloaded from the IFIP-SIG9.2.2 site by clicking 'SIG9.2.2 Ethics and Internet Governance' :
http://www.info.fundp.ac.be/~jbl/IFIP/cadresIFIP.html

44. Jürgen Habermas, *De l'éthique de la discussion*, Paris, Cerf, 1992. [Engl. Transl.: *Justification and Application: Remarks on Discourse Ethics*, Cambridge Mass.: The MIT Press, 1993]. Marc Maesschalck, *Pour une éthique des convictions. Religion et rationalisation du monde vécu*, Publications des Facultés universitaires Saint-Louis, Bruxelles, 1994, Coll. Philosophie.

V. CONCLUSION

A conclusion may seem inappropriate at a time when an urgent need to reopen and organize the operation of public space and discussion arenas exists. Such spaces are for the most part the preserve of specialists in lobbying and activists. There is an urgent need today for all citizens to reacquire a taste for shared words and an exchange of views, to reinvent procedures which enable the interests of everyone to be negotiated and not just those of the few. People must understand that they bear the same responsibility for the future as those who have already decided to shape it to their own ends.[45]

45. Democracy does have a future "only if the citizens come back out of their bunkers and start talking", in: John Gray, Does Democracy Have a Future? art. cit.

INDIVIDUAL FREEDOM AND SOCIAL RESPONSIBILITY IN THE INFORMATION SOCIETY

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Freedom of expression is a fundamental principle of any democratic society. Moreover, it should not undermine respect for others and human dignity, or furthermore law and order. How is the Internet to reconcile the freedom of expression and personal freedom when these notions vary so from one State to another?

Indeed, Internet users are citizens who each have a different perception of freedom of expression. There is not one single freedom of expression alone, but several, more or less defined by the policies of the State concerned.

1. DEFINITION OF THE NOTION OF FREEDOM OF EXPRESSION

1.1. A principle widely recognized as one of the foundations of the democratic functioning of a society

- ***Universal Declaration of Human Rights of December 10, 1948***

  In France, the Universal Declaration of Human Rights states that "each individual has the right not to be harassed for his opinions, and the right to seek, to receive and to pass on, the information and ideas by any means of expression, regardless of boundaries." This standard is an integral part of the block of constitutionality.

- ***CEDH of November 4, 1950***

  The European conception of freedom is, for its part, expressed by the European Agreement of Protection of the rights of the Man and the Fundamental Liberties of November 4, 1950, which expresses that "every person has the right to his/her freedom of expression." This right includes the liberties of

thought, consciousness and religion, the freedom to receive or to communicate information or ideas as well as "the right of respect for a private and family life, for the home, and for correspondence."

- ***1st Amendment of the United States of America's Constitution***

  This amendment is essential because it establishes as an absolute rule every citizen's to express his opinions. The Supreme Court of the United States of America declared certain capacities of the "Communication Decency Act" to be unconstitutional, considering that "the interest in supporting the freedom of expression in a democratic country results in a theoretical censorship, the effects of which have not been proved."

1.2. A notion of changeable policies

- ***An area linked with the values of society***

  The field of the freedom of expression is more or less limited in every society according to the political, ideological or religious context. As an example, China set up a filtering system, which prevented Chinese Internet users from accessing certain sites considered unsuitable.

- ***The difficulty in establishing an international standard***

  The disparity of values and the differences in definitions of the notion of freedom of expression (within Europe, for example, one can observe that whilst pornography is forbidden in Ireland, it is completely permissible in Sweden), are an obstacle to the adoption of standards determined on an international scale.

2. FREEDOM OF EXPRESSION AND THE INTERNET

The French law applies to all activities linked with the Internet: existing texts in fact cover indeed all means of communication.

2.1. Protecting the principle

The jurisdictions of the judicial order are the guards of this fundamental freedom. The freedom of expression can be restricted only in particular hypotheses and according to strictly determined modalities (TGI Paris, ord. ref. In June 12, 1996: in the case in point, the judges had refused to order the implementation of censorship measures for revisionist sites, because judges are forbidden to give a verdict by general and statutory arrangement).

2.2. The penalty of the abuse of the freedom of expression.

- ***The penalty in case of infringement upon personal freedoms***

  - *Defamation, insult (law of July 29, 1881 on the press and the law of September 30, 1986 on broadcasting)*

    In prescription of a violation of the press laws committed on the Internet, the jurisprudence seems hesitant. Certain judges considered that a publication on the Internet is a "continuous" act, since the publication is as a result of the renewed will of the broadcasting station, which places a message on the site. It is therefore applicable to the valid prescription of 3 months in press from the day that the criminal activity stopped because "the Internet constitutes a form of communication, the specific technical characteristics of which require that principles established by the law on the press be adapted" (CA Paris, 11th ch. in December 15, 1999, aff. JL. Costes, and *T.Corr*. Paris, in December 6, 2000). However, the Court of Paris, in a ruling of June 23, 2000, returned to the traditional interpretation of the article 65 of the law of July 29, 1881. In this decision, the Court announces consequentially the time limit of the day prescription of the first act of publication. The jurisprudence is thus still vague on this point and nothing seems definitively fixed.

  - *The infringement on private life (art. 9 of the Civil code and art. 226-1 and s. of the Penal code)*

    Internet use can lead to the broadcasting of comments that are harmful to the intimacy of private life, or to a person's image. On the Internet, as with all other media, the jurisprudence considered that "every person has an absolute right, regarding their image and on the use which is made it, which allows them to oppose its duplication and its broadcasting without their express permission in writing, regardless of the type of medium used" (Ord. ref. of June 9, 1998).

  - *Racial hatred, negativism and revisionism*

    Internet messages inciting racial hatred or acting as propaganda for revisionist and forbidden ideas, are dealt with under the article 32 al.2 of the law of July 29, 1881. In a decision of August 27, 1999, the *Tribunal correctionnel* of Strasbourg condemned in this way an Internet user who had expressed some comments inciting racial hatred.

❑ ***The penalties in case of threat for law and order***

- *Protection of minors (art. 227-23 of the Penal code)*

  Art. 227-23 and following ones of the Penal code: punishments are aggravated when a telecommunications network has been used for the commission of malpractice;

  Trib. Corr. of Le Mans, 16 February 1998: the court sanctioned the recording, the transmission or the broadcasting of the image of a minor presented as a pornographic character.

- *Terrorism*

  Art. 24 of the law of July 29, 1881: any Internet publication inciting the terrorism (ex: a manual describing how to make a home-made bomb) is sanctionable on this foundation.

- *Trafficking, gambling and games*

  An Internet game chance site can be considered as a "gambling club" under the law of July 12, 1983. The offence of lottery is constituted if 4 conditions are fulfilled:

  - public nature of the game's offer;
  - hope of gain for the participant;
  - intervention, even partial, of chance;
  - monetary loss for the participant.

❑ ***The limits of freedom of expression for employees***

- *The employer's power of control*

  Today, an employer has technical means to control his/her employee's activity, notably by the means of communications used. The employer has indeed a power of control (Cass. Soc. May 22, 1995: the employer has the right to control and observe the activity of the staff during working time), moderated by:

  - an obligation to inform and a consultation of the company's Committee, prior to the implementation within the company of means or techniques to control the employees' activity (art. L.432-2-1 of the Labour Code). The employees should also be informed about the application of such techniques (art. L.121-8 of the Labour Code);
  - the necessity of an employee's suspicious behaviour to warrant monitoring. These limitations of a person's rights should however be justified by the nature of the task to be carried out and in proportion with the required purpose (art. L.120-2 of the Labour Code).

- *Employees use of the Internet*

  The infringement of employees' private correspondence is sanctioned penally (art. 226-15 of the Penal code). According to a decision of the *Cour de cassation* on November 20, 1991, the employer can not "spy" on his employees. The *Tribunal correctionnel* (Court dealing with criminal matters) of Paris clarified in a decision of November 2, 2000 that a correspondence by e-mail has a private character since "the contents which it conveys are exclusively intended by one named person to another person, also an individual, unlike messages given to the public." For all that, certain behaviour on the Internet can constitute genuine and serious causes of dismissal:

  - CPH Nanterre in January 13, 2000: the consultation of pornographic sites;
  - Cass. Soc. in November 16, 1993: formulation of deceitful accusations intending to cause harm.

2.3. A penalty sometimes difficult to put in practice

❑ *Technical obstacles*

- Technical intermediaries are under an obligation: article 43-9 of the law n°2000-719 of August 1st, 2,000 charges space providers and access providers with an obligation to detain and to keep the "data which permits the identification of each person to have made a contribution to the contents."
- However, it is not unusual to encounter technical difficulties in identification:
  - An Internet user can employ spoofing software, or forgery, of the computer's IP address when he/she accesses Internet. This technique makes identification more difficult, and even impossible;
  - Moreover, an Internet user can resort to erasing all traces of his/her intervention if relay computers have been used (this behaviour constitutes in itself an act punishable under article 323-3 of the Penal code, concerning the deletion or the modification of data in an automated system).

❑ ***The presence of an "extraneity" element (Yahoo! affair)***

How to act when:

- the author of malpractice repressed in France lives abroad?
- the litigious site is hosted abroad but accessible from France?

The "Yahoo! Affair" is an illustration of the problems of penalty of the abuses of freedom expression abroad.

INFORMATION ETHICS: AN ENVIRONMENTAL APPROACH TO THE DIGITAL DIVIDE

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1. INTRODUCTION

The Draft Medium-Term Strategy[1] strongly emphasizes that UNESCO is being confronted by a momentous task. The Organization needs to develop an efficient and effective strategy to deal with the new ethical challenges arising in the development of the Information Society. This task is critical and urgent. It is critical because the international community naturally looks at UNESCO as one of the principal sources for conceptual and ethical guidance, especially in this context. It is urgent because the Information Society is developing at an astounding pace, and has already posed fundamental ethical problems, whose complexity and global dimensions are rapidly evolving.[2] There is no time to waste. International co-operation and consultations are already in progress.[3] UNESCO will soon be provided with the necessary background to develop its ethical strategy.[4] But the pressing problem is still with us: what is the best strategy to construct an Information Society that is ethically sound? This is the question I wish to discuss in this paper.

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1. Medium-Term Strategy (2002-2007), Draft 31C/4 "Contributing to peace and human development in an era of globalization through education, sciences, culture and communication": http://unesdoc.unesco.org/images/0012/001223/122379e.pdf

2. See the *Okinawa Charter on Global Information Society*, (http://www.g8kyushu-okinawa.go.jp/e/documents/it1.html), especially paragraph 18, which called for the formation of the Digital Opportunity Task Force (DOT Force), a Digital Divide initiative of the Group of Eight (G-8); the documents provided by the DOT Force at http://www.dotforce.org, especially *DOT Force Draft Report Version 1.x*, http://www.dotforce.org/reports/dotforce-draft-report-v1.doc; and the documents provided by the Organization for Economic Co-operation and Development (OECD, http://www.oecd.org/), especially *Understanding the Digital Divide*, http://www.oecd.org/dsti/sti/prod/Digital_divide.pdf

3. For an overview of some literature and results see *The Public Voice and the Digital Divide: A Report to the DOT Force*: http://www.thepublicvoice.org/dotforce/report_0301.html. Some of the information contained in this paper are from this useful report. Note that the report does not mention UNESCO activities in this context.

4. See the UNESCO Observatory on the Information Society:http://www.unesco.org/webworld/observatory/index.shtml

Let me anticipate my conclusion. The Information Society is so called because of the pivotal role played by information-intensive services (business and property services, communications, finance and insurance) and the public sector (education, public administration, and health care). UNESCO can play a fundamental role in the Information Society. It can be its ethical driving force. The task is to provide UNESCO with the means to fulfil this role. We need to formulate an information ethics that can treat the world of data, information, knowledge and communication as a new environment, the info-sphere. This information ethics must be able to solve the ethical challenges arising in the new environment on the basis of the fundamental principles of respect for information, its conservation and valorization. It must be the environmental ethics for the information environment. In the rest of this paper, I shall explain why.[5]

2. WHAT IS THE DIGITAL DIVIDE?

The digital divide (DD) is the source of most of the ethical problems emerging from the evolution of the Information Society. It is the combination of a vertical gap and a horizontal gap.

The vertical gap separates ours from past generations. In less than a century, we have moved from a state of submission to nature, through a state of power of potential total destruction, to the present state in which we have the means and tools to engineer entire new realities, tailor them to our needs and invent the future. For the first time in history, we are responsible for the very existence of whole aspects of our new environment. Our technological power is immense. It is growing relentlessly. It is already so vast to have overcome the barrier between the natural and the artificial. Our moral responsibilities towards the world and future generations are therefore equally enormous. They go hand in hand with our ontic power. Unfortunately, ethical intelligence and wisdom do not necessarily follow technological power and moral responsibilities. We are still like children, light-heartedly and dangerously toying with a marvellous universe. We may have almost demiurgic power over it, but we can rely only on our fallible good wills to guide us in our constructions.

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5 . For an initial development of Information Ethics and a more technical treatment of some of the themes discussed in this paper see the following papers, available from http://www.wolfson.ox.ac.uk/~floridi/papers.htm: *Does Information have a Moral Worth in Itself?*; *Computer Ethics: Mapping the Foundationalist Debate*, *Artificial Evil and the Foundation of Computer Ethics* (with J. W. Sanders), *Ethics and Information Technology* 2001 (3.1), pp. 55-66; *Information Ethics: On the Theoretical Foundations of Computer Ethics*, *Ethics and Information Technology* 1999 (1.1), pp. 37-56; *Entropy as Evil in Information Ethics* (with J. W. Sanders), *Etica & Politica*, special issue on Computer Ethics, I.2 (1999). Oxford University, Computing Laboratory, Programming Research Group Technical Report TR-5-00; *The Internet: Which Future for Organized Knowledge - Frankenstein or Pygmalion?,* International Journal of Human-Computer Studies 43 (1995), pp. 261-274.

The vertical gap signals the end of modernity. Post-modern critiques have unveiled the strategy of modernity as the techno-scientific colonization and domination of nature. With Descartes, we are happy to stress that the goal of modernity was "[… to] use this knowledge [i.e. science and technology, my addition] - as the artisans use theirs - for all the purposes for which it is appropriate, and thus [to] make ourselves, as it were, the lords and masters of nature".[6] The project of modernity was the full control and mastery over reality understood as the natural environment. It began with the semanticization of nature as its textualization, developed through a society based on mass-produced goods, and ended with the semanticization of a textual culture as its deconstruction. The information age builds on the modern project, but its essence is not just the shaping of the physical world. Rather, it is the creation and construction of alternative, non-natural environments that replace or underpin it. The modern mind dealt with reality and tried to control and modify it, the informational mind builds it and hence, in dealing with it, it really deals with its own artefacts. I shall return to this distinction shortly.

The DD, of course, is not just a vertical gap between the present and past generations, it is also a new horizontal gap within humanity, between insiders and outsiders.

The info-sphere is not a geographical, political, social, or linguistic space. It is the atopic space of mental life, from education to science, from cultural expressions to communication, from trade to recreation. The scientist in Rio de Janeiro, the manager in New Delhi and the student in Paris, may all inhabit the info-sphere and form a community of "netizens", citizens of the net. The architect in Miami, the lawyer in Tokyo and the medical doctor in Rome may well be complete outsiders. The borders of the info-sphere cut across North and South, East and West, industrialized and developing countries, political systems and religious traditions, younger and older generations, even members of the same family. Of course economic and socio-cultural conditions matter, how could anyone ever underestimate this macroscopic fact? The economic and socio-cultural roots of the DD problem are dramatic and indisputable.[7] Two billion people have no access to electricity;[8] four billion people earn less

6 . Descartes, *Discourse on the Method*, Part VI, C. Adam and P. Tannery (eds.), *Oeuvres de Descartes*, rev. ed. , 12 vols. (Paris: Vrin-CNRS, 1964-76), vol VI, p. 62; English trans. in J. Cottingham, R. Stoothoff and D. Murdoch (eds.), *The Philosophical Writings of Descartes*, 2 vols. (Cambridge: Cambridge University Press, 1984), vol. I, pp. 142-3.

7. Valuable statistical data are provided by the OECD document *Understanding the Digital Divide*, cit. above: http://www.oecd.org/dsti/sti/prod/Digital_divide.pdf.

8. Source: *Time* magazine special report on "Our Wired World", June 4, 2001.

than 1,500 US$ a year,[9] two billion people have never made a telephone call.[10] To call them digitally "disadvantaged" or "underprivileged" is a pathetic and disrespectful understatement. On a global scale, it is fair to argue that basic alimentation, health, education and the acceptance of elementary human rights should be among our foremost priorities.[11] What needs to be stressed here, however, is that underestimating the importance of the DD, and hence letting it widen, means exacerbating these problems as well. In a global context, where systemic synergies and interactions are escalating, no significant problem comes in isolation, no crucial issue can be solved without considering the whole system of relations in which is it embedded. Bridging the DD may be part of the solution,[12] leaving it unsolved is certainly part of the problem.

The DD does not simply mirror the divide between developed and developing countries, North and South of the world, rich and poor. Even where economic and socio-cultural factors are not an issue, the DD remains a problem. It is a problem within Europe, for example. Consider the number of Internet hosts and mobile phones per 100 inhabitants, two standard indicators for the growth of the Information Society: "the European Union candidate countries are generally below the European Union average. In 1999 none of them had reached the lowest European Union rate for mobile phones, but the Czech Republic, Estonia, Hungary, Malta, and Slovenia had more Internet hosts than the least equipped European Union countries, Greece and Italy."[13]

It seems more accurate to say that the DD occurs between individuals rather than countries or whole societies, between the computer literate and the computer illiterate (e-analphabetism), between the information rich and the information poor, whatever their nationality and

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9. Source: *Businessesweek*, December 18 2000, Special session dedicated to the digital divide: http://www.wri.org/business/bwfinal.pdf.

10. Source: *Global Bridges, Digital Opportunities: Draft Report of the DOT Force*: http://www.dotforce.org/reports/dotforce-draft-report-v1.doc, page 9.

11. Over-optimistic and utterly unjustified "visions" are not rare, see for example A. Hammond *Bottom-Up, Digitally-Enabled Development: A vision*, iMP, February 2001: http://www.cisp.org/imp/february_2001/02_01hammond.htm; and *Digitally Empowered Development*, Foreign Affairs, March-April 2001: http://www.digitaldividend.org/pdf/0201ar04.pdf. Bill Gates' assessment of the difficulties encountered in bridging the digital divide are far more realistic, see *Bill Gates Turns Skeptical On Digital Solution's Scope*, New York Times, November 3, 2000.

12. The possibility is analyzed in Juliana Gruenwald, "Seeking Answers to the Global 'Digital Divide'", *Interactive Week*, January 14, 2001: http://www.zdnet.com/intweek/stories/news/0,4164,2674126,00.html.

13. Sources Eurostat Yearbook 2000: http://europa.eu.int/comm/eurostat/Public/datashop/print-product/EN?catalogue=Eurostat&product=1-12062001-EN-AP-EN&mode=download; Eurostat Information Society Statistics: http://europa.eu.int/comm/eurostat/Public/datashop/print-product/EN?catalogue=Eurostat&product=KS-NP-01-023-__-I-EN&mode=download.

neighbourhood. The DD abolishes space and time constraints but creates new technological barriers between insiders and outsiders. Currently, only 5% of the world's population have access to information and communication technologies (ICTs).[14] They are the insiders, who can play some role in the life of the new environment and shape its future. The remaining 95% of outsiders, some of whom live in G-8 countries, are not merely marginalized, they actually live under the shadow of a new digital reality, which allows them no interaction or access, but which can influence their lives profoundly.

3. COPING WITH THE DIGITAL DIVIDE

The DD disempowers, discriminates, and generates dependency. It can engender new forms of colonialism and apartheid that must be prevented, opposed and ultimately eradicated. How can we cope with the new ethical challenges? Since the DD is a problem affecting individuals rather than societies, solutions can be more effective if they are grassroots-oriented and bottom-up, but unfortunately old solutions to past ethical problems cannot be merely exported and mechanically re-applied to the info-sphere. Technologies are not only tools, but also vehicles of affordances, values and interpretations of the surrounding reality, like hermeneutic devices. Any significant technology is always ethically charged. Naturally, other technological innovations (the printing or industrial revolutions, for example) had their own pressing ethical consequences. Some of them are still with us, think of universal literacy, freedom of speech, sustainable development, or pollution. However, the ethical impact of past technologies took place within a context in which nature played the queen and we were her workers. Ethical problems developed on a much longer time scale, and they did not have the immediately global and pervasive nature we associate with information and communication technology nowadays. All this guaranteed some continuity in the ethical discourse: ethical issues could still be interpreted as mere techno-version of old problems. We have seen that the computer revolution has further increased the magnitude of the ethical impact of technological innovations. It has finally brought about the end of modernity and the transformation of its project, shifting the focus from control to construction. ICTs have finally put humanity in charge of the ontic implementation of the hyper-reality inhabited by the citizens of the Information Society. We are now more the engineers than just the regulators of our universe. This is the historical difference compared to any previous technological revolution. The problem is that our ethical development has been much slower than our technological growth. We can do so much more than we can understand. Upgrading our moral sensibility is a slow process.

14. Source, *Time* magazine special report on "Our Wired World", June 4, 2001.

The info-sphere is a transversal environment that is essentially intangible and immaterial but not, for this reason, any less real or vital. The ethical problems it generates are best understood as environmental problems. They include education as capacity-building training; preservation, dissemination, quality control, reliability, free flow and security of information; enlargement of universal access; technical support for the creation of new digital "spaces"; the sharing and exchanging of contents; public awareness; respect for diversity, pluralism, ownership and privacy; ethical use of ICTs; integration of traditional and new ICTs.[15] To alleviate these and similar problems we need a robust environmental approach, which can provide a coherent guidance for the equitable development of this new space for intellectual life. In short, we need an information ethics.

4. AN ENVIRONMENTAL APPROACH TO INFORMATION ETHICS

Information ethics is the new environmental ethics for the Information Society. It argues that the DD between the information rich and the information poor, between the insider and the outsider, can be bridged. What we need to do is to fight any kind of "destruction, corruption, depletion" (marked reduction in quantity, content, quality, value) or "closure" of the info-sphere, what shall be referred to here as "information entropy". The ethical use of ICTs and the sustainable development of an equitable Information Society need a safe and public info-sphere for all, where communication and collaboration can flourish, coherently with the application of human rights and the fundamental freedoms in the media. Sustainable development means that our interest in the sound construction of the info-sphere must be associated with an equally important, ethical concern for the way in which the latter affects and interacts with the physical environment, the biosphere and human life in general, both positively (e.g. telework as a solution for traffic and fuel pollution) and negatively (e.g. rising energy consumption, ICT-generated waste, computer-related forms of illness).[16]

Bridging the DD means developing an informational ecosystem management that can implement four basic norms of a universal information ethics:

i. information entropy ought not to be caused in the info-sphere;

ii. information entropy ought to be prevented in the info-sphere;

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15. For an instructive approach to integration of new and traditional ICTs see the final report on UNESCO Seminar (Kothmale, Sri Lanka, 22-27 January, 2001), prepared by I. Pringle: http://www.unesco.org/webworld/kothmale/seminar_report.pdf.

16. See the final report on UNESCO Seminar on Integration of New and Traditional ICTs, cited above.

iii. information entropy ought to be removed from the info-sphere;

iv. information ought to be promoted by extending, improving, enriching and opening the info-sphere, that is by ensuring information quantity, quality, variety, security, ownership, privacy, pluralism and access.

These universal principles represent a development of the ethical discourse in Western culture, which has gradually abandoned its anthropocentric perspective. They re-evaluate an ethics of respect for both the physical and the immaterial world. An information ethics for the Information Society needs to take into serious consideration the value of what is immaterial and intangible. This is the best way to foster care and respect for the info-sphere. Reality, both natural and immaterial, is not merely available for domination, control, and exploitation. Reality should also be an object of respect in its autonomous existence. This is what we can learn from an environmental approach. But history has its ironic twists, and precisely those high-technology societies, which have brought about the information revolution, seem to be the least able to cope with its ethical impact. Why? Because one of the most fruitful contributions for developing an environmental approach comes from pre- or non-industrial cultures, which have been able to maintain a non-materialistic and non-consumistic approach to the world. These cultures are still spiritual enough to perceive in both physical and immaterial realities something intrinsically worthy of respect, simply as forms of existence. It is these cultures that can help us to make the info-sphere a more civilized space for all. The environmental ethics of the info-sphere can be built by relying on its outsiders.

Given its expertise and know-how, its pluralistic, multicultural and interdisciplinary experience, its resources and mandate, UNESCO is in a unique position to assist and advise the international community about the ethically correct approach to problems arising in the new context of the info-sphere. Fostering the formulation of universally recognized principles and common ethical standards related to the use of ICTs and based on an environmental information ethics will be a major contribution to the construction of a better world. We need the formulation of an environmental information ethics for the twenty-first century. UNESCO can and must provide the world with ethical guidance. It can act as the interface between insiders and outsiders.

5. CONCLUSION

In 2003, at the World Summit on the Information Society and at the 21st World Congress of Philosophy, the task of the international community will be to build global consensus around a core of ethical values and principles for the Information Society. There is a profound and

widespread need for analysis and normative guidance. UNESCO is in the best position to provide both. It is not a matter of imposing legislative measures, strict regulations or empowering some controlling organization. The goals are to extend the ethical concern from the biosphere to the infosphere, to sensitize humanity to the new ethical needs, and to indicate how the DD can be bridged. Our challenge is to collaborate to develop a coherent and robust environmental information ethics for the future of humanity. Building an equitable Information Society for all is a historical opportunity we cannot afford to miss.[17]

17. A first version of this paper was given as invited speech at the UNESCO Executive Board 161st Session Thematic debate *The New Information and Communication Technologies for the Development of Education*. I am very grateful to all participants to the debate session for their comments, and to Vito di Bari, Michiel Brumsen, Anna Nobre, Jeff Sanders and Gabriele Sardo for their feedback on previous versions of this paper.

Disempowerment and Self-Empowerment in the Information Society*

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**Information Society is one of the "big ideas" of our time somewhat comparable to the "New Economy", the "Knowledge Society" or the "Global Village." Such ideas are rarely correct and mainly serve to provide the public debate with simple answers to complex questions. Intellectually, the concept of the Information Society is very unsatisfactory. It does not offer an adequate social scientific description of current social and economic developments. Among other problems it is not helpful to assess all the impacts new information-communication technologies (ICTs) have in a large number of countries that - although they are by no standard (today and for considerable time to come) "information societies" - experience ICT effects.*
In this text I shall use the term Information Society to point to social developments whereby ICTs become the essential infrastructure for a wide variety of transactions among individuals and institutions, and whereby information and knowledge develop into society's essential economic and cultural resources.

AMBIVALENT TECHNOLOGY

The audacious Prometheus, according to Greek mythology, stole the fire from the Olympic Gods. When Zeus saw the glow of fire on earth, he became very angry and punished humanity by sending Pandora. She carried a mysterious box and when she could not control her curiosity, she opened it. All the disasters and plagues that were in the box escaped and spread around the world. Prometheus' theft is essential for human progress. Yet, the myth warns us that progress exacts a price: the anger of Zeus.

Whatever breathtaking advances technological innovations offer, they are never without trouble. Technology inevitably brings great benefits and awesome risks. This essential ambivalence raises the challenging question about human governance of technological development. Can a balance be struck between disempowering and empowering potential? How should social choices be made to shape technology towards the aspiration of human empowerment?

Technology has an inherent ambivalence. It is fascinating to see how a technology that has strong military roots and is primarily designed and developed to support centralized, bureaucratic structures and to serve largely destructive purposes, evolved into an instrument used for interactive communications within almost anarchistic environments and for constructive, progressive perspectives.

INFORMATION SOCIETY: THE UTOPIAN SCENARIO

This scenario couches its support for the deployment of ICTs in such terms as “new civilization”, “information revolution”, or “knowledge society”. This reflects an emphasis on historical discontinuity as a major consequence of technological developments. New social values will evolve, new social relations will develop, and the widespread access to the crucial resource information will bring the “zero sum society” to a definite end. The “utopian” scenario forecasts radical changes in economics, politics and culture.

In the economy: ICTs will expand productivity and improve chances for employment. It will upgrade the quality of work in many occupations. It will also offer myriad opportunities for small-scale, independent and decentralized forms of production.

In politics: decentralized and increased access to unprecedented volumes of information will improve the process of democratization; all people will be empowered to participate in public decision-making.

In culture: new and creative lifestyles will emerge as well as vastly extended opportunities for different cultures to meet and understand each other, new virtual communities will be created that easily cross all the traditional borderlines of age, gender, race, and religion.

INFORMATION SOCIETY: THE DYSTOPIAN SCENARIO

Critical analysts reject the idea of discontinuity and stress the incorporation of ICT-deployment in the historical continuity of socio-economic disparities, inequalities in political power, and gaps between knowledge elites and knowledge-disenfranchised.

On the economic level this scenario forecasts a perpetuation of the capitalist mode of production with a further refinement of managerial control over production processes. It foresees in most countries massive job displacement and de-skilling.

In politics the expectation is that a pseudo-democracy emerges that allows all people to participate in marginal decisions only. ICTs enable governments to surveill their citizens more effectively than before. The proliferation of ICTs in the home will individualize information consumption to the extent where the formation of a democratic, public opinion becomes an illusion. Cultural developments will be characterized by the divergent and antagonistic processes of a forceful cultural "globalization" (homogenizing the world's ways of life into the mould of global "Disneyfication") versus an aggressive cultural "tribalization" (fragmenting cultural communities into fundamentalist cells with little or no understanding of different "tribes").

Surveying the current literature and policy papers of many public and private institutions, it is obvious that the utopian and discontinuity claims generally have more support than the anti-utopian, continuity counter-claims.

The prevailing scenarios are based upon the claim that a fundamental technological revolution is taking place, which inevitably entails a radical social transformation. The conventional framework suggests that changes in ICTs (labelled as revolutionary) cause changes in society (also labelled as revolutionary). These changes provide the basis for claims to utopian versus anti-utopian scenarios. The key assumption is that there is an information revolution. Basic to this social revolution is a technological revolution, which is unlike all previous technological developments.

The information revolution will lead to the creation of the Global Information Society. This society is fundamentally different from earlier societies. It is a post-industrial society and the implication that the way we live, work, play, organize our societies and define ourselves will be transformed. Against this dominant perspective some critical footnotes have to be presented.

TECHNOLOGICAL REVOLUTION?

Technical developments can hardly ever be described as radical breakthroughs since they usually have long histories of earlier technical discoveries and applications. Studies on technological inventions usually demonstrate that innovations have (often long) pre-histories of conceptual and technical developments. Also today's ICTs evolve quite logically from earlier technological generations. Size diminishes, speed increases, and capacity expands. But this is hardly revolutionary. Almost all developments today are just further refinement of what is there already.

New ICTs are often old ICTs provided with gradual upgrading and enhancement. Most of today's developments are gradual innovations that fuse existing technologies such as computing and consumer electronics by, for example, adding high-quality audio and video-features to the PC, or making it possible to surf the WWW on the TV screen.

The ICT-industry promises to deliver shortly more powerful video-game players, cable TV set-top boxes for interactive and on-demand television, digital TVsets, digital videodiscs, intelligent home systems in alarm clocks, wireless phones with computing capability. Most of these developments are new but hardly revolutionary developments. Most of them add more processing power to the already existing tools such as television sets, home video-recorders, and telephones.

SOCIAL REVOLUTION?

In general, the processes of social transformation resulting from the interaction between socio-economic variables and technological innovation are most adequately analyzed in terms of gradual change. There are certainly important social processes at play in relation to the application of ICTs. But it is not certain that these processes usher in a totally new society. It is usually argued that, in the transition from an agricultural society to an industrial society, and from an industrial society to an Information Society, the sources of social power shift. It may be that the sources of power changed from land ownership to capital ownership, and from capital ownership to information ownership; but what fundamental difference does this make when, after every shift, there is a new elite (usually evolving from the old one) controlling access to the source of power? History may on reflection turn out to be more a continuous process than the “watershed” protagonists want us to believe.

What we experience in our era can often be explained a mere continuation of the historical process. Rather than thinking in terms of a revolutionary change from the past, or a radically new “paradigm” the “Information Society” can be described as a logical sequence to previous historical phases.

RISKS OF DISEMPOWERMENT IN THE INFORMATION SOCIETY

In much of the literature, the press and popular debate on the Information Society is heralded as a social arrangement that promises new forms of power to people.

Against such promising perspectives we need to be reminded that also strong disempowering effects are a realistic possibility. Disempowerment literally means making people powerless. The concept refers to a process in which people loose the capacity to control decisions affecting their lives. Disempowerment is the reduction of people's ability to

define themselves and to construct their own identities. Human disempowerment in the Information Society can be caused by (among other variables) the following factors:

a. Exclusion from the Information Society

The socio-economic and technical developments that are basic to the emergence of the Information Society are highly unequally distributed across the globe.

There is today a starkly unequal distribution of ICT resources in the world. In so far as ICTs assist human empowerment, a large proportion of the world population is excluded from these benefits. This holds true not only in terms of the ICT-infrastructure but also in terms of its knowledge content.

There is today certainly not a global Information Society. Moreover, between and within most societies the linking into ICT-developments is very much divided across lines of gender, age, ethnicity, education and income. This implies that whatever disempowering or self-empowering takes place it will affect different people and social groups in different ways.

There is nowhere in the world a homogenous or inclusive process towards an Information Society.

Globally there are today stark inequalities in both access to and use of ICTs. “The network society is creating parallel communication systems: one for those with income, education and -literally- connections, giving plentiful information at low cost and high speed; the other for those without connections, blocked by high barriers of time, cost and uncertainty and dependent on outdated information” (UNDP, 1999: 63).

Unequal access holds for all new networks and services. In rich countries one finds 84% of cellular phone users, 91% of fax machines, and 97% of all Internet host computers (OECD, 1998).

In 2001 over 300 million people use electronic mail. This represents some 5% of the world population. Over 80% of e-mail users are in North America and Europe.

Access to global electronic networks is mainly available to those with good education and those living in the OECD countries with sufficient disposable income. In most countries, men dominate access to the Internet and young people are more likely to have access than the elderly. Ethnicity is an important factor and in many countries the differences in use by ethnic groups has widened. “English is used in almost 80% of Websites and in the common user interfaces the graphics and instructions. Yet less than 1 in 10 people world-wide speaks the language” (UNDP, 1999: 62).

A particularly skewed distribution of ICT resources and uses concerns the position of women across the world. An immediate problem is the fact that ICT skills are largely based on literacy. Actually, "...it seems likely that the vast majority of the illiterate population will be excluded from the emerging knowledge societies" (Mansell and Wehn, 1998: 35). This affects women especially, since around the world illiteracy rates for women are higher than for men. According to the latest data from UNICEF, there are among the one billion illiterates in the world some 130 million children. Among these kids for whom there are no schools, two of every three in the developing world is a girl (UNICEF, 1999).

There is also worldwide a skewed distribution of knowledge. Using a variety of indicators (such as enrolment in educational institutions, ownership of patents) it can be documented that there is a skewed global distribution of knowledge. Research & Development is shifting further away from the developing countries. In the 1980s they held 6% of the global total R&D investments and in the 1990s this is 4%. Industrial countries hold 97% of all patents worldwide. In 1995 more than half of all global royalties and licensing fees were paid to the United States of America, mostly from Japan, United Kingdom, France, Germany and The Netherlands. More than 80% of patents granted in developing countries belong to residents of industrial countries.

The unequal distribution of knowledge is reinforced by a strong trend toward the privatization and commercialization of knowledge sources and the concurrent enforcement of legal measures to protect private intellectual property. The currently emerging global regime for Intellectual Property Rights (IPR) tends to give more emphasis to the economic aspects of IPR protection than to public interest considerations. There is a dominant economic angle from which this regime is constructed in ways that prioritize the interests of large producers over small creators and over consumers. The central focus is more on the misappropriation of corporate property than on the creation of the widest possible, affordable public access.

The present development to bring public domain materials under IPR protection when they are put in electronic databases could render access to knowledge more costly and thus prohibitive for large numbers of people. Also the initiative to extend copyright protection to all forms of digital copying could make the Internet a pay-per-view medium that creates obstacles in accessing knowledge.

b. Digital dependency

Almost total dependency upon a complex technological infrastructure disempowers people since it increasingly delegates important decisions to electronic systems. These systems tend to be ill-

understood, unreliable and very vulnerable to interference (by technical malfunctioning, by human error or by devious intent). Where ICTs are more readily available, their many different applications ranging from electronic mail to e-commerce pervade a wide range of social domains and have serious impact on national economies and private lives.

As more and more social domains (like banking, telecommunications air traffic, or energy supply) become dependent upon cyberspace technology, society's vulnerability to malfunctioning of the technological infrastructure raises the possibility of serious destabilization. Among the possible causes are software failures and deliberate destruction of computer systems.

We find today that digital systems are applied in a wide variety of applications - from microwave ovens to cockpits of airplanes. Such systems are guided by software. This implies that the instructions for the actions that systems must perform are written in thousands of rules in a computer programme. The obvious intention is that the systems do precisely what they are instructed to do. Often this works well. But all computer users are familiar with the nuisance of computer programmes that malfunction or with programmes that - upon their installation - delete existing software. Since even the simple PC is never fully reliable, users are constantly advised to make so-called “backups”.

In general, it has to be said that digital systems are unreliable. In many big projects, the software demonstrates serious flaws. Such problems are known since the 1960s but have still not been satisfactorily resolved.

Much work is at present done to improve the reliability of essential software. All kinds of control mechanisms are explored that would detect failures much earlier. The production of software has certainly improved in the past years and will be further refined by the application of more strict methodologies in software design. However it is not possible to completely avoid errors. Error-free software remains - possibly forever - a dream.

One important problem in this context is that measures to make software more secure always cost time and money. There is always the need to balance these costs against the consequences of possible failure.

c. Surveillance in the Information Society

In many countries electronic surveillance is mushrooming. Through video camera's in public spaces, bugging of telephone calls, credit card firms, scanners in supermarkets, “cookies” on the World Wide Web and international spy-satellites. As the scope of “surveillance” in a society grows, the confidentiality of communications diminishes. Digitization renders surveillance easy and attractive. It facilitates what governments

have always wanted to do: to collect as much information as possible about those they govern. Because of technological limitations, this was always a difficult job. However, recent technological innovations have made grand scale spying rather simple. One consequence is that the trading of surveillance technology from rich to poor countries has become an attractive sideline for the world's arms traders. Digitization facilitates the monitoring of all communications through fax-machines, telephones (particularly mobile phones) and computers. It has become technically relatively easy to register all traffic that uses GSM cellular telephones. The computer systems of telecom service providers can register where mobile phones are even when they are not used for calls but switched on to receive voice mail. In many of the digitally advanced countries the state has a strong desire to monitor civil electronic communications. The crucial argument is that, although this violates people's privacy, it is inevitable to guarantee security. As state institutions can compose rather precise profiles of the communications traffic of their citizens, the inequality in power relations between states and citizens increases. The civil claim to confidentiality of personal communications is violated and the principle of information security is seriously eroded.

The permanent surveillance of people hampers their free participation in communication and information traffic. When personal data about individuals are collected, processed, stored and retrieved without their consent, their information security is under threat. People across the world face today a rapid proliferation and globalization of uncontrollable forms of electronic control by law enforcement agencies and commercial companies. The current practices of both governments (the increasing use of surveillance technologies for law enforcement and national security purposes) and commercial companies (the use of surveillance technologies for management purposes and the use of datamining technologies for marketing purposes) erode the principle of information security.

d. Censorship in the Information Society

All forms of communication are under threat of censorship. Each day people become victims of censorship measures. Journalists are killed, writers detained, radio stations blown up and films prohibited. Less dramatically, but even more frequently, children are silenced by their parents and employees regularly find their right to free speech restricted. Censorship is common to all types of regimes: authoritarian, totalitarian, or liberal-democratic and to all kinds of human relationships. Not only the creative elites fall prey to censorship but in fact all those who want to be informed about what happens in the world.

Initially it looked as if with the development of the new information and communication technologies (and particularly their manifestation through the Internet) a new and completely free, almost anarchistic space was created where state censors had no power. The first cybernauts certainly expected that virtual communication spaces would be exempt from state interference. To some extent this expectation has come true. There is already a series of illustrative moments where Internet communications have escaped state censorship. Dissident movements across the world (in Cambodia, Indonesia, Mexico, Sri Lanka and Tibet) have begun to use the Internet in their cause for political freedom. This is possible because it is indeed difficult to silence electronic communication through global networks. Materials can be distributed through many different channels and networks. As an Internet newsgroup gets closed down, the materials can move to other virtual spaces somewhere else in cyberspace. Users can substitute one Internet provider for another with relative ease. Messages can be distributed through secret codes. For a really effective control one needs the assistance of the so-called Inter Service Providers (ISPs). But if they are willing to co-operate, they will have to violate the privacies of their clients in the process.

Although it may be complicated for national governments to establish national control over a global network, it is not fully impossible. The computers that provide access to the network are placed not in virtual but in concrete physical space and they belong to persons who fall under national jurisdictions. National lawmakers could in principle restrict the operations of both providers and users to a considerable extent. Such laws could be ignored, obviously, but that is not necessarily an attractive proposition in all countries, and least in authoritarian countries. Moreover, there is always the albeit remote possibility that national governments join forces and co-operate in efforts to curb network communications. Eventually, the censorship measures in one country can only be evaded through other countries with which no extradition agreements exist. Around the world governments have undertaken efforts at forms of regulation of Internet traffic.

It should be realized that state censorship is - despite the decentralized nature of the networks - certainly possible. It is not so much the technical nature of the Net - as is often claimed - that hampers censorship, but rather the lack of international legal co-operation. A real concern is that the justified anxiety about child pornography could be used by states to introduce forms of censorship. The trouble is that however justified this censorship would be, it would easily and uncontrollably spill over in less legitimate, but politically convenient forms of silencing dissident voices.

It is ironic that exactly the technical infrastructure of cyberspace communications causes a considerable vulnerability to censorship measures. As long as access to telephone lines and electricity is required, there is ample possibility for interference. This infrastructure also makes control by industrial interests a real possibility. To partake of cyberspace traffic the Internet user must connect with a local Internet Service Provider. This ISP must connect with the chief transporters of Internet communications. At present over three quarters of this global traffic is carried by one company: MCI/WorldCom/Sprint.

The key resource of electronic communications is the electromagnetic spectrum that carries all the frequencies for radio, TV, Internet and mobile communications. Whereas the electromagnetic spectrum has always been considered “common good”, the recent trend is towards its privatization. The American Federal Communications Commission is at present studying a proposal to transfer the spectrum to its main users and grant them permission to sub-lease their frequencies to secondary markets. The implication is that the Electro Magnetic Spectrum (EMS) of the United States of America would be controlled by handful of major media conglomerates. If this trends would spread globally, the end result is that the world's frequencies are in the hands of the leading global media giants with an unprecedented power to control access to global communications. This will cause insurmountable obstacles to the right to communicate for the world's majority and will filter away all those opinions that threaten the business interests of the transnational EMS-controllers. The end result will be massive disempowerment.

e. The future does not need the human species anymore: the ultimate disempowerment

It is increasingly clear that human beings adapt themselves to artificial environments and are equipped (through regenerative surgery) with artificial limbs, blood vessels, hearts, livers and bones. This in fact renders the question whether robots resemble human beings as intriguing as whether humans resemble robots. In science fiction the borderlines between human beings and their technology have already disappeared in the manifestation of the “cyborg”. The cyborg is a combination of cybernetic technology and biological organism. This bionic creature is more than a fiction since so many cybernetic tools can already be constructed within the human organism (pacemakers, for example).

In any case the distinctions between human beings and technological products begin to blur. A shadowy domain evolves where robots learn from their mistakes and people talk to intelligent ovens. Appliances have begun to run parts of our daily lives in self-learning microwave ovens, through light switches that can be programmed, cruise controls in automobiles and alarm clocks that inform coffee makers. These

tools demonstrate certain behaviour and we increasingly trust them to carry out our instructions with a high degree of precision and reliability. In principle we could programme such appliances such as to realize that they fail in their performance and make them offer their apologies to their masters.

Let us assume that new types of human intelligence could be developed that would be superior to the capacities of the human species. The confrontation between the human being and the humanoid digital system (the “cyborg”) creates a fundamentally new situation for moral philosophy. The cyborg presupposes a development by which digital electronics is deployed within the human body and human brainpower is linked to cybernetic systems. This would seem to belong to the realm of science fiction and there is indeed no possibility to predict with any certainty, which forms of digital life this leads us to. Since there are no indications that human beings will be held back by moral considerations in the search for the possibility of “virtual people”, it is only reasonable to not discard the evolution of a new humanoid species, more intelligent than human beings. This would raise the real possibility that the future does not need the human species anymore.

SELF-EMPOWERMENT

ICTs have extraordinary potential for human empowerment. However the realization of this potential will not depend upon features of the technology itself, but upon the political decisions and the institutional arrangements that govern their deployment. At present the dominant global governance structures - through such institutions like the World Trade Organization and its policies on the trade of telecom services and the protection of intellectual property rights - do not augur well for an equitable accessibility of the technology and a deployment thereof inspired by public interest motives.

Self-empowerment literally means that people make themselves powerful. The concept refers to a process in which people *libertae* themselves from all those forces that prevent from controlling decisions affecting their lives. In the process of self-empowerment the disempowered participate actively in their own empowerment. They no longer leave decisions to others. They arrive independently at conclusions, they create their own space, define themselves and create chances for unfolding their identities.

ICTs can play a significant role in the process of self-empowerment. Self-empowerment needs knowledge about decisions affecting people's lives and information on what they can do about these decisions. There can be no doubt that the development of a tool such as the World Wide Web provides people around the globe with unprecedented potential to search and find information on matters that affect them.

Human self-empowerment requires the availability of public spaces for social dialogue and the accessibility of information and knowledge. In other words, it requires an infrastructure that consists of:

- channels through which knowledge and experiences can be published to multiple audiences;
- networks for deliberation and exchange among audiences;
- sites where information/knowledge sources can be consulted and vehicles to visit these sites.

The new ICTs have a promising potential for these requirements. They facilitate the creation of open fora where knowledge and experience can be shared and development choices can be deliberated. ICTs also offer channels and networks for access to unprecedented large volumes of information and to those individuals and institutions that can assist in the transformation of all that information into applicable knowledge.

Global activists such as the *Zapatistas* in Chiapas, women's groups around the world, the participants in the ATTAC movement, and those who mobilized the anti-MAI (Multilateral Agreement on Investments) campaign have already made a creative use of this ICT potential.

The ICTs have also unprecedented potential for new forms of education and new more direct forms of democratic participation. Educational facilities can be improved by providing distant learning and on-line library access and there are very promising pilot projects in countries such as Canada where over 10,000 schools have been linked electronically for the provision of a host of on-line services. Electronic networking has also been used in the improvement of the quality of health services by remote access to the best diagnostic and healing practices and - in the process - by cutting down costs.

Digital technologies for remote resource sensing can provide early warning to sites vulnerable to seismic disturbances, or can identify suitable land for crop cultivation. Computer technology can assist the development of flexible, decentralized, and small-scale industrial production. Thus the competitive position of local manufacturing and service industries can be improved. In a number of countries (Brazil, Hong Kong, Singapore) the introduction of computer-aided manufacturing (CAM) technologies has been very successful in small-scale industries. The World Commission on Environment and Development, in its report “Our Common Future” suggests (1987: 215), “New technologies in communication, information and process control allow the establishment of small-scale, decentralized, widely dispersed industries, thus reducing the levels of pollution and other impacts on the local environment”.

The currently available computer-communication technologies make it fairly easy for PC users around the world to create a public sphere in "cyberspace". Using personal computers, modems, and telephone lines, new global communities are established. Increasingly, also Third World organizations find it possible to join these forms of horizontal, non-hierarchical exchange that already have demonstrated to be able to counter censorship and disinformation.

From ecological movements, human rights activists, farmers, senior citizens, to the *Zapatistas* and the women's groups attending the Bejing NGO-women's summit, an impressive use has been made of the new, fast, reliable and effective networks of communication. Combining telecommunication technologies with desktop publishing software creates new opportunities for even the smallest action group to disseminate its messages across the globe at relative ease and at minimal expense.

In the late 1980s and early 1990s through various aid projects, electronic information systems have been introduced into rural health services (India), agricultural extension (Peru), infrastructural development (e.g. railroads in Pakistan), or energy management (Malaysia). In some developing countries special computer training courses have been developed in schools and colleges (Sri Lanka).

MORAL RESPONSIBILITY AND GOVERNANCE OF THE INFORMATION SOCIETY

A society that would responsibly deal with future technological developments and applications should realize that the core of the matter does not rest with the new technologies, but with the quality of its governance.

There is today a worldwide trend for governments to delegate the responsibility for basic social choices to the marketplace. The democratic control of important social domains is thus increasingly eroded without any major societal debate. Following their desire to deregulate, liberalize and privatize, many governments are leaving the governance of the new information and communication technologies in the hands of private entrepreneurs. The European Commission's Action Plan "Europe's Way to the Information Society" (17 July 1994) - for example - states that European regulation must promote the mechanisms of the marketplace. The Commission proposes that through liberalization a competitive climate can be created within which the forces of the market can freely operate. "The creation of the Information Society will be entrusted to the private sector..." (p. 10).

One implication is that the realization of the social potential of ICTs comes to depend more on investment decisions than on considerations of common welfare. For anyone who cherishes the democratic ideal, this is a regrettably short-sighted position that demonstrates a basic lack of

democratic sensitivity. If democracy represents the notion that all people should participate in those decisions that shape their future welfare, such social forces, as the new technologies, cannot just be left to the interests and stakes of commercial parties on the market. If we are serious about the democratic nature of our societies, there should be a public responsibility in such a crucial domain as the design, development, and deployment of the new information and communication technologies.

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INDIVIDUAL EXPECTATIONS, DEMOCRATIC PARTICIPATION AND SOCIAL EXCLUSION IN THE INFORMATION SOCIETY

by Mr David KONZEVIK (Mexico)
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TWENTY THESES AND ONE PROPOSAL

1) At the dawn of the new millennium, the single most important and urgent economic, political, and social phenomenon in emerging countries is "The Expectations Revolution."

2) No economic, political or social indicator is growing as fast as the individual expectations in emerging countries. The consequences of this phenomenon are starting to manifest themselves dramatically all around the world.

3) Governments and international institutions do not make a clear distinction between "absolute poverty", and "relative poverty". The former includes the miserable, and is clearly defined. The latter includes the miserable, the poor, and the middle classes.

4) The Information Revolution is the mother of the expectations revolution, and also of the current globalization process. Therefore, these two phenomena cannot be analyzed in depth without reflecting on their origin. Is it perhaps, as Napoleon used to say that nothing, not even the best army in the world, can stop an idea whose time has come.

5) The information revolution, the true engine of the knowledge society, comes at a time when almost all of the emerging nations have structural deficiencies that it will take time to overcome. Do they have such a time?

6) The arrival of the virtual world, which, along with the mapping of the human genome, is perhaps the most important event of our generation, brings about a radical change in the classical time and distance dimensions. This induces a profound existential confusion in the current generation, i.e., those who were born before the eighties.

7) A consequence of the current confusion and disorientation, which is not limited to emerging countries, is what I call "modern man's schizophrenia".

8) Confronted with the growing gap between themselves and the first world in the knowledge society, emerging nations have a pressing need for a qualitative leap, because homeopathic quantitative increments will not forestall the incipient breakdown of the social contract that is already being observed in many of these countries.

9) The worldwide unification of the economic model at all costs, disregarding the cultures and subcultures of each country, is leading to alarming social tensions.

10) Behind the phenomenon of individual expectations, of social exclusion and democratic participation, is the culture of each nation's inhabitants, the departure and arrival point for every analysis of this issue.

11) It is difficult to find examples of high economic growth with low inflation for periods of ten consecutive years in emerging countries with a democratic regime. Why?

12) What we do observe in democratic emerging countries is a sort of *corsi e ricors*, where material well being advances and then retreats, sometimes as far back as it was decades ago. What continue to move forward, uncontainable, are the individual expectations.

13) The information revolution and its offspring - globalization, the explosion of knowledge, and the expectations revolution - have shattered the paradigms upon which traditional democracy, politics, economics, business, and education used to rest.

14) The change in the notion of time and space has rendered traditional democracy in emerging countries inefficient. The new democracy now requires an adjective.

15) Globalization inflicts a mortal wound on traditional democracy, which is based on voters who exercise their right once every so many years, by creating a second kind of voters, as important or more important than the former, and with generally conflicting interests. It is the new Scilla and Charibdis of the politicians in the new millennium.

16) The Information Society leaves traditional social outcasts untouched, and creates a generation of new social outcasts, produced by virtue of their illiteracy in the new languages imposed by that society.

17) Today, the name of the game for the majority of mankind is not wondering whether the countries in which they live are headed in the right direction. The truly relevant question is whether they are moving fast enough.

18) In the Information Society, power factors shift, and emerging countries, with few exceptions, have failed to realize who the new protagonists are.

19) For decades, many emerging nations have been caught up in a perverse vicious circle. Tired of a disappointing government, people claim: “We do not want this terrible reality, we want promises.” The opposition, who offers those promises, wins, and when the opposition becomes government people change their claim: “Enough promises, we want realities.” And so on, and on, ad infinitum, in a pendulum of sorts that, all too often, excludes parties and involves the military.

20) In the Information Society, the wings will defeat the roots, and this phenomenon, already in motion, will give rise to a problem of incommensurable magnitude for emerging countries: the raw material of the knowledge society is talent, and that talent, the development of which exacts a heavy toll on these nations scant resources, will tend to concentrate on a handful of countries, thus widening the gap.

ONE FINAL PROPOSAL

What if, in order to have a preliminary assessment of the nations, cultures, a necessary foundation for any diagnosis and possible solutions, we were to ask in emerging countries what for some time I have been asking participants at the end of my lectures on this topic? “If you were poor, where would you rather live? In a country where the poor man makes 1 dollar and the rich man makes 5, or in another where the poor man makes 5 and the rich man makes 500?”

ETHICS AND INFORMATION TECHNOLOGY: THE PLACE OF HUMAN AND SOCIAL VALUES IN THE INFORMATION SOCIETY

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In this short article, I offer a very general map of the area of social, ethical and political dimensions of information technology. It is necessarily slanted by the issues that I am most familiar with, by my own disciplinary background - philosophy - and the national context in which I work - the United States of America -. But the study of societies and information technology is undertaken from within many disciplines in the social sciences and humanities and there is a multitude of links between and among them. Furthermore, this technology, particularly digital electronic networks, perhaps more than any other, has for years been touted as "global" and an effort has been made by academics and practitioners alike to recognize, celebrate, and study the related social phenomena in global terms.

The story of how information technology has radically altered our lives and even ourselves has been told many times, in many versions. The radical effects of computerization have extended to institutions, social processes, relationships, power structures, work, play, education, and beyond. Although the changes have been varied, affecting the economy, the shape and functioning of organizations, artistic expression, and even conceptions of identity, some of us have focused on changes with an ethical dimension.

I have found it useful to organize this work, which can be summarized under the heading ethical (or social or political) impacts (or implications) of information technology into two categories according to the distinct ways values factor into it.

FOCUSSING ON SOCIAL IMPACTS OF INFORMATION TECHNOLOGY

In one category there is work in which the values at stake, though they are the fundamental motivation for the work, are not themselves the main focus of attention. Thus, when researchers worry about computer

systems replacing humans who act in positions of critical responsibility - prescribing drugs, making investment decisions, controlling aircraft, and so on - they are not questioning the value of responsibility itself. Rather, they assume the centrality of the value and worry that under the new arrangement, lines of accountability and responsibility will be disturbed and possibly erased. Where once we could hold someone responsible for failure and its consequences, now there seems to be a vacuum. When researchers call attention to the digital divide, they are not questioning the value of justice or focussing on justice itself as the subject of their study, rather, they are worried about the possibility that information technology will cause even greater social injustice than we currently experience.

In the other category, however, technology's values form part of the controversy. In the case of intellectual property, for example, some researchers argue that because intellectual production has been so profoundly affected by information technology, it strikes at the heart of previously settled ideas and valuations of intellectual property. Information technology, more than any other technology before it, enables collective production of valuable intellectual works and forces us to rethink essential categories, such as author, artist, and document. And at the same time it forces us to rethink private property rights in light of new production modes (as, for example, in open source software). Privacy offers another case where information technology, as a result of the novel actions it enables - including the capture of trivial bits of data and the ability to aggregate, mine, and analyze them -, forces us to re-examine our beliefs regarding privacy and its normative theories.

In such cases, we cannot simply align the world with the values and principles we adhered to prior to the advent of technological challenges because the technology has placed demands on values and principles for which they have not previously been honed. We need further inquiry into these values and principles to make them more accessible to a world that has been shaped by technologies of information.

FOCUSSING ON SOCIAL VALUES EMBODIED IN INFORMATION TECHNOLOGY

Common to both research categories is the direction of causation: information technology changes the world, and some of these changes challenge previous commitments to values and principles. Yet the idea of values embodied in computer and information systems suggests motion in the opposite direction, from values to technology. Values affect the shape of technologies and because of this, one may need to pay attention to values even as one describes what may appear to be technical features of systems and devices.

Of course, it would be simplistic to suggest that systems and devices embody values as a function merely of their objective shapes. There is a complex interplay among systems and devices, those who design and build them, what these designers and builders have in mind, conditions of use, as well as the natural, cultural, social, and political context in which these systems and devices are embedded. All these factors may feature in an account of the values embodied in them.

Accepting that systems may have moral or political properties has an immediate practical consequence: humanists and social scientists can no longer bracket technical details - leaving them to someone else - as they focus on the social effects of technology. Fastidious attention to the before-and-after picture, however richly painted, is not enough. Sometimes a fine-grained understanding of systems - even down to gritty details of architecture, algorithm, code, and possibly the underlying physical characteristics - plays an essential part in describing and explaining the social, ethical, and political dimensions of new information technologies.

CASES

Several recent dramas played out in the public arena demonstrate why we must maintain a tight link between values and design.

Take, for example, Intel's Pentium III processor chip with its embedded personal serial number. When the uproar over PSN arose, Intel took advocacy groups seriously enough to send executives to discuss a proposed compromise that would, hopefully, stop a threatened boycott. Intel asserted that it designed the PSN to guard against hardware theft and unauthorized copying of software. PSN would also facilitate user security by, for example, authenticating users' identities for e-commerce. Privacy advocates argued that PSN would also facilitate tracking of users' Web activities. Intel's compromise? A software patch that set the PIII's default mode to disable PSN disclosure.

As I watched this story unfold, I wondered why Intel had decided to stamp its new processor with a digital serial number. Had it overlooked the privacy implications, merely hoped no one would notice, or made a considered judgement that the potential security benefits outweighed privacy concerns? Had there been deliberation behind closed doors after some project manager, designer, engineer, or marketing executive alerted company executives to the hazard? Was the decision a sign of carelessness, arrogance, or mere misjudgement? Was Intel out of touch with prevailing values, or did it assume that the company carried enough clout to shape them?

Cases like Intel's PSN are not unique: we have witnessed furor over cookies, consternation over PICS (Platform for Internet Content Selection), raging indignation on both sides of Napster, disappointment over security flaws in Java, and worry about data mining. We need accurate answers to the technical questions these issues raise. Does the software patch for the PIII work? Does Napster make its own copies of the music? How readily can PICS be adapted to individual users' mores? In what ways are we vulnerable to damaging applets? Does data mining generates privacy threats of a new order? In each of these cases, although questions address the system's technical character, they are rooted not in an interest in the technology alone but in a concern - and usually a dispute - over values. That the pursuit of questions about values at times leads necessarily and irrevocably into the entrails of information and computer systems lies at the heart of the idea that systems can embody values.

EXPANDING CRITERIA

But the lesson taught by Pentium III and a multitude of similar cases does not apply to technology-shy humanists and social scientists alone. Scientists and engineers can learn a different lesson from these events: they must expand the set of criteria they would normally use to evaluate systems to incorporate social, ethical, and political criteria. The failure to meet conventional technical criteria did not propel Pentium III, Napster, and data mining into the limelight - the controversial ways these technologies engaged social, ethical, and political values did that.

If these cases can motivate at least some participants in both the technical and non technical worlds, an ideal meeting ground would be to join forces to uncover crucial keys to systematic relationships between systems features on the one hand and values on the other. In turn, this approach might reveal possibilities of incorporating a broader spectrum of perspectives into the design process itself.

The idea of systems embodying values - its practical aspects and challenges - presents disquieting implications for both groups. Usually, social scientists and humanists conceive theory as the highest achievement of their fields. General truths and prescriptions are important because they broadly encompass both time and place. Painstaking attention to cases, from the bottom up, one at a time - as the idea of embodying values in design implies - may seem retrograde. Forget achieving collegial adulation - how can we save the world this way?

Engineers, although accustomed to the idea of building from the bottom up, are burdened in a different way. They face an unfamiliar obligation to perceive not only the usual set of properties that the systems they build or design may embody - efficiency, correctness, elegance,

reliability, and so on - but those systems' moral properties as well - bias, anonymity, privacy, security, and so on. The challenge of building computer systems is transformed into a forum for activism - engineering activism. Not only is such activism a calling for which many may feel unfit, it is also a difficult one.

We may be tempted to conclude from our computing examples that only unusual cases - those that have earned media attention - warrant concern about the values they embody. This is not so. While neither every conceivable device nor every aspect of design has significant value dimensions, moral properties are common. For any number of devices and systems we encounter at home, work, and play, we should ask questions about the values they embody. Questions such as the following may apply:

- What values do they embody?
- Is their locus of control centralized or decentralized?
- Are their workings transparent or opaque?
- Do they support balanced terms of information exchange?
- Do they unfairly discriminate against specific sectors of potential users?
- Do they enhance or diminish the possibility of trust?

Engineering activism means posing these and similar questions and, where possible, doing something about them.

It may be difficult to address such questions, however, because factors in the real world - such as bosses, shareholders, regulations, competitors, and resource limits - can prove hostile to yet another layer of constraints. Yet tempting as it may be to ignore value properties, doing so will not make them go away. Systems and devices will embody values whether or not we intend or want them to. Ignoring values risks surrendering the determination of this important dimension to chance or some other force.

THE PLACE OF HUMAN AND SOCIAL VALUES IN THE INFORMATION SOCIETY?

I return, now, to the question with which I was charged - the place of values in the Information Society - interpreting the question in this way: if we are interested in discovering the effects of technology on human and social values and if we are concerned to maintain an ongoing commitment to important values, where should we be focussing attention and effort?

I propose three important points of focus: 1) the collective; 2) the engineering enterprise; 3) the individual.

1. The collective

By this I mean public and especially regulatory institutions such as national and local governments - as well as other governing and advisory bodies - national as well as international. Many issues related to the governance of the Information Society have come before governments, upon which they have been called to regulate. How many of these issues are settled has a bearing on values: privacy, intellectual property, governance, speech and censorship are just a few. There are important economic and political dimensions to these problems but we, as collectives, should keep a bright focus on the values at stake.

2. The engineering enterprise

Although this may not be immediately obvious, I have tried above to explain why this venue is so important for social, political and moral values. Those who design and build information systems need to be sensitive to the value dimensions of their work. It will be important to develop a methodology both to guide engineering practice and to enlighten humanistic understandings in order to come closer to having and living with technologies that are compatible with our value commitments. Another venue for the consideration of values in the engineering enterprise and that is within professional guidelines that articulate the responsibilities of the engineers and designers of information technology. Here we need robust communication between the professionals and society at large.

We would urge the engineering enterprise (individuals and industrial organizations) to embrace the challenge of values in the Information Society as well as they can and sometimes only by degrees. This can include: advising others, especially those with less technical know-how, on the gritty workings of systems and devices that may be systematically related to values; advocating on behalf of values by sharing the moral and political implications of technical features with those who have the power to shape our profession, including managers, co-workers, regulators, professional organizations, and standards-setting bodies. And finally, to act, make, build, or design the necessary changes, to the extent that it is possible.

3. The individual

What are the duties and responsibilities of the individual in an Information Society? What should our expectations and hopes be? It is important, when designing information systems and when devising policy to think realistically about the actions and principles guiding actions of people. We must articulate what comprises good and bad behaviour in a computerized world. We should seek ways to encourage deliberation on

these subjects in a way that speaks to individual quality of life and is not overly influenced by vested interests. Important for us will be questions of how to balance individual needs for freedom, autonomy, and responsibility with institutional needs for order and compliance. Many of the controversial issues involving property rights, privacy, autonomy, and security involve a quest for such balancing. And beyond these, we can explore questions about information technology and quality of life.

THE FUTURE OF THE INFORMATION SOCIETY: THE SOCIETY OF KNOWLEDGE

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KNOWLEDGE AND INFORMATION

Echoing T.S. Eliot's famous lines from the early 1930s, "Where is the wisdom we have lost in knowledge? Where is the knowledge we have lost in information?" John Naisbitt in his popular book "Megatrends" (1982) bemoans the phenomenon that the world is "wallowing in detail, drowning in information, but is starved for knowledge." Naisbitt's formulation is taken up by Vartan Gregorian among many others, in an address given in 1992.[1] Gregorian here also refers to Carlos Fuentes as saying that "one of the greatest challenges facing modern society and contemporary civilization is how to transform information into knowledge." The conclusion Gregorian reaches is that today's educational institutions must be careful to "provide not just information, but its distillation, namely knowledge".

The notion that "information" is somehow inferior to "knowledge" is not of recent origin. Although the Latin word *informare*, meaning the action of forming matter, such as stone, wood, leather, etc., also took on the senses "to instruct", "to educate", "to form an idea"[2] - Cicero's *informare deos coniectura* was explained as *imaginer en son esprit et conjecturer quels sont les dieux* by Robert Estienne in his *Dictionarium Latinogallicum* (1552), *informare* in Italian, *informer* in French, and "to inform" in English from the beginning had the connotation of conveying knowledge that is merely particular. Perhaps another Latin word, *informis* - meaning unshapen, formless - had, with its French and English derivatives (*informe*, "inform"), a certain coincidental effect here. To have information amounted to knowing details, possibly unconnected. Hence the use of the word "information" in the contexts of criminal accusation, charge, legal process. John Locke, in his Essay Concerning Human Understanding (1690), might have thought that "information" had to do with "truth and real

1 See http://www.cni.org/docs/tsh/Keynote.html

2. Recall, also, the original meaning of the Greek words *eidos* or *idea*: "pattern", "visual form".

knowledge"[3]. However, what the *OED* refers to as the "prevailing mod. Sense" of "inform", namely "to impart knowledge of some particular fact or occurrence", or the *Larousse* phrase *informer quelqu'un de quelque chose*, indeed appear to capture the essentials of the concept.

Thus Roszak can correctly point out, in his "The Cult of Information" (1986), that in the days of his childhood, shortly before the outbreak of World War II, "information" was a dull word, referring to answers to concrete questions, having the form of names, numbers, dates, etc. With Shannon's and Weaver's technical concept of information, put forward in "The Mathematical Theory of Communication" (1949), and with the emergence of computers, it also became a misleading - and glorious - word. Attempts at clarification of course abound.[4] Daniel Bell made such an attempt in 1979, writing: "By information I mean data processing in the broadest sense; the storage, retrieval, and processing of data becomes the essential resource for all economic and social exchanges. ... By knowledge, I mean an organized set of statements of facts or ideas, presenting a reasoned judgement or an experimental result, which is transmitted to others through some communication medium in some systematic form".[5]

INFORMATION OVERLOAD

Information is not yet knowledge; we are, then, certainly justified in believing that specific efforts are needed if the future Information Society is to become a society of knowledge. As was formulated in the opening

3. Cf. book 3, chapter 10, sect. 34.

4. As Roszak, in an often-quoted passage, puts it: "Information is an idea that has been given a form, such as the spoken or written word. It is a means of representing an image or thought so that it can be communicated from one mind to another. Rather than worrying about all the information afloat in the world, we must ask ourselves what matters to us, what do we want to know. It's having ideas and learning to deal with issues that is important, not accumulating lots and lots of data".

5. Bell, *The Social Framework of the Information Society*, in M. L. Dertouzos and Joel Moses, eds., *The Computer Age: A Twenty-Year View*, Cambridge, Mass.: MIT Press, 1979, p.168. - Compare Alvin Toffler, *Powershift: Knowledge, Wealth, and Violence at the Edge of the 21st Century*, New York: Bantam Books, 1990: "There are, of course, as many definitions of knowledge as there are people who regard themselves as knowledgeable. Matters grow worse when words like signs, symbols, and imagery are given highly technical meanings. And the confusion is heightened when we discover that the famous definition of information by Claude Shannon and Waren Weaver, who helped found information science, while useful for technological purposes, has no bearing on semantic meaning or the 'content' of communication. - In general, in the pages ahead, data will mean more or less unconnected 'facts'; information will refer to data that have been fitted into categories and classification schemes or other patterns; and knowledge will mean information that has been further refined into more general statements. But to avoid tedious repetition, all three terms may sometimes be used interchangeably." (p.18) - Less useful, for our present purposes, is Dretske's well-known distinction: "Roughly speaking, information is that commodity capable of yielding knowledge, and what information a signal carries is what we can learn from it" (Fred I. Dretske, *Knowledge and the Flow of Information*, Oxford: Basil Blackwell, 1981, p.44).

speech of H. E. Mrs. Vigdís Finnbogadóttir at the Conference INFO*ethics* 2000" (Paris, Nov. 2000), there is a "long way to go in the evolution of mentalities to properly draw the line of development, which passes from information to "knowledge"; and from communication to "understanding". And the main obstacle on that way appears to be, precisely, the phenomenon of "information overload" - which there is "too much" information, and that it is "inadequately organized". As the same speech has felicitously put it: "if access to information has to be the way for individuals and communities to reach authentic self-determination, our attention should also be focused on the need ... for the right not to be overwhelmed and alienated by the uncontrolled plethora of information coming from outside. The right to a "responsible adaptation", to make information appropriate to one's own needs and ways of life. ... An appropriation of information which..., before being universal, has to be sustainable".

Now long before the phrase "information overload" became current, the idea of there being a vast universe of knowledge impossible to navigate already occupied the educated mind. As Rolf Engelsing wrote in a classic paper: *Noch an der Wende vom 18. zum 19. Jahrhundert war - oder erschien wenigstens - die wissenschaftliche Produktion erst so weit ausgedehnt, daß die bedeutenderen Fachgelehrten ihren Bereich ungefähr zu überblicken und über die Neuerscheinungen auf dem laufenden zu sein glaubten. ... Im 19. Jahrhundert machte die Ausdehnung der wissenschaftlichen Produktion das frühere Vertrauen der Gelehrten auf ihre fachliche Universalität fragwürdig*[6]. Nietzsche first drew the philosophical implications of this state of affairs. "Modern man", he wrote in his "On the Use and Abuse of History for Life" (1873): "finally drags a huge crowd of indigestible rocks of knowledge around inside him..."[7]. By the mid-twentieth century, decades before the advent of personal computers and electronic networking, it has become a philosophically trivial thesis that the world of knowledge was too immense to permit any kind of overall grasp, and that, consequently, the supposition of a single, coherent reality was meaningless. Thomas Kuhn's very influential book "The Structure of Scientific Revolutions", published in 1962, in effect argued that divergent scientific theories could not be brought together in an overall explanation of the world. Five years earlier Gaëtan Picon, in the introductory essay to the popular collection he edited, *Panorama des idées contemporaines*, a collection immediately

6. Engelsing, *"Die Perioden in der Lesergeschichte der Neuzeit: Das Statistische Ausmaß und die soziokulturelle Bedeutung der Lektüre*, *Archiv für Geschichte des Buchwesens* 10 [1969], col. 954f.

7. Translation by Ian C. Johnston, cf. http://www.mala.bc.ca/~johnstoi/Nietzsche/history.htm. The German original runs: *"Der moderne Mensch schleppt zuletzt eine ungeheure Menge von unverdaulichen Wissenssteinen mit sich herum...".*

translated into several languages, registered a feeling of disorientation effected the *spécialisation croissante*. This, as he put it, *éloigne de plus en plus de toute image ordonnée du réel. Au monde succèdent les mondes*. *"[D]écentré*", wrote Picon, *le système de la connaissance*, and: *Le monde a éclaté en mondes irréductibles, qui vivent d'une coexistence sans communication ni hiérarchie*.[8]

The present task of overcoming the difficulties of information overload is, then, just a new chapter in the ongoing struggle against knowledge overload. And I think this chapter promises to be a particularly successful one. We have reason to believe that the knowledge possessed by the future Information Society will be of a less alienated kind than that characterizing the culture of the printed book. This is because it will be operational rather than theoretical; concrete rather than abstract; embodied not merely in texts but also in sounds and images; and coming alive in interactions within the community rather than in individual minds. An important development from our point of view here is the emergence of mobile access to information networks:

1) mobile access might bridge the time gaps occurring, e.g. when away on a journey, during which messages and new information tend to become too numerous and dense to handle; also,
2) mobile information is, ideally, situation-bounded, i.e. information in context: knowledge per se. Finally,
3) owning and operating a mobile communication device is in some respects cheaper than setting up and using a desktop connection.[9] Mobile, interactive multimedia networking is, really, a returning to humanity's natural communicational environment on a higher level, the overcoming of informational alienation. Precisely because the net corresponds so closely to the needs of human nature, can one argue, as H. E. Vigdís Finnbogadóttir did in her closing address at the INFO*ethics*'98 congress at Monte-Carlo, for the "Participation Principle": "Every citizen (in the world) should have the right to meaningful participation in the Information Society."[10]

8. Gaëtan Picon (ed.), *Panorama des idées contemporaines*, Paris: 1957, rev. ed. Paris: Gallimard, 1968, pp.17f. and 28.

9. Mobile telephony is not a privilege of rich people, or of rich regions. There is a fascinating little article in the March 3, 2001 issue of The Economist - Mobile phones in India: Another kind of net work - reporting on the way Indian fishermen exploit the advantages of mobile information.

10. See INFO*ethics'98*. Proceedings of the Congress on Ethical, Legal and Societal Challenges of Cyberspace, Monaco: 1998, p.341.

BARRIERS TO PARTICIPATION

There are many barriers to meaningful participation. I will here focus on two such: first, linguistic barriers, most prominently on the global English versus local languages issue - languages of smaller nations; minority languages; local dialects. Secondly, barriers constituted by textuality itself, i.e. the difficulties of conveying multisensorial knowledge via the medium of abstract, linear written language. The first set of these issues was of course prominent at the INFO*ethics*'98 congress, too.

The web seems to protect, rather than to endanger, disadvantaged cultures and, in particular, small languages. As Geoffrey Nunberg has some time ago put it: "In half an hour's wandering around the Net the other day I found discussion groups in more than 60 languages, at which point I stopped counting. ... If you give people a chance, they are less interested in turning the Net into a world forum than a backyard fence".[11] Those living in diaspora, immigrants, ethnic minorities separated by borders - they all can, henceforth, maintain intensive virtual contacts. To maintain a wide diversity of languages on the net is not just a question of linguistic rights; it is also a necessity in terms of making available linguistic frameworks for well-informed and logically coherent thinking, i.e.: a *cognitive* necessity.[12] This is what I take Helmut Schmidt to mean when saying: *Es scheint mir leider zwangsläufig, daß die Globalisierung in Wirtschaft und Wissenschaft, im Internet und im Fernsehen, zur Dominanz des amerikanischen Englisch führen muß - man kann auch sagen: des amerikanisch verkümmerten Englisch. ... Gleichwohl ist aber das Motiv der Bewahrung der eigenen sprachlichen Tradition ein überlebenswichtiges Motiv. Denn wenn die eigene Sprache unterginge oder wenn sie in wenigen Generationen völlig korrumpiert würde, so ginge damit zugleich ein großer Teil der eigenen Kultur verloren - und damit gingen Teile der eigenen Identität verloren*. To preserve the high standards of one's own language amounts, for Schmidt, to a *selbsterzieherische Anstrengung*, namely *die Erziehung zur eigenen Kritikfähigkeit, zur eigenen Urteilsfähigkeit, insbesondere im Zeitalter des*

11. Quoted by The Economist, Dec. 21, 1996, p.48.

12. In my contribution to the INFO*ethics*'98 conference *(Global Education and Local Communities)*, I discussed the possibilities of a virtual university system for Hungary, and singled out the language of instruction as a problem meriting special attention. At the entry level this would, obviously, have to be Hungarian; at higher levels, it appeared to me, it would be a kind of universal English, offering an abundant array of technical concepts, but employing few idioms. Particular questions I thought would have to be considered here are: at roughly what age should the entry level lie? Will it move downward? If yes, might not sub-national dialects gradually supplant literary Hungarian? Or should we aim, rather, at modernizing the Hungarian literary language, enriching it with a vocabulary adequate for the information age, allowing thereby that the switch to English as the language of higher studies would become necessary at a more mature age only - and allowing, indeed, for innovative scientific milieux with Hungarian as at least a second working language? (Cf. INFO*ethics'98*. Proceedings p. 238) - Today I have no doubts anymore that this latter alternative is the only feasible one.

globalen Fernsehens und des globalen Internet[13]. And this is, of course, what Bernard Cassen emphasized almost two decades ago when he argued that the struggle to preserve a national language that is enriched by all aspects of life - including science, technology and cultural aspects - is vital, both economically, culturally and politically. Many scientists, even French ones, said Cassen, are unaware of the social, economic and cultural risks involved in not being able to express oneself in one's native language: however, the transnational ideology of the natural sciences goes hand in hand with that of transnational economic interests. By expressing their thoughts in English, as many scientists are forced to do, they buttress, Cassen argued, American hegemony and make it harder for the broader scientific community and interested laymen to partake of their work[14]. Let us add that linguistic diversity is indispensable, in particular, if the net is to become an organic learning environment, or, in other words, if virtual education is to succeed.

And now to the barriers constituted by verbal language itself. The advent of computer graphics has given new impetus to the construction of "iconic languages", designed to supplement, or even supplant, word languages. There are, also, plans to devise a universal iconic language. Such plans in a sense clash with the trend of English becoming the global language. As it has been put recently: “English, despite the counterclaims of other languages, is the most common second language on the planet. It has been for many years the language of business, of international aviation, and, through the Internet, of telematic communications. Could the dominance of “world English” render the development of visual iconic languages unnecessary?”[15]. The fundamental idea behind building pictorial languages is of course not that of overcoming English, but of overcoming, or rather complementing, textuality as such.

Written language as contrasted with pre-literate spoken language is a cognitively and politically liberating medium; but it can also be a straitjacket, when it comes to conveying concrete perceptual experience. The program of a better integration of text and images was already envisaged by the Austrian sociologist Otto Neurath in the 1920s and 30s. “Frequently it is very hard”, he wrote, “to say in words what is clear straight away to the eye. It is unnecessary to say in words what we are able to make clear by pictures”. Neurath was working towards an

13. Helmut Schmidt, *Globalisierung: Politische, Okonomische und Kulturelle Herausforderungen*, DVA, 1998, pp.125f.

14. B. Cassen, *English Language Imperialism in France*, World View 1983. London: Pluto Press, pp.83f. I am here following the summary given by Olle Findahl, in his *Language in the Age of Satellite Television*, European Journal of Communication, vol. 4 (1989), pp.133-159.

15. Andrew J. King, *On the Possibility and Impossibility of a Universal Iconic Communication System*, in Masoud Yazdani - Philip Barker, eds., *Iconic Communication*, Bristol: Intellect Books, 2000, p.25.

“International System Of Typographic Picture Education”, abbreviated as "isotype”, an interdependent and interconnected system of images, to be used together with *word languages*, yet having a visual logic of its own. Isotype would be two-dimensional, using distinctive conventions, shapes, colours, and so on. Neurath stressed particularly that the elaboration of this picture language was meant to serve a broader aim, that of establishing an international encyclopaedia of common, united knowledge - the “work of our time”, he said[16]. Neurath’s program has been taken up again for instance by Robert E. Horn,[17] and, most recently, by the authors in a volume edited by Masoud Yazdani and Philip Barker[18]. Of course pictorial communication itself is dependent, in part, on cultural and verbal conventions. As it has been often pointed out, pictures are seldom unambiguous; resemblance is a contested notion. However, dynamic as contrasted with static pictures, easily created in today’s digital environments, might well represent a break-through here. As Yazdani writes: “icons can explain themselves (if the need arises) in order to clarify the meaning and provide the context. Such “self explaining icons” use simple animations to help the user understand the meaning of the message clearly and thus avoid the problem of ambiguity associated with static icons[19]. The network environment of the future society of knowledge is likely to be a multimedia environment, with pictures, in particular, acting as extensions of word languages, and themselves constituting a kind of global language.

THE RESPONSIBILITY OF THE INTELLECTUALS

In 1927 Julien Benda published a book with the title *La trahison des clercs*, translated into English as "The Treason of the Intellectuals". Today a new treason of the intellectuals looms. To what extent, and in what ways, pictures can usefully supplement or even supplant texts, to what extent texts on the screen can supplant hardcopy documents, in what ways thought processes are influenced by the specific kind of

16. Otto Neurath, *International Picture Language* (1936), Department of Typography & Graphic Communication, University of Reading, 1980, pp. 26, 65 and 111.

17. *Visual Language: Global Communication for the 21st Century*, Bainbridge Island, WA: MacroVU, 1998.

18. See the reference in note 15 above. As the editors put it in their preface: “some information is communicated better by one medium than by another, as each medium has both constraining and enabling features, while other information is communicated better by a combination of media. ... Do pictures really enhance the communicative power of text? ... How do we combine words with pictures to communicate across cultural barriers? ... ‘iconic communication’ systems could be developed to bridge linguistic and cultural gaps and to provide effective computer-based systems for conveying information on a global scale”.

19. Masoud Yazdani, *Communicating through Icons*, in Yazdani–Barker, eds., p. 63.

organization of texts in a digital environment[20], but also: to what extent a knowledge society must rely on local knowledge of particular facts and traditions as contrasted with global knowledge of general trends and connections, i.e. to what extent mobility in a global world needs to be supplemented by local rootedness, and finally to what extent virtual connections can, or should, supplant personal encounters? All these are[21], psychologically and philosophically speaking, open questions. It is the new responsibility of the intellectuals to face these questions in research and teaching, and indeed to set personal examples. We ought to realize that it is indeed possible to make oneself permanently at home in a place, to commit oneself to one's neighbourhood, participating in place-bound efforts, in local educational efforts, and in efforts to connect the given locality to global networks. It is possible to combine, in the course of one's own intellectual activities, proficiency in the digital medium and networking on the one hand with a commitment to books, real libraries, and the insistence on printouts and hardcopy versions on the other. It is possible to uphold, in one's intellectual environment or range, the idea of some sort of a cultural canon - "local canons", in Fowler's happy phrase[22], or "traditions in the miniature", in Bolter's less felicitous formulation[23]. And it is possible to aim at maintaining a kind of equilibrium between one's virtual and real encounters, and indeed to aim at turning many of the latter into rewarding, rich, and stable acquaintances. If the future Information Society is to become a society of knowledge, new and old patterns of organizing information have to be juxtaposed; web literacy and bookish knowledge have to be synthesized.

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20. By asking this latter question I do not wish to commit myself to any kind of technological determinism. I agree with the UNESCO position as outlined in "Epistemology and Self-Determination: Reflections on Inner and Outer Factors of Self-Consciousness Development and on New Strategies of Manipulation of Personal Consciousness", paper given at the conference *Intellect, Imagination, Intuition: Reflections on the Horizons of Consciousness*, September 17- 21, 2000, St. Petersburg. No genuine transformation of the world can be expected merely from transformations in the realm of communications media; transformations in terms of personal attitudes, values, ideas are indispensable, too. And to point to the role of personal consciousness is, of course, also to point to the responsibility of the intellectuals.

22. Robert M. Fowler, *The Fate of the Notion of Canon in the Electronic Age* (1993), Forum 9 (1996), pp. 151-172, accessible at http://www2.baldwinw.edu/~rfowler.

23 "There is [a] positive way to view the loss of a stable core for our culture. Although we do lose the satisfaction of belonging to a coherent cultural tradition, we gain the freedom to establish our own traditions in the miniature." (Jay David Bolter, *Writing Space: The Computer, Hypertext, and the History of Writing*, Hillsdale, N.J.: Lawrence Erlbaum Associates, 1991, p. 238).