# CHAPTER 3

## New technologies, new growth?

New technologies and services constitute the two core activities in the new economy as it is presented to us. However, they are extremely hierarchised. The new information and communication technologies (ICTs) form the main driving force, creating innovation, growth, productivity gains and skilled jobs in all sectors, starting with those sectors specifically given over to producing them (software, systems analysis, on-line networks and databases, Internet etc.). Other services to households and firms, dragged along by the growth and purchasing power produced by this "information revolution", are then able to create the large number of varied jobs that characterise the new economy. This portrayal of the new economy is more than debatable : whether we are dealing with the supposed driving force, the other activities following in its wake or the relationships between the two, the points at issue are not primarily technological. Rather, they are social, and alternative development models exist. Let us begin with the miracle of ICTs.

The notion that the new growth is based on the new information and communication technologies is not a new one. However, it carries more force today, since it is obvious that the convergence of related technologies around the digitisation of data of all sorts and Internet-type networks has created the conditions for the emergence of a new "technological paradigm", to use the language of specialists in the economics of innovation.

Nevertheless, we have to try to subject these new technicist myths to the test of facts and observations. We also need to assess the risks we now know they may bring with them. In order to do that, it is important to identify the two principal characteristics attributed to the new technologies. The first is their ability to create large number of high-skill jobs for specialists in these technologies and consequently to produce value added in these activities. The second, rightly considered the most important, is their impact on productivity in all sectors of the economy, which makes possible a return to strong growth without inflation. Let us begin by examining the reality of the prospects for high-tech job creation.

### 3.1 The new technologies create far fewer jobs than is maintained

What can we learn from the facts, if we take as a model the economy that is most advanced in this area, that of the USA? Is it true, for example, that the employment growth of the last ten years has been sustained largely by jobs linked to ICTs? The answer is very simple : no. It is true that a not insignificant share of the jobs created (around one third according to our estimations, which are very much in line in this respect with those of other studies) are undeniably high-skill jobs requiring high-level professional competences. However, the occupations and sectors in which specialists in the new technologies are employed account for only a very small minority of these jobs.

We can draw here on data gathered by the American statistical institutions[22] for the period 1986-1996, as well as on the projections made by these same institutions (for the period 1996-2006) by extrapolating from the most recent employment trends. It is difficult, if not impossible, to square these data with the image of an American "jobs miracle" driven by the sectors and occupations linked to the new technologies. The overwhelming majority of the jobs created between 1986 and 1996, whether skilled or unskilled, were not in occupations linked to computer and data processing services or the Internet. It is true that, in the USA as elsewhere, these activities have very high *rates* of employment growth, but since these rates apply to occupations or sectors whose share in overall employment is still relatively low, they do not produce large numbers of jobs. Between 1986 and 1996, for example, 1.6 million jobs were created in the "eating and drinking places" sector, 2.94 million in health services and 2.9 million in state and local government (excluding federal government), compared with only 618 000 jobs in computer and data processing services.

If we base our calculations not on sectors but on **occupations** (which is essential, since there are IT-related occupations in all sectors), the same conclusions are reached. If we take the 30 occupations which, in the employment projections for the period 1996-2006 (i.e. on the basis of current trends), are set to experience the greatest job growth, and if, among these 30 occupations, we select the eight that require high-level qualifications (bachelor's degree and above), then there are only three that can be described as specialist IT-related occupations. The others include general managers and top executives, teachers, marketing and sales worker supervisors, social workers, etc. In all, the three high-skill, IT-related occupations are likely to create 1 million of the 8.6 millions jobs the 30 leading occupations are projected to create between 1996 and 2006. This is far removed from the mythology of a boom in high-skill jobs driven by the new technologies. This does not mean, of course, that these technologies are not being widely diffused in our societies and having a profound effect on work and production. However, the teachers, researchers, doctors, nurse or counter clerks who use information technology are not being transformed into IT specialists. The main points at issue in the development of these technologies are linked not to the (real, but limited) potential for job creation in these sectors but rather to the skill required to use them as vehicles for other activities, to the role they are made to play (as sources of productivity gains and cost reductions, or as means of improving quality, diversity, relevance, etc.) and to the employment and working conditions and inequalities of access and control that characterise their diffusion in our societies. This brings us to the second assumed property of the new technologies, namely their ability to produce high productivity gains throughout the entire economy.

[22] *Statistical Abstract of the US,* 1998, figures based on BSL estimates.

**Box 1**

**The size of the new information technologies sector, or how to massage the figures**

In an official report entitled "The Emerging Digital Economy" that was circulated and debated across the world, the American Department of Commerce took a very robust and forthright line, predicting that by 2006 half of the economically active population in the USA would be employed in high-tech occupations. It is only through careful examination of Annex 1 of the report (which can be accessed on the Web…) that the statistical jiggery-pokery on which these extremely fanciful predictions are based is revealed.

The first incidence of statistical massaging involves the adoption of a definition of the IT sector that goes far beyond what it would be reasonable to accept as such and a certain degree of ambiguity as to which of these technologies are really new (those linked to the Internet, computer hardware and software, mobile telephony…) and those that have already been in existence for several decades. By virtue of this ambiguity, the definition of the new technologies can easily be extended to include fixed-line telephony, telegraphy (!), broadcasting and radio and television sets, the wholesale and retail distribution of such equipment, all industrial measuring equipment, etc.

The second, more technical incidence of statistical massaging concerns the method used to asses the impact of ICTs on overall growth, which is based not on their value added in current prices (which would put their contribution to growth at around 14% in 1998, even with the extended definition of ICTs) but on their value added "in inflation-adjusted prices". Given the sharp drop in the prices of most of the relevant equipment, the IT sector's contribution to growth can be increased from 14% to 28%, doubling the outlay. This is in no way justified, as the report's authors timidly accept : "The inflation-adjusted measure of the IT sector may overstate its practical contribution to overall economic growth…" (p. 6).

The third incidence of statistical massaging involves defining the total IT labour force as *all* those employed in the above sectors *plus* all those occupations in other sectors that are "IT-related". Once again, a very broad definition of what constitutes an "IT-related" occupation is used, since the figures used in the report include electrical technicians, electrical power line installers and repairers, engineering and science managers, electromechnical equipment assemblers, electrical assemblers, etc. Furthermore, it does not occur to the authors that, while it is indeed true that in most sectors of the economy there are specialist IT occupations, it is equally true that in those sectors that produce high-tech goods there are manual occupations, sometimes in very large numbers, that have very little to do with IT. Are all the manual workers on semi-conductor, television and photocopier production lines IT workers? They cannot be serious, can they?

The fourth and final incidence of statistical massaging revolves around the assumption that this vast sector of employment defined, misleadingly, in the report as "IT-related jobs", is going to grow uninterruptedly between now and the year 2006 at the same exceptional rate as in recent years. It is most fortunate that the authors stopped at 2006, because in just a few more years these high-tech jobs would have been employing more than the entire working population of the USA.

Fortunately, Manuel Castells is more circumspect when he concludes at the end of his analysis of these same issues : "… if information is a critical component in the functioning of the economy and in the organization of society, it does not follow that most jobs are or will be in information processing. The march toward information employment is proceeding at a significantly slower pace, and reaching much lower levels, than the trend toward service employment" (p. 226).

## 3.2 The impact of the new technologies on productivity

Are ICTs leading the way into a new era of high productivity gains after several decades of "a slowing down of productivity gains"? Have we succeeded, at the dawn of the 21st century, in overcoming the infamous "productivity paradox" that was expressed by Robert Solow in the following terms : "we see computers everywhere, except in the productivity statistics"? The paradox was not an insignificant one : during the 1980s, and indeed until the mid-1990s, the American economy saw a decline in its labour productivity gains, despite the fact that it was the developed economy with by far the highest rate of diffusion of information and communications technologies in its productive system. Economists lost themselves in conjecture. Were the methods of measurement incapable of capturing actual gains that did not appear in the statistics? Did these productivity effects not manifest themselves until a certain level of diffusion and expertise had been attained? We will not examine these debates in any detail[23], but some of these economists now seem somewhat reassured: labour productivity gains have been greater in the USA since 1995, and it is once again possible to advance the hypothesis that this recovery has its origins in ICTs. The problem is that this hypothesis is disputed and that most studies produce the following results. Firstly, productivity gains in the American economy are currently greater than those for the years between 1980 and 1995 but lower than those recorded during the glory years of the "old technologies", and particularly between 1960 and 1973. Secondly, the new technologies certainly played a role in the relative recovery of the late 1990s, but that role is a secondary one.

It is easy to understand why these findings irritate *Business Week* and the other advocates of the new high-tech growth. Nevertheless, they should be taken into account and analysed from an economist's point of view. Such exercises are not always futile.

Between 1995 and 1998, the official figures of the Bureau of Labor Statistics show that hourly labour productivity in the American economy as a whole (private sector only, excluding agriculture) rose by 2.1% per year. The average annual rate of increase was 1.7% in the 1970s, 1.1% in the 1980s and 0.9% from 1990 to 1995. Compared with this last period, the current rate of increase is substantial, *but during the 1960s, the rate of increase was 3%.* Incidentally, this point is not made by Manuel Castells, who goes back only as far as 1970 in order to illustrate his debatable thesis that ICTs have had a major impact on the emergence of remarkably high productivity gains.

A shrewd study carried out by the Federal Bank of Dallas[24] takes a similar line. It steps back from the immediate present and concludes that the relatively strong economic growth of the second half of the 1990s is not exceptional, that its durability is far from assured and, above all, that it cannot be attributed to particularly strong growth in productivity. Similar ideas were expressed by Martin Wolf in the *Financial Times* of 4 August 1999 in an article entitled "Not so new economy".

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[23] On this point, cf. J. Gadrey, *Services: la productivité en question,* Desclée de Brouwer, 1996.
[24] What's New About The New Economy? by Evan Koening, July-August 1998.

Clearly, productivity gains have recently returned to a rate that is *more or less equivalent to the very long-term historical average* (around 2% per year over a century[25]). Can the recovery of the 1995-1999 period be attributed to the new technologies? In part, undoubtedly, but to what extent? Assessments vary, but most of the results are very disappointing for the discourse on the new economy. Daniel Sichel[26], for example, estimates that the productive capital embodied in computers would at best have contributed to less than one tenth of American growth in the 1990s[27]. True, there have been enormous productivity gains in the production of computers themselves. However, this industry accounts for only 1.2% of domestic American output[28]. In June 1999[29], one of the leading American experts in this area, Robert Gordon, attributed the upsurge in growth in America to three factors: firstly, improved measurement of inflation in recent years (with the old measuring instruments, the recorded rate of economic growth would have been lower by 0.4 percentage points), secondly, a business cycle effect, with an economic upturn still influencing productivity irrespective of any technological revolution (this effect is put at + 0.3 percentage points of growth) and enormous productivity gains in the computer manufacturing industry (this effect is put at almost 0.3 percentage points of growth). In the *Lettre de la BNP* of April 1999, Jean-Pierre Petit and Emmanuel Kragen, for their part, show that the growth of the American economy over the course of the 1992-99 cycle, which they describe as "not so exceptional", was not reflected in higher rates of job creation than those recorded during the previous cycle (1988-89). On the contrary. Furthermore, they stress that this growth was closely linked to the modest increase in labour costs, the drastic reduction in the various "social benefits" employees used to enjoy (employers' contributions to health insurance and pension schemes) and the fall in interest charges and in the cost of raw materials and energy. Other factors are mentioned in this exhaustive appraisal, notably monetary policy. All of these important factors have little to do with the miracle of the new technologies.

Obviously, various criticisms can be levelled at these broadly similar findings, particularly the one expressed in the previous chapter: is it possible to evaluate the progress of a (partially) informational economy by using the tools traditionally used to measure growth and productivity? There is still very little academic backing for the new economy, and it is understandable that its advocates prefer to confine themselves to describing a string of success stories. However, this does not prevent us wondering whether the economists cited above are in fact failing to identify certain truly new realities. It is well known that their methods have many limitations. Can we find other arguments, not strictly economic or statistical in nature, that will help to justify an

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[25] Baumol, Batey-Blackman and Wolff, *Productivity and American Leadership*, MIT Press, 1989.
[26] *The Computer Revolution: an Economic Perspective*, Brookings Institution Press, 1977, and *Business Economics*, April 1999.
[27] Investment in ITCs is not limited to the stock of computers. Conversely, however, it would be incorrect to take the view, as all those studies that seek to "inflate" the figures for the new economy do, that telecommunications *in their entirety* belong to the ICT sector. The telephone and telephone networks are old technologies, a part of which (and an increasingly large part, particularly with the boom in mobile telephony) is being used in a new mode. It is this part that should be included in the evaluations.
[28] Cf. Martin Wolf, op. cit.
[29] Quoted by M. Wolf, op. cit.

argument that we believe to be correct, namely that *the new technologies have significant effects in many areas, but that their overall impact on labour productivity, and hence on growth, is fairly modest*? It seems to us that further support for this argument can be found by supplementing economic studies with simple observations of work and its outcomes in many sectors of the economy.

### 3.3. The limited impact of ICTs on productivity at the microeconomic level

To begin with, let us take the example of Manuel Castells, both as researcher and producer of a monumental work and as a sociologist who shares more or less uncritically the belief of the moment in a new and durable form of productivity driven by ICTs. Manuel Castells, who writes in California, has at his disposal the best technological tools, the Internet, on-line bibliographical databases, etc. His output is varied (conferences, seminars, articles, books, lectures, etc.), but we will confine ourselves to his major publication of recent years, namely the three-volume work on "the information age". We ask two questions : 1) would this book have been fundamentally different if its author had worked with the old tools (library, journals, telephone, pre-Internet computers, "snail mail" for written communications)?; 2) was this book produced significantly more quickly thanks to the new technologies (productivity gains)?

We do not have at our disposal all the information required to answer these questions (researchers do not use the new technologies to the same extent or for the same purposes), but we can base our deliberations on our own experience and that of our colleagues engaged in the same kind of activity. It is practically certain that Manuel Castells' book would not have been fundamentally different in terms of the arguments it advances and the illustrations it provides or in the breadth of its thinking and that it would have taken almost as long to write (according to *Libération*, the book is the result of 14 years' work) if its author had produced it in the California of the 1980s. Why should this be so? The answer is that a researcher's work is not primarily "informational" (in the sense of gathering and processing the information contained in books, articles, statistical databases, etc.) but *cognitive*. It not only makes particular demands on *the productivity and quality of the human brain* but also requires, albeit to very variable extents depending on the methods used, *verbal interaction*, whether that generated by *interview-based* surveys or the often extremely rich interaction that occurs within a community of researchers. We would need working time budget surveys in order to prove it with figures, but it is clear that social science researchers spend most of their time *reading, thinking, writing* and *conversing*. Neither the Internet nor computers offer much, if any, assistance with these four activities. One can be snowed under with electronic messages and connected to all the databases in the world, but they have to be read, assimilated and interpreted. One can participate in electronic forums, but the reading, writing and thinking still has to be done. Such involvement in the virtual world is not without its effect, *but it is not a productivity effect.* Rather it opens up access to information that would not otherwise have reached us, information that enriches our perception, which forces us to think even more and, on occasions, *to spend more time* producing an *improved* academic "product". Obviously, productivity is enhanced to some extent by the ability to obtain on line information that it would have been necessary to acquire from

a library or to order from a remote source, as well as by certain survey or data-processing procedures. Nevertheless, this is a relatively minor phenomenon that does not explain the *qualitative benefits* of the new technologies for research.

But, I hear you object, researchers operate in such a different world from most other occupations that any attempt at transposition is automatically invalid. Absolutely not. In an economy in which the two major transformations taking place (even if they too have to be placed in context) are the mobilisation of knowledge (which is in no sense comparable with the inflation of information) and the development of service relationships (with clients and users) and cognitive interactions at work (what some people refer to as "organisational learning"), the principal activities are not the gathering, distribution and processing of information, but rather those involving reading (of information, instructions, reports), interpretation, thinking, arguing, interacting with others verbally (or in writing or through e-mail, although here too we are dealing with human writing or speech, controlled by brains) and meetings. Modern technological tools are increasingly being used to support these fundamental activities, sometimes to save time (increasing productivity) but, more usually, to enhance their reliability and relevance and *to enrich the supply of useful information*, which sometimes makes the *cognitive processing* of that information more difficult and time-consuming.

Nurses and doctors will increasingly have to work with computers; they will be connected to networks, sometimes to monitor their work, their actions and their prescriptions more closely, sometime to provide them with valuable information on patients, on drugs and on health care networks. This is all well and good, but will this have a significant effect on their productivity as they carry out their core activities, namely gathering information on symptoms, diagnosing, reassuring, treating, prescribing, monitoring, etc?

The most technically minded teachers may at some time in the future have additional aids at their disposal to improve their lessons by making full use of multimedia technologies. Will their productivity be enhanced as a result? It is already evident that this productivity is in fact tending to decline (depending on how it is measured) because the new technologies do not seem to have a significant impact on learning unless implemented in an environment in which pupils are able to work in small groups, with pupil-teacher ratios that are considerably lower than those found in the French education system under the current minister of education, Claude Allègre, who is otherwise a strong supporter of computers in education.

Many more examples could be given : consultancy work, personal services, retailing, hotels and catering, tourism or even functional departments in firms in all sectors. We could also point to the role of "meetings" as an essential locus of work. In all situations in which relations, interaction and direct exchanges of knowledge and information play an essential (and often increasing) role, ICTs *are not replacing* interpersonal relations, in accordance with the productivist principle of "substituting capital for labour"; rather, they function as supports, as additional resources, used either to enrich those relations with additional content or meaning, or to monitor them.

3.4 Banks and logistics

In the early 1980s in France, an article by a reputable specialist in the banking field, published in *Le Monde*, caused something of a sensation. It was entitled "Banking: the steel industry of tomorrow". It stated what many specialists in the new technologies of the time believed to be inevitable, namely that employment in the banking industry would fall drastically as those new technologies (mainframe computers used to automate transactions) were implemented. Employment was expected to fall by more than half within a decade. *This did not happen*: between 1980 and 1990, employment levels in the French banking industry actually rose by about 5%! It is true that from the beginning of the 1990s onwards it began to fall and by 1997 had declined to its 1980 level. Any parallels with the iron and steel industry in all this are very strictly limited. Why is this? It is a fact that computerisation led to considerable productivity gains *in that part of banking activity concerned with the recording and processing of transactions* (according to our estimates, these gains were running at more than 10% per annum during the 1980s). At the same time, however, as banking products and the use of banking services by households and firms began to diversify and become more complex and as banks became more commercially minded and began to offer financial advice services, the nature of the banks' activities began to change. There was a shift from the "industrial" processing of simple accounts towards the provision of "value added" relational, commercial and intellectual services (advice and consultancy). This does not mean that employment in the banking industry was not under threat then, or that this is not still the case today (as a result, for example, of disintermediation and the rise of new financial institutions). However, it is at much greater risk from the various forms of competition than from technologies, whether old or new.

Even in activities that can hardly be described as primarily relational or interactive, it is inaccurate to see ICTs as the major source of current or future productivity gains. As part of a partnership with the French Post Office, we have been able to investigate labour productivity gains in postal delivery services since 1970. The volume of mail delivered per postman per day (one of the indicators of productivity) rose from 1983 to 1997 at an average annual rate of 2.6%, greater than that of the American economy of the second half of the 1990s! Now ICTs play absolutely no role at all in postal delivery services, since sorting is a completely separate activity. How did postal workers and their organisation achieve such a result? Several factors play a part, but there are two that stand out as the most important. The first is a "volume effect". Over the period in question, the volume of mail delivered per letterbox rose continuously. As a result, delivery services benefited from economies of scale. However, these economies of scale are themselves subject to a major limitation, namely the weight of the postman's bag. For a round of unchanged length, an annual increase of 2.6% in the volume of mail delivered over a period of 15 years represents a 50% increase in the volume of mail to be carried; moreover, if we take account of the fact that a growing share of this mail is made up of advertising material, which tends to be heavier on average than normal household mail, then postmen’s sacks have doubled in weight and can no longer be carried. This is where the main “technological revolution” in postal delivery services, the one that has made

possible these very high productivity gains, actually lies, namely in the introduction of *secure deposit boxes* located at several points on each round from which postmen pick up the mail for the next stage of their rounds. The precondition for this, of course, was the establishment of *an adequate logistical system*, with delivery vans stocking up the deposit boxes before the beginning of each round.

Why have we chosen this example, which seems positively archaic in the age of the Internet and Silicon Valley? The reason is that the logistics of deliveries (to firms or to private individuals) and, more generally, of the transport of goods and people, however dependent it may be on ICTs, will always involve moving people and "heavy" goods in space. It's very unfortunate, but they simply cannot be dematerialised and sent to their destinations via the Internet. Moreover, since e-commerce figures in all the new discourses, it is worth pointing out that it may well make a breakthrough in the purchasing decisions market but that it too will have to resolve the very "material" issue of transport and delivery, in which the prospects for productivity gains are uncertain, particularly since it is not clear that the resultant traffic jams and nuisances will be any less severe than those caused by consumers travelling to today's shops. In any event, it is well-known that just-in-time manufacturing systems have caused the number of heavy lorries on European motorways to increase to critical levels.

Numerous other examples could be cited to show, sector by sector, 1) that ICTs do indeed lead to very considerable productivity gains in certain activities whose main focus really does lie in automatic data processing, automatic optical character recognition, global data distribution, international finance, and so on and 2) that, *in most cases,* whether because the activity is mainly relational, cognitive or interactive or because it falls within the scope of a material logistical system that cannot be freed from the constraints of space and weight, the new information technologies have little if any meaningful impact on labour productivity, even though they may have a very real impact on the quality of the work done.

### 3.5 From technological paradigm to social uses

Leaving the enchanted world of Silicon Valley and the Internet as an instrument of universal liberation, we return to the real world in which the new technologies are put to social uses, with all its difficulties and inequalities and its tendency to impose American technical and cultural standards. In doing so, we can turn away from propaganda as a basis for our deliberations to the large number of serious studies that are available but ignored by the new fashion.

In France, Yves Lafargue[30], for example, has analysed the Janus-faced nature of these new technologies, which are a source both of interest or pleasure and of stress and mental fatigue, as the case may be, and are capable of facilitating integration or, conversely, producing exclusion. The dual nature of the new technologies *requires new rules*,

[30] Comment mesurer le travail dans la société de l'information? in J. Gadrey (ed), *Regards croisés sur le travail et l'emploi*, Paris, L'Harmattan, 2000.

including those governing the measurement and remuneration of work. Eric Brousseau[31], for his part, has reminded us, opportunely, that great care is taken not to highlight the fact that one of the specific characteristics of these technologies as deployed in the workplace is that they "allow management to monitor employees' work by spying on their messages : according to a recent survey of one thousand companies, almost one in two American firms monitor their employees' electronic communications". He also points out that "the difficulties of access to these technologies are frequently underestimated. It is relatively straightforward to install an intranet facility. With any encouragement to use it and without training, the coffee machine will remain the favoured means of information exchange. Many firms install intranet systems that are not used and set up Web sites without knowing why, which prove to be totally useless".

A remarkable report entitled "Building the European information society for all" (1996), produced under the auspices of the European Commission[32] by a group of experts chaired by Luc Soete, shows that there are several models of the "information society". Indeed, the whole notion is downplayed in favour of that of a society capable of transforming information into useful knowledge, of controlling information rather than allowing information to control us, of giving priority to social objectives, of preventing the real risks of dualism, of establishing rights to self-disconnection in order to reduce the risk of one's private life being invaded, of establishing a "universal service" in the area and of providing collective facilities for learning and of monitoring and curbing the concentration of property rights over information.

In order to extend and investigate these observations more thoroughly, we can draw on two major and, in our view, complementary sources: Manuel Castells' lengthy work on the information society and the 1999 UNDP report[33], chapter 2 of which ("The new technologies and the global race for knowledge") is a superb example of informed and balanced thinking in the service of social development. In both cases, there is no mistrust or rejection of the *potential* opened up by the new technologies. On the contrary. They are seen as a challenge to our societies which, *depending on the rules that emerge*, could lead to the creation of a harsher, more unequal world, dominated culturally by centrally produced norms or, conversely, of a better, pluralist world in which new forms of solidarity flourish.

The central ambiguity of Manuel Castells' book, which in part reflects the ambivalence of the new technologies, is that, on the one hand, it advances a model of the information economy that appears at first sight to be the only possible one ("Any attempt to reject the Silicon Valley model will be defeated economically and socially. It's as if people had said that the Industrial Revolution must be rejected."[34]) and, on the other, contains innumerable lucid and critical insights into the risks of that model. In our view, this apparent contradiction can be explained by the fact that, for Castells, the technological

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[31] Interview in *Libération*, 12 November 1999.
[32] Cf. also the Green Paper entitled "Living and working in the information society: people first", 1996: http://www.ispo.cec.be/infosoc/legreg/docs/peopl1st.html
[33] *Human Development Report* (1999), United Nations Development Program, Geneva.
[34] Interview in *Libération*, 5 July 1999 .

model based on Silicon Valley and the Internet is socially neutral or open, and that everything depends on its social uses and the rules governing it. This may be true in certain respects, but one may legitimately doubt the absolute neutrality and openness of tools which, as Castells demonstrates elsewhere, have imposed standards or "protocols" and a dominant language and which are invested in by firms seeking to achieve positions of global monopoly or oligopoly. However this may be, Manuel Castells certainly helps us to identify the issues at stake. In particular, he rightly distinguishes between *the professional and non-professional uses ("multimedia") of ICTs.* As we write this book, the priests of the new economy are privileging the former, whereas a few years ago it was more fashionable to focus on the prospects for growth in the world of multimedia. However, fashion is fickle and turnarounds are always possible, depending on how stock market successes, mergers and takeovers and technological and market breakthroughs evolve.

As far as professional uses are concerned, the focus of Castells's critical thinking is the way in which modern capitalism tends to introduce the new technologies by polarising work and employment: "While a substantial number of jobs are being upgraded in skills, and sometimes in wages and working conditions in the most dynamic sectors, a large number of jobs are being phased out by automation in both manufacturing and services… Downgraded labor, particularly in the entry positions for a new generation of workers made up of women, ethnic minorities, immigrants, and young people, is concentrated in low-skill, low-paid activities, as well as in temporary work and/or miscellaneous services. *The resulting bifurcation of work patterns and polarisation of labor is not the necessary result of technical progress or of inexorable evolutionary trends… It is socially determined and managerially designed in the process of capitalist restructuring".*

### 3.6 Multimedia

Similar social risks are inherent in the rapid development of multimedia in the realm of consumption, leisure and household equipment. This question is of the greatest importance because, according to Castells, "for the majority of the world's population", the information society manifests itself in the form of multimedia systems, "the new symbolic environment", under conditions in which "it is business and not governments that are shaping the new multimedia system". Now "business control … will have lasting consequences on the characteristics of the new electronic culture". Not only is there a risk that uses will become dualised, but this dualisation is already manifesting itself and is accompanied by various forms of cultural domination that are indeed contradictory (in some cases, traditional cultures may also benefit from unexpected diffusion following their incorporation into the media) but nevertheless worrying. Manuel Castells highlights the following two characteristics of the "socio-cultural structure" that is being fuelled by the nascent multimedia industry:

– "*Increasing social stratification among users*. Not only will choice of multimedia be restricted to those with time and money to access, and to countries and regions with enough market potential, but cultural/educational differences will be decisive in using interaction to the advantage of each user… *Thus, the multimedia world*

*will be populated by two essentially distinct populations: the interacting and the interacted* … And who is what will be largely determined by class, race, gender, and country.

– "The communication of all kinds of messages in the same system, even if the system is interactive and selective (in fact, precisely because of this), induces an *integration of all messages in a common cognitive pattern*. From the perspective of the medium, different communication modes tend to borrow codes from each other: interactive educational programs look like video games; newscasts are constructed as audiovisual shows; trial cases are broadcast as soap operas; pop music is composed for MTV; sports games are choreographed for their distant viewers, so that their messages become less and less distinguishable from action movies; and the like." Now this common cognitive pattern is both an advantage which "reduces the mental distance between various sources of cognitive and sensorial involvement", and a risk: that of the standardisation of meanings and the disappearance of cultural expressions that cannot be digitised. "The price to be paid for integration into this common cognitive pattern is adaptation to its logic, its points of entry, its codings and decodings."

These observations may give rise to anxiety or hope, as the case may be. Not everything is determined in advance. Moreover, the development of multimedia is coming up against certain constraints, linked to both available time and content. Leisure time fell by 37% in the United States between 1973 and 1994[35]. "Most experts of the media industry consider that the real bottleneck for the expansion of multimedia is that the message is lagging the medium" (p. 398)… "One of the most complete surveys of multimedia demand … revealed a much deeper interest in using multimedia for information access, community affairs, political involvement, and education, than in adding television and movies to their choice".

## 3.7 The new technologies from a North-South perspective

Chapter 2 of the 1999 world report on human development, drawn up by the UNPD, provides much food for thought on both the "tremendous opportunities" of the new technologies as aids to development and present reality, in which "the global gap between haves and have-nots, between know and know-nots, is widening", against the background of the "new rules of globalization - liberalization, privatization and tighter intellectual property rights".

Let us turn first to the potential of the new technologies as aids to development. This potential stems, among other things, from the fact that "distance learning, through teleconferencing and, increasingly, the Internet, can bring critical knowledge to information-poor hospitals and schools in developing countries". Network communications have given NGOs the power to create a "tremendously important countervailing force out of previously silent voices in the global arena". Numerous examples are cited: a Web site in India "exposes the exclusion of 250 million low-caste

[35] M. Castells, op. cit., p. 398.

people" and coordinates international campaigns in defence of human rights; the Mexican NGO *Mujer a Mujer* (Woman to Woman) uses e-mail and the Internet to campaign against the exploitation of women; in the former Yugoslavia, women were establishing contacts between the various ethnic groups in 1994, while their menfolk were killing each other and slaughtering the women themselves; outlets are emerging for small African enterprises and for "fair trade" in craft products from 14 countries in Africa, Asia and Latin America. And so the list goes on.

While this potential needs to be encouraged, it does have its limits. Firstly, if the potential of the new technologies is to be exploited, then infrastructures, institutions and training are required. These are generally lacking. "A widely accepted measure of basic access to telecommunications is having 1 telephone for every 100 people – a teledensity of 1. Yet as we enter the next century, a quarter of countries still have not achieved even this basic level." Thus we are very far from having the minimum level of access required to exploit potential of the Internet and of e-mail. Furthermore, "even if telecommunications systems were installed and accessible, without literacy and basic computer skills people will have little access to the network society. In 1995, adult literacy was less than 40% in 16 countries, and primary school enrolments less than 80% in 24 countries". *Above all, the most urgent needs of developing countries are not informational needs.* Access to information may help developing countries to respond more appropriately to their urgent needs but, allowing for exceptions, it is not part of those needs. "Information is only one of many needs. E-mail is no substitute for vaccines, and satellites cannot provide drinking water." *There is even a danger that large-scale high-tech projects, driven forward particularly by large companies from the North and the governments that act on their behalf, will push certain more urgent needs into the background* : "'Our priorities are hygiene, sanitation, drinking water.. how is access to the Internet going to change that?' asks a nurse in Kathmandu. The main constraint is inadequate resources for health and education systems as a whole." One of the participants in the Davos summit held in January 2000, Christine Todd Whitman, governor of the state of New Jersey, declared : "We are focusing on the Internet, but there are still hundreds of millions of people around the world who do not have access to this mode of communication simply because they have no electricity".[36]

Given the current state of affairs, and again according to the UNDP, disparities in access to the new technologies are widening in what seems to be an inexorable way, but only because of the pervading laissez-faire : "The typical Internet user worldwide is male, under 35 years old, with a college education and high income, urban-based and English-speaking – a member of a very elite minority world-wide… The voices and concerns of people already living in human poverty – lacking incomes, education and access to public institutions – are being increasingly marginalized".

This superb analysis, reduced here to a few statements that cannot reflect its full richness, concludes with some proposals for new rules governing policy and politics, since "the rush and push of commercial interests protects profits, not people". The following are

[36] Quoted in *Le Monde*, 30 January 2000.

some of the proposals advanced in the report: "the relentless march of intellectual property rights needs to be stopped and questioned", by assessing their economic and social consequences for each country. "Alternative approaches to innovation, based on sharing, open access and communal innovation" are possible and indeed already exist. It is also necessary to regulate the "new economy", to open up the debates on "domain names, taxation, privacy and protection of intellectual property rights", and, more generally, to extend citizens' participation in the management of technology. *And in order to finance the communication revolutions on a global scale, consideration also has to be given to the introduction of a "bit tax", calculated by the volume of data transmitted through the Internet.* This tax, the cost of which would be negligible for most users, even those sending as many as 100 e-mail messages per day, each containing a 10-kilobyte document, which is quite a substantial amount of data, could generate almost 100 billion dollars per year across the world, or more than the amount of public money currently spent on development. Is it inconceivable that the elected members of the European parliaments could support such ideas: modest taxes on data flows and a tax on patents? Apart from uncompromising free-marketeers (or hardline leftists, who will see the taxes as an intolerable attempt to soften capitalism), are there not many people in the developed countries who would support the proposals advanced by the UNDP experts, which reflect the urgent expectations of the developing countries?