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Knowledge economy, Learning society and Lifelong Learning A review of the French literature

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Introduction

It is very difficult to find, in French, a direct equivalent for the term “learning society”. The best translation would be "société apprenante" but it is not used. The expressions normally used are "société du savoir" (knowledge society –KS-), "économie du savoir" or more often "économie de la connaissance" (knowledge economy-KE-). Similar difficulties arise with lifelong learning. “Learning” could be translated here by “apprentissage”, but the term could then be misinterpreted as “apprenticeship”. Usually « education » and/or « formation tout au long de la vie » are used. These difficulties are not only due to the difference between English and French. They probably also reflect the French conception of knowledge, which puts the emphasis on explicit and scientific knowledge, and the French conception of learning, which traditionally puts the emphasis on formal education and training.

This could partly explain why so many discussions have recently been centered on the links between knowledge economy (or society) and the initial and further education systems. But it also could explain why some analysts compare the old notion of “éducation permanente” – introduced at the beginning of the 1970s - with that of lifelong learning, and often argue that nothing is new (Gauter, Plan, 1999). In fact, at the end of the 1960s, politicians as well as educationists emphasized the necessity of implementing a system of permanent lifelong education so as to meet the new economics needs (technical skills required in order to cope with automation in the industrial sector) and the need for social equality (by giving access to education and training to individuals who had left initial education early). Thirty years later, this debate could be re-initiated with the emergence of the “learning society” and of lifelong learning.

But French literature is also under two major international influences. The first influence comes from the OECD with its concept of Knowledge Economy. Many of our leading authors work or have worked for the OECD (Foray, Lundvall, 1997) and as a result the French conception and definition of Knowledge Economy is to a great extent inspired by the OECD's approach (Guellec, 1996). Most studies developing benchmarking between France and other countries are based on OECD indicators and data.

The various EU initiatives (The first report on Information Society (1996), the white paper on education and learning (1996), the Lisbon summit and the memorandum on life long learning (2000)), the UNESCO and ILO approaches (Bindé, 2000, Fourcade, 2002) have also influenced French literature, but more on the question of lifelong learning than on the question of KE or Learning society (Baunay, Clavel, 2002).

On the question of «savoir » (« économie or société du savoir ») and «formation tout au long de la vie », four types of studies prevail :

- A large number of studies, carried out essentially by economists, deal with the economic side of knowledge economy (or “information economy” or “new economy” or “post-industrial economy”). Most of them address the question from a macro-economic perspective. Few of them actually open the black box of the firm.
- A second set of articles, mainly written by educational specialist (or VET specialists) discuss the notion of lifelong learning and its consequences for the initial and further education and training system. But non-formal learning is given more and more importance.
- A third set of papers (economy, sociology, political sciences) looks at knowledge society from a broader perspective, and in particular discuss the risk of a “two speed” society.
- Last but not least, many official reports, commissioned by the public authorities, but also by unions or employers associations, must be taken into account, as they contribute to the debate, and sometimes lead to changes in policies (mainly in terms of further education and training).

In this article, we propose the hypothesis that “the Learning society” is more a political slogan and prospect than a social reality (In France, as in most OECD countries, public investment in

formal education and training has actually decreased since the OECD started talking about lifelong learning). And there is no agreement as to what a future “learning society” should be. Firstly, the framework of knowledge economy has not yet been defined and analysts remain divided on the issue: is it (or will be) an extension of a deregulated, market economy and society, or a more regulated capitalist economy? Should knowledge be considered as a public good or as a marketable one (section 1). Secondly, the consequences of the resulting economic changes for workers and for citizens are unclear. Although most studies acknowledge the development of new (net) work organizations, of new skill requirements and of new opportunities for learning, some studies also emphasize new risks of economic and social exclusion (section 2). And the French specificities are particularly marked in terms of education and lifelong learning strategies. (section 3). Although lifelong learning strategies are sometimes explicitly (but more often implicitly) related to the prospect of a Knowledge Economy, part of the debate is purely endogenous to the educational sphere and initial education and further education remain separated .

1. Knowledge economy or Learning society?

More than “learning society”, it is the “knowledge economy” that appears as the key concept when discussing the trends prevailing in French economy and society.

1.1 Information or Knowledge?

Assuming the hypothesis that something new has emerged in the economic system and in society (we will later discuss the roots and reality of this novelty), a distinction must be made between information and knowledge.

The EU initially put the emphasis on information (European Commission, 1996). ITC were considered to be at the heart of the evolution process. But experts underlined the difference between information and knowledge (all information is not knowledge, knowledge is needed to transform information into economic or social tools). They also underlined the need for a wide conception of information society, in order to avoid some negative consequences (for employment, citizenship, private life...). Similar oppositions are found for example between Petit (1998) or Mayere (1990) on the one hand and authors that favor the concept of knowledge.

Firstly, they discuss the relationship between information and knowledge. Focusing exclusively on information results in the latter being considered as an economic good. The question raised is then that of the growing stock and flow of information, of its use as an input for the economy, and of the process of selection and privatization of information (Mayère, 1990, Petit, 1998). But according to most authors (Foray, 2000, David and Foray, 2003, Aghion and Cohen, 2004, Viginier, 2001) information and knowledge are not equivalent. Knowledge - particularly scientific and technological knowledge - (this will be discussed later) must be distinguished from information: knowledge is cumulative; it requires a process of appropriation by the individuals. It is a “matter of cognitive” capability (David, Foray, 2003, p 4, Viginier, 2002). In a similar way, Paulre (2001, p 16) defines knowledge as “an organization of the representation (of the world) which allows the organization of the action”.

The second point of debate between “knowledge economy” and “information economy” lies in the importance given to ITC. In a “Information economy or society” the emphasis is put on the role of ITC in the growth of information stocks and flows (Soete, 2001). Change is mostly technology driven. This conception is close to that of a “new economy” which focuses mainly on ITC, particularly in the new sectors of development. For most authors, the change towards a “knowledge economy” is more complex. ITC do play an important role, but are not necessarily the most important factor (David Foray, 2003, Iribarne, 1996, Greenan, 1996 a, Guellec, 2002).

1.2 Knowledge economy

With regards the concept of “knowledge economy” - the most recent and most widely used concept in French literature - three main questions are raised.

The pace of change

Is the knowledge economy an old story? Some authors have emphasized the fact that knowledge has always played a highly important role in society as well as in the economy, and that the growth that took place during the 19th century was also knowledge-based (Paulré, 2001). If something new is appearing, it is much more “a “sea change” than a sharp discontinuity” (David and Foray, 2003). Other authors, most of whom are inspired by the “regulation theory”, are also in favor of a new relationship between the old model (Fordist

economy) and the new model (post Fordist, flexible economy) (Boyer, 2002). They are in favor of a “hybrid” model. The first reason for this is that technologies are always modeled and used differently, according to different societal factors: State and public institutions (including the educational system), labor relations (within and outside the firms), labor market specificities, work organization...(Boyer 2002, Iribarne 1996). If ITC is commonly considered as a major technological change, other previous major technological changes have always been appropriated and integrated in different ways in different societies, building bridges between a former and a “new” economy (Amable, Petit, 2002). The second reason is that the pace of diffusion of the knowledge economy is rather slow and (but it is a controversy) that it will not affect all economic sectors. For example the rapidly growing sector of household/personal services (cleaning services, home care for elderly people) could not be regarded as a KE sector (Gadrey, 2000, Moati, 2003). And in some sectors, the market pressure could even lead to a less knowledge-based production (Gadrey, 1996).

The roots of the evolution

Four common driving factors are discussed in literature. But depending on the author, their role is more or less important.

As mentioned earlier, one factor is technological change. ITC is commonly considered as one of the key factors (Petit, 1999). Firstly, it makes the exchange and growth of knowledge easier and faster (David, Foray, 2003); secondly it leads to the emergence of new ways of production (such as network production) which can also facilitate the direct integration of knowledge in the production. But it is neither the main nor the only factor.

The role played by innovation in production, and more broadly by all activities requiring expertise is regarded as a major factor (Hatchuel, 1999). This new role of innovation and expertise is market driven: globalization, new demands from consumers, the rhythm of diffusion of innovations and new products require continuous and rapid innovation (Hatchuel, 2002). But it is also thought to be supply driven (Petit, 1999, Foray 2000). One of the characteristics of the KE is the high level of investment in education and training. The education sector is becoming one of the largest (in expenditure or in number of workers). Furthermore, the increasing education level of citizens and workers is a key factor both for the accumulation of knowledge and for innovation. Here again we point to the controversy

regarding the role of education in economic growth and the macro-economic impact of investment in human capital (Aghion and Cohen, 2004).

This leads us to the third factor that is endogenous to knowledge itself. One hypothesis is the increasingly fast generation of knowledge (of scientific knowledge essentially). The growing number of scientific workers, the level of investment in science and technology, as well as the fast ITC-based exchanges all contribute to the development of knowledge and of scientific discovery. It is believed that the growing numbers of engineers, researchers and managers of all kinds will have an “hysteresis effect” on economic growth (Foray, Lundvall, 1997). But again, the existence of such a tendency has not been measured nor verified.

The fourth common factor (sometimes combined with the growth of education) is the increase in intangible capital in the economy. In most countries the economy (and firms at the micro level) is nowadays characterized by a higher level of intangible capital (education and training, research and development, brands...) than of tangible capital. And this intangible capital plays a more active role in productivity growth (Guellec 2002).

But, as mentioned above, several questions remain unsolved and need to be discussed. Some analysts are skeptical and critical. They argue that the so-called knowledge economy is not all that different from the “old economy” and that it might just be an ideological argument justifying a renewed capitalism. Gadrey (2002) sees the concept of “new economy” as a “normative ideology”. The above-mentioned critics of the concept discuss the difference between knowledge capitalism and knowledge society (Gorz, 2003). Paulré (2001) uses the term “hyper-capitalism” to define knowledge capitalism: innovation, because of its rapid diffusion, has become a routine; Secondly, the capital takes a new place, not only in the physical accumulation, but also in the flow and stock of knowledge, extending its control to the “circulation sphere”.

Assuming that Knowledge economy is or will indeed become a reality, what will be its main consequences?

1.3 The consequences of change: a new conception of knowledge

The first consequence of this change will be the emergence of a new conception of knowledge, or at least of the relationship between knowledge and economy.

In a narrow conception of knowledge (i.e. scientific and technological knowledge), knowledge is not purely produced outside the economy (in universities, research department), but in close relation with what was previously defined as external knowledge producers and knowledge users or consumers. The dialectic relationship between knowledge production and knowledge use is reinforced, and the boundaries between users and producers are blurred. This gives rise to a new conception of scientific production and of the relationship between scientific research, R&D and production (Verdier, 2001). But some historical analyses provide evidence that, in the 19th century or at the beginning of the 20th century, there was not such a clear divide. The debate is therefore still about the novelty of the concept.

In a broader conception of knowledge, knowledge is not reduced to scientific and technical knowledge. It also includes “tacit knowledge”, organizational knowledge, market knowledge, behavioral knowledge. The knowledge economy will not be a reality without knowledge workers and citizens (not only specialized knowledge producers) being able to maintain and develop their knowledge in autonomous and very different ways (including education and training, but also through work experience, networking, self learning....). Whether this knowledge society and economy can be self-produced (with natural networks, communities of practice), or whether it requires a stronger organization (knowledge management within firms, learning organizations, public policies supporting knowledge development, see for example Hatchuel, Le Mosson and Weil, 2002) remains unclear and is subject to debate. But in this relationship between various types of knowledge and various supports for knowledge dissemination and circulation, emphasis is put on the articulation between explicit and tacit knowledge. On the one hand, ITC make it possible to codify tacit knowledge more easily. They transform the stocks and flows of knowledge, which are more and more included within technical supports (Soete, 2001) and could lead to a devaluation of former tacit knowledge. But on the other hand, the transformation from tacit to explicit (codified) knowledge could lead to the cumulative development of new tacit knowledge. In this conception, knowledge is not only scientific or technical knowledge, and it is not external to individuals, but it is generated through interaction between individuals (Weissberg, 2001).

And some authors (Hatchuel, 1999, Mayen 1996) put emphasis more on the process of knowledge creation through new relationships between workers (and/or between citizens) than on individual knowledge. Knowledge is not seen as a product in itself, but as a product of the relationship between workers (and/or between workers and consumers). These

conceptions are in keeping with what Combes' hypothesis concerning the new competencies in the service economy (see below p 12).

They also reflect the transition from an industrial to a service society. Most analyses highlight the fact that the industrial sector is losing importance; but as this phenomenon started in the 1970s and 1980s, it is unclear whether it bears a relation to the emergence of a KE. However many authors emphasize that ITC and KE have contributed to a large extent to the growth of the service sector. The KE would then be mainly a service economy, with an industrialization of « old services » (through ITC and knowledge codification), and a growing importance of non-industrialized new services (Gadrey, 1992, Gadrey, 1996).

1. 4 Knowledge economy, Knowledge society or Knowledge capitalism?

With the broad conception of knowledge, there is a possible bridge between KE and KS. The new role of knowledge is not restricted to the economic productive sphere. The question related to the “knowledge consumer” is also a key question for the knowledge economy. More broadly, the knowledge citizen must be able to cope with knowledge development, in his/her family life, social life, and at work (Soete, 2002). Knowledge networks must (can or will in future) irrigate society as a whole (Jollivet, 2001).

If indeed the question has to do with the knowledge citizen's production, then some authors speak of a new kind of society, considered for example as “anthropogenetic”, where the main objective (and the main source of growth) is the production of man by himself (Boyer 2002). Gaudin (2002) also opposes an old conception of knowledge in a scientific society, where scientific knowledge was used for the production of goods and imposed to individuals, to a new conception, where the relationship between individuals (mutual recognition by creating knowledge through interactions) will be dominant (a cognitive society). Llerena (2002), focusing more on productive organizations, spoke of “cognitive cooperation” between individuals, as a process of sharing knowledge during action, and of production of new “collective mental models”, at the root of knowledge production. And Girard (2001) emphasizes the new importance of (productive) information and knowledge outside working hours. The borders between working time and “non-working” time are blurred (as the citizen

or consumer also produces knowledge that is useful for work), and therefore the validity of the traditional mechanisms of wealth distribution are called into question.

Such an approach could be articulated with a more radical point of view. The question is not about change (which everyone accepts) but about how change occurs. Gorz (2002) accepts the new role of knowledge, both in the economy and in society. But he stresses that the excessive importance given to knowledge is destroying the roots of capitalism. As knowledge is an intangible good, and as the new ways of producing knowledge (including non-profit networks such as Linux cooperative networks) are based on a non-marketable exchange, he stresses that the knowledge society has gone beyond the boundaries of knowledge capitalism and is even destroying the foundations of the capitalist society: generating and sharing knowledge in the framework of a cooperative network should be incompatible with the rules of a capitalist economy. This radical approach is a severe criticism of other analyses which often concern the new challenges posed by the KE to the market economy. For Gorz, the question is more about how to prevent the development of the market in the context of the new knowledge based society rather than the various ways of introducing regulations on property rights or others regulations on knowledge production and property. Palloix (2001), suggests the thesis of a new form of exploitation: capitalism is nowadays a predator of the collective wealth (information, knowledge) produced outside the productive sector, by society as a whole. And Gensollen (2002) also questions the validity of the (mainstream) economic discourse. He defends the hypothesis that an information society will develop if there is a) a struggle of consumers against producers, b) a model of cooperation inspired by the “free” model of the scientific community, c) free access to information and a fight against the private appropriation of knowledge by firms and d) less space and importance given to the market.

1.5 France in the Knowledge economy

Boyer (1995) proposes the hypothesis that, in a knowledge economy, human resources are at the heart of the process of economic growth. And insufficiencies in terms of education and vocational training could break the “virtuous circle” between knowledge and growth. Public institutions are very important: education policies, public regulations for the information market, and public infrastructure (high speed information networks).

Official reports, written for the most part by scientific experts, compare the situation in France with the situation in other countries, and discuss France's strengths and weaknesses for coping with the challenges posed by knowledge economy (Martinez, 2001, Gauron 2000, Aghion and Cohen 2004, Viginier,2002). Some reports explicitly refer to the knowledge economy or society, and (or) to the learning society, others do not. Some are based on comparisons between France and other countries while others only concern France. They all discuss questions related to the educational system (initial or further education), to the R&D system, and the diffusion of ITC. Most of them conclude that urgent reforms are needed. Adopting the narrow conception of knowledge in the KE (i.e. scientific and technologic knowledge, mainly produced by universities and research institutions), Aghion and Cohen (2004) show that France spends less money on tertiary education and research than other developed countries do. They also highlight the inefficiencies of the French system (funding principles, student selection, management of universities). They conclude that there is an urgent need for reform and for greater national investment in tertiary education and research. Other analysts focus more on secondary education, and on the lack of efficiency of the French system compared with others (mainly through OECD comparative studies such as PISA), despite a huge increase in educational expenditure per pupil. Other reports (Gauron, 2000, Secrétariat d'état 1999, Lichtenberger, Méhaut, 2001) deal with further education and training (FVET), and highlight the necessity of reforming the Further vocational education and training system in the perspective of lifelong learning. In all cases, the French educational system is considered as inefficient in the context of a learning society.

2. The “new” worker in the KE and the risks of the KE/LS

With regards more practical questions concerning the consequences of KE , KS and LS, other types of studies must be mobilized. Most of the studies mentioned above are explicitly dedicated to the question of knowledge economy in itself. Some discuss its consequences on the work organization, education and training policies, but they do so in a very broad way. Another part of literature focuses more on the new tendencies in organizations, at work, in society. The terms KE, KS, LLL are always mentioned as a vague reference but the links between the three are never clearly defined.

2.1 Changes in work and changes in skills: the profile of the new worker

The first question is related to the changing work environment, the new organizations and the profile of the new worker. Foray and Lundvall (2002), defined the KE as “an economy of continuous change, which requires higher level of skills, and specific competencies focusing on adaptability, mobility and flexibility”. Petit (1998), in a macro-economic perspective, analyses the transition from unskilled to skilled labor. As many other authors, he considers that the new economy introduces a skill bias that rewards skilled workers, and which is reflected in the increasing wage gap between unskilled and skilled workers (in some countries, but not in France). In another study (1999), Petit developed the hypothesis that the skill bias could be partly explained by the growing supply of skilled workers flowing out of the educational system and by precautionary measures taken by employers: as the principles of the new economy remain unclear and unstable, and as the new forms of organizations have only started developing and are not finalized, it is in the employer’s interest to hire over-skilled workers, especially as their cost is reduced by their abundance and by the high level of unemployment. Greenan (1996,a, b), or Guellec (1997) have defined the relation between technical change, organizational change and employment and skills. Studying the changes that occurred in the industrial sector between 1988 and 1993, Greenan emphasized the need for a strong relation between technological change (mainly ITC), organizational change and the development of employees’ skills. But the model is not technology driven. Various paths are selected: some firms choose a flexible model, with less hierarchic control and an increasing role for operators. Others choose the “technical” way: less hierarchy but more technicians... And the change in skills is more related to the organizational change than to the technical change. Guellec (1996) also proposes the hypothesis that some employers, in an uncertain environment, offer skilled workers higher wages in order to hire and keep them in the firm. These conclusions are in keeping with others studies that consider organizational change (whether or not it is allowed or fostered by ITC) as a central factor of skill growth (Iribarne, 2001).

Major prospective studies (Seibel, 2002) also concluded that in the next ten years, there will probably be an increase in the level of qualifications and of skill requirements. But they also stressed that this evolution will be combined with growing numbers of unskilled workers in some sectors: it will be the case in the household service sector (with a growth of the employment level), as well as in some industries (the food processing industry for example). Another discussion concerns the new skill and competence requirements. Although most authors agree on the absolute necessity of basic literacy skills and knowledge (both for work

and citizenship) and believe that in future individuals without basic literacy skills will be excluded from society, the new role of the worker or citizen has not yet been clearly defined. Boyer (1995) defines the new worker as a skilled and adaptable actor, with a good level of basic and vocational education. He will be able to respond to unforeseeable events, and will have a high capacity to learn so as to be able to cope with a changing environment.

Most authors believe that a new aspect of literacy will be the ability to use ITC (PC, Internet). Some authors argue that without this skill there will be a new “digital divide” between individuals (Bigot, 2003). But they also show that it will take many years before all households and work places are equipped with PCs. Other authors focus more on the importance of soft skills in the new economy. MC Combes (2001) examined a number of prospective analyses in the field of the service sector. She discusses skill requirements in the bank industry, the retail and other sectors. Most of these analyses were carried before the massive diffusion of ITC. But she concentrated on the relationship between the producer and the consumer. The latter is thought to be more informed, more competent (more highly educated, IT skilled) and flexible than he/she used to. The producer needs to develop new quality and proximity related strategies through a process of interaction with the consumer. These new producer/consumer relations lead to a) growing technical competencies, b) pedagogical capabilities (to transfer technical knowledge and information to consumers), c) the ability to collect information and d) the ability to mobilize other competencies disseminated within the firm. What matters is not just individuals’ competencies but also the firm’s organization (information management, networks, management of the time constraint...)

2.2 The debate on competency-based management

Another, indirect way of entering the debate about the KS or LS is to raise the question of competency-based management. Largely inspired by the main French Employers association (CNPF, later MEDEF), competency-based management is supposed to be an answer to market pressure, to globalization, to ITC development and to the rapid innovation process. Promoting competency-based management, the MEDEF has tried to promote change in the organization of labor and in HRD, but also to develop new tools to mobilize employees more

efficiently and reinforce their loyalty. According to a number of studies presented at an international conference (CNPFF, 1998):

- Competency-based Management implies a closer link between corporate strategy, work organization and HRD policy;
- Competency-based management also aims to mobilize employees' skills and abilities differently, so as to cope with the increasing competitive pressure;
- Competencies could be defined as a specific combination of knowledge, know-how and behaviors, which only becomes operational in concrete job situations, and which is the key to individuals' and team's performance;
- Having and using such competencies is a component of the individual's employability; it is the individual's responsibility to mobilize and develop his/her own competencies in order to secure his/her job;

Some sociologists have, since the mid 1980s, highlighted the importance of promoting competencies, but in a rather normative way (Zarifian, 1988). And since the end of the 20th century, a growing number of studies have been carried out on the subject (See Dupray, Guitton, Monchatre, 2003 for a synthesis).

Some sociologists see in competency-based management a danger for wage earners because the main objective of employers' organizations is to develop an ideology of individualization, by fighting the collective foundations of classification and wage regulations: through competencies, employers would be able to change the rules of control of the production and of the employment relationships. For others, the picture is more blurred (Lichtenberger, Paradeise, 2001). Some dangers are real, but can be avoided if unions play their role. And most importantly, competency-based management introduces a real break from the Taylorist/Fordist organization. The "competency-based model" (which means more initiative and autonomy at work) cannot be developed without a new recognition of the productive role of employees. And employees have been demanding that their competencies be better recognized. Taking into account behavioral competencies is also a growing necessity, due to changes in certain aspects of work (relationship with other workers, with clients...). Changing the foundations of the classification system (from a classification system based on function to a system based on competency) implies new opportunities for negotiation at firm level, but also new opportunities for wage increase and mobility in lean organizations.

2.3 The risks of the learning society

If most authors agree that there is a need for new perspectives of economic growth (increasing productivity due to the ICT, new goods), some of them are concerned about the possible risks posed by the new economic regime.

Monopolistic tendencies and the risk of excessive codification of knowledge

Whereas some authors highlight the advantages of a global and transparent world market on the web, due to the rapid changes related to innovation and to the “privatization” of knowledge, other authors sometimes underline the risk of monopolistic tendencies (Foray, Lundvall 2002, Gadrey, 2002, Guellec, 2002).

The increasing codification of knowledge is also perceived as a risk. The cost of the codification process implies a wider (global) scale of diffusion and a kind of irreversibility. This could lead to a loss of diversity and to more difficult evolutions at a later stage.

Employment level and distribution per economic sector.

A first point of debate concerns the growth of employment. In the KE, the new productivity regime, as well as changes in the goods that are produced could lead to important job losses. For example, in some industrial sectors, ITC make it possible to alleviate both time and geographical constraints (Soete, 2001). ICT facilitate “just in time” production and thus the reduction of stocks. And it facilitates a more direct contact with the client. This could have negative effects on some activities in the sector of logistics. Opposite effects, but with similar consequences, are forecasted in some service sectors (bank, insurance, the personal service sector). Firstly, ICT make it possible to store information, and secondly they make proximity to the consumer less essential. Some service sectors, in which proximity and face-to-face relations with clients used to be necessary, could benefit from this new distance from the consumer and from new possibilities of storing information. This could result in a huge increase in productivity and consequently in a decline of employment levels.

The overall effect on employment levels is the object of discussions; some studies highlight the positive consequences while others concentrate on the negative effects. (see Gadrey, 2002 for a criticism of the pace of job creation in the US and the consequence for France). But most

analyses put the emphasis on the fact that the huge economic restructuring will take time, and that the beneficiaries of the changes will be future rather than present generations - as in the case of previous major changes (Iribarne, 1996).

Changes in the nature of jobs and the risk of exclusion

But the risks are not just related to the employment level, but also to changes in skill requirements and to demographic evolutions in the labor force. If skill requirements increase, low-skilled workers will be under increasing pressure, in the industrial sector and in some service sectors. And demographic evolutions could reinforce this tendency. On the one hand, progress in health care increases life expectancy. On the other, the cost of health care services puts pressure on the public budget and on the social security system. France, as other European countries, is engaged in reforms of the retirement pension system, highlighting the need for a longer working life. But nowadays, most firms tend to retrench older workers who are also those with the lowest levels of education and with the lowest probability of attending further training (Fournier, 2002,2003). The greatest risks of exclusion concern essentially young and unskilled new entrants on the labor market (Cereq, 2004), and older workers (Ginisty et al, 2001). Again, this is a controversial matter as some forecasts actually predict an increase in unskilled job opportunities, mainly in the field of household personal services (for home care for elderly people for example) (Seibel, 2002). But these jobs could be dead-end jobs, with a higher segmentation than before. And this risk is enhanced by the decreasing efficiency of social policies (Barbier, 2003, Castel, 2003), which were developed for the previous economic regime and which are under more budget pressure than in the past.

The digital divide

More generally, analysts are not only concerned about employment and job exclusion, but also about the overall risk for citizenship (Castel, 2003, Bigot 2003, Azais, 2000). Although access to a PC is not more unequal than the households income distribution, it is not the case of access to the Internet. And the growing dependency on ITC in everyday life (including the new administration policies, tax declaration, or possibly voting through the Internet for example) could also give rise to new factors of exclusion.

The institutions and the employment relationship

The last point of discussion concerns institutional changes. Some authors, mainly those speaking about the “information economy”, the “new economy” and the role of ITC, often relate the development of the information economy to the market deregulation. ITC and globalization will produce new “pure” markets if the “old institutional barriers” are destroyed. ITC and globalization require market deregulation, less state and public intervention, taking as an example the American model. But looking at the various models, and in particular at the good performance of Nordic European countries, others authors (Boyer, 2002, Amable and Petit, 2002) plead in favor of a reorganization of public institutions, both as a condition for the development of the KE (rules for the knowledge circulation and property) and of knowledge workers and citizens (increasing role of education and of health facilities).

A similar question is raised about labor markets. The growing precariousness of employment (for both young and older people; Behaghel, 2003) – a phenomenon started well before the KE - could be reinforced by the new economic trend. Moreover, examining the characteristics of labor relations, some authors forecast a radical change. The “new worker” will be a self-employed knowledge worker, selling his services directly to the consumer (and not under a contract with an employer). Work contracts will take the form of commercial contracts. The growing importance of stock options as a remuneration method, for managers and in most start-ups could foreshadow a more general evolution. But again, this is a subject of controversy.

More important is the debate about the production of knowledge workers and citizens. If we agree that the question related to the production of knowledge workers (at work and outside work) is in itself a key question, then investing time and money in education, in health care, in developing social and personal networks, in cultural activities could be regarded as a productive investment at a micro as well as at a macro level. Supiot (1999), for example, highlights the need for a new kind of contract (“contrat d’activité”) that values the time spent learning outside work (special leave for education and training, time devoted to social activities). This could be a way of reducing precariousness and instability, but also of encouraging individuals’ self development.

3. Learning society or lifelong learning ?

With regards to learning in the KE/LS, three main questions must be highlighted; that related to learning strategies being the most frequently raised in the “KE” literature, (see Petit, 1998, Foray and Lundvall, 2002, Aghion and Cohen, 2004, Viginier, 2001) and particularly in studies related to lifelong learning. Foray and Lundvall (2002) propose ways of eliminating the risks of KE on employment: a) accelerate the pace of change in order to become the leading nation and to benefit from a monopolistic position (but they emphasize that all nations will attempt to do this), b) slow down the pace of change (but with the risk of recession), c) maintain (or develop) a protected sector, outside the KE, and d) develop new human resources and education and training policies.

3.1 The debate on educational policies

As mentioned before, many official reports written in recent years, have examined the French educational system. And some studies on the KE also discuss issues related to education and research activities. Twenty years ago, one of the priority objectives of the French Minister of Education was to enable 80% of young people to reach the Baccalaureat level (i.e. ending secondary school at the age of 18-19, with or without the diploma). For this purpose, a new vocational Baccalaureat was created. Two of the arguments supporting this policy were related to the necessity of anticipating future increases in skill requirements and to the belief that investment in education contributed to economic growth. This policy has resulted in an increase in the education level of young people: approximately 65% of young people obtain the Baccalaureat. This increase has to a great extent been due to the creation of the new vocational Baccalaureat. But this has also resulted (at the beginning of the 1990s) in an increase of the number of students entering tertiary education. For various reasons, this trend has now reversed (Beduwe, Germe, 2004). The number of students entering tertiary education – especially university - has stagnated or decreased. Studies show that the French university system is under developed, lacks funds (Among OECD countries France has one of the lowest levels of expenditure per university student), and needs radical institutional reforms in order to be able to cope with the KE/LS challenges (Aghion, Cohen, 2004). But other studies highlight the high cost of secondary education and the lack of efficiency of the system: the high rate of dropouts, difficulties at lower secondary level (Dubet,1999). Others emphasize how difficult it is to reform the French educational system. “Academic” education remains more attractive than vocational education; there is no parity of esteem between academic,

technical and vocational qualifications; meritocratic selection still prevails, and entering tertiary education remains a “must” (and there are no numerous clauses inasmuch as obtaining the Baccalaureat gives automatic right of access to university) (Verdier, 2001). Whether the main weakness is at secondary or tertiary level is a matter of debate (see for example Mougeot in Aghion and Cohen 2004). Some authors propose another strategy: increasing opportunities of further education and training, giving adults easier access to university rather than increasing the duration of initial education (Merle, 1997, Méhaut, 1997).

Another object of debate is related to the qualitative aspects of education. Between 2003 and 2004, a national forum was opened by the ministry of education, on the goals and the future of the educational system. Over 1,5 million teachers, students, parents, citizens have participated in various kinds of initiatives. The discussions were not in the framework of the learning society. But among the various topics discussed, the values and mission of the educational system (citizenship, republican values, preparing or not preparing individuals to working life...) were discussed (Comission nationale, 2004). Education curricula are also the object of debates. In primary school and in vocational education, curricula are increasingly organized around competencies to be acquired and measured. But in secondary education (mainly “academic” education), this kind of curriculum organization is less developed (Rope, 2000). Some authors show that in junior school and in high school, the emphasis is on knowledge transmission (through classroom teaching); they believe that too many disciplines are included in education programs and that the latter are too heavy (Dubet, 1999, Duru Bellat and Dubet, 2000). The relationship between academic and scientific knowledge and more practical knowledge is discussed by education specialists who are torn between a humanistic conception of education and knowledge or a more utilitarian conception. And a relation could be established with the ability to learn to learn (which is believed to be a crucial competence in the LS). Some authors criticize the French system, highlighting the low level of autonomy of students in a learning strategy, and the fact that students work individually and are not encouraged to work collectively (Dubet, 1999).

3.2 The Lifelong learning perspective

Moving on to the question of lifelong learning, two preliminary remarks must be made.

Firstly, in most French studies, “learning society” is considered as the equivalent of “lifelong learning”. The development of a “lifelong learning strategy” is believed to be sufficient to

develop a learning society. This is in keeping with an old French conception of education as a way of changing society.

Secondly, the French commonly associate lifelong learning with further education and training (or to adult learning), and not with initial education. This is probably due to the importance given to initial education and to its meritocratic rules (the French consider that the future of an individual depends essentially on how well he/she did at school) on the one hand and to the institutional separation between initial education and lifelong education on the other (Verdier, 2001, Rovan, 2001).

Social Promotion and lifelong learning

During the sixties and at the beginning of the seventies, part of the debate on FVET concentrated on the question of social promotion (opportunities to move from unskilled to skilled job positions, from blue collar to white collar positions...). Further education was regarded as a second chance for those who had not pursued secondary or tertiary education (Lietard, 1996, Dubar Gadea, 1999). Moreover, further education was seen as an individual right, disconnected from firms' strategies, and providing free access to "general education" in a humanistic perspective. Forty years later most analyses actually show that it has become more difficult to achieve social promotion and, that the further education system, seen as a second chance, has failed (Collectif, 1996, Mehaut, 1996, Dubar Gadea, 1999). The perspective of lifelong learning has renewed the debate. But some authors are very skeptical and argue that lifelong learning centers too much on economic goals, and not enough on humanistic goals (Lietard, 1996, Trautman 1996). Others discuss more the reality of lifelong learning and the conditions for its development.

Lifelong learning: a slogan or a reality?

Most analyses of the French FVET system show that it had a strong impact, between the 1970s and the 1990s, on access to short-term, job adaptation-oriented training. The number of workers and citizens who had access to FVET increased. But the system was unable to cope with the high rate of inequality (for example between unskilled and skilled workers, between employees and unemployed people) (Gauron, 2000, Dubar, Merle, Schwartz, 1996, Goux, Maurin, 1997). Moreover, training concerns essentially young workers at the beginning of

their careers and older workers actually have the lowest access to training. Such training cannot therefore be called “lifelong training” (They, 2002, see also Méhaut 2004 for a more global international perspective). Even more worrying is the fact that in the last few years, firms’ investments in employee training have decreased and the resulting deficiency has not been compensated by public investment. The result has been an overall stagnation (and even a slight decrease) in public investment in formal further education and training, at a time when “lifelong learning” is on everybody’s lips! Virville (1996), Pery (1999), Gauron (2000), Lichtenberger and Méhaut (2001), have pinpointed the need for structural changes. The recent agreements between employers associations and trade unions have led to some changes in this regard, giving employees more choice in terms of training (Merle 2004). But the public policy remains centered on unemployed people, and does not benefit unskilled employees; furthermore the relations between initial and further education remain too weak (Mehaut, 1997, Gauron, 2000, Dubar, 2002).

Individuals in the lifelong learning strategy

One of the key questions is related to the necessity of taking into account individuals’ needs in terms of lifelong training and of enabling them to develop their own strategies. Most authors agree that the French system is too much segmented by “institutional tracks” (for the public policies) and/or by the firms’ policies (depending the sector of industry or the size of the firms). Individuals cannot develop their own (long-term) strategies in terms of lifelong learning. In the KE/LS perspective, it is necessary to develop a pro-active learning strategy taking into account individuals’ needs (Dubar, 2002). But there are disagreements as to how this need can be met.

This question was partly addressed in the UE “memorandum about lifelong learning”. In its first draft (and following the UE report “Teaching and Learning, Towards a cognitive society” see Iribarne, 1996) the memorandum put strong emphasis on the individual’s own choice and responsibility. It underestimated the needs for collective rules and safety nets (They, Quintero, 2001), as well as the role of the State and of the industrial relations system. The French response was to ask for a more collective approach and public (state or social partners) regulations so that the financial burden and the risks are not borne by the individual alone (see also Baunay and Clavel, 2002, for a union point of view).

The same question was raised during discussions between employers and unions about the reform of the further education and training system (Méhaut, 2003, Merle, 2004). Again, most analyses have emphasized the low level of individual's initiative and opportunities (Secretariat d'état, 1999, Fournier, Lambert, Perez, 2002). One of the proposals was to create a new system enabling individuals to negotiate with their employers in order to enter an education or training course in a more lifelong (and career) perspective. But, the first problem was related to whether the system was to be a "commercial" one (with a kind of individual "training" account in the form of a voucher; this solution was first experimented in the UK) or a more collective, less commercial system (which was chosen at the end of the bargaining). The second question raised concerned ways of avoiding selectivity and the exclusion of low-skilled workers. One of the proposals made by employers and unions was to give to the individuals without a secondary degree of education a right to complete a one year FVET course. But the government did not agree.

Putting the emphasis on the free exchange of knowledge between citizens (out of the market), the solution proposed by Heber Suffrin (2002) consists in developing networks exchanging knowledge, and offering a free and autonomous access to information. This type of proposal, outside any official (state or firm based) framework is in keeping with the initial conception of "popular education" (Chosson, 2002).

3.3 Accreditation of prior learning and experience

A third question is related to the importance of formal learning. In the French tradition, nobody can learn without a teacher and a classroom situation. Such a conception went hand and hand with the excessive importance given to initial education on the one hand and with the Taylorist work organization on the other. In the mid 1980s, institutional changes were made in order to enable workers to have their work experience validated. But in practice a very limited number of workers were actually given this opportunity. (Labruyere, 2003). After a long debate, a new law was passed in 2002; it gives workers the opportunity to have their previous work or social experience recognized in the form of a degree (a full or partial degree); moreover, for education and training providers to be registered as official providers, they have to not only propose training courses but also to validate (in the form of degrees) individuals' prior learning and experience. It is too early to know what impact this new law has had. But it could potentially lead to a radical change in the way the French think of

learning and education. Social partners (employers organizations and trade unions) also discussed the question of a wider conception of education and training when they reformed the institutional framework of the FVET system (Méhaut, 2003, Merle, 2004). They agreed that the conception of further education and training must be widened and should not only include formal education but also on-the-job training, self-learning with ITC, etc. And there is a relation between the growing importance of work experience in the lifelong learning strategy and the debate (2.2) on the new role of competencies and the change in work organizations (Zarifian, 1999, Boyer, Durand, 1998, Iribarne, 2001).

4. Conclusion

Up until now most studies carried out in France about the learning society have not clearly defined what the latter should be and should imply; in other words, the learning society remains a black box. Most authors address the question indirectly by discussing related issues (knowledge economy, the lifelong learning strategy). This could confirm our hypothesis that Learning Society is more a political slogan and perspective than a concrete reality. And this could explain why this slogan is mostly translated and interpreted according to the French conception: learning = education, lifelong learning = further education and training, knowledge = scientific and technical knowledge...

As a slogan, the “learning society” can be the object of controversy but it could also ultimately lead to a more precise and commonly accepted concept.

Three important questions remain to be solved:

- What is (or what will be) Knowledge in the new era and where (and by whom) is it produced? Beyond the question of whether knowledge should mainly include scientific and technical knowledge or whether a wider conception of knowledge (including other types of knowledge) is desirable, the question related to the role of the different categories of workers and citizens in producing knowledge must also be raised.
- What choices must be made about the generation and circulation of knowledge? The circulation of knowledge, seen as an economic good, must be governed by new property rights. And the diffusion of patents, property rights making it possible to extend the market will be the best solution. Seen as a public good, and/or as a good produced through both

economic and non-economic activities, other solutions must be found in order to facilitate its accumulation and circulation.

- What is the role of initial and further education in the development of the KE/LS? This question probably requires that the contributions of initial and further education be re-considered so as to be able to develop new, less formal strategies on the one hand, and to reorganize the French system so that initial education and further education and training be more closely related.

References

- Aghion P, Cohen E, 2004, *Education et croissance*, Paris : La documentation française
- Amable B, Petit P, 2002, La diversité des systèmes sociaux d'innovation et de production, in Touffut Jean Philippe (dir) *Institutions et innovations, De la recherche aux systèmes sociaux d'innovation*, Paris : Albin Michel
- Azaïs C, Corsani A, Dieuaide P (eds), 2001, *Vers un capitalisme cognitif, Entre mutations du travail et territoire*, Paris, L'harmattan,
- Barbier J. C, 2003, Nouvelle économie et politiques sociales in Moati Philippe (dir) *Nouvelle économie, nouvelles exclusions ?* La Tour d'Aigues : Editions de l'aube,
- Baunay Y, Clavel A, 2002, *Toute la vie pour apprendre, un slogan ou un véritable droit pour tous ?* Paris : Syllespe,
- Beduwe C, Germe J. F, 2004, 2004, Les logiques de l'élévation des niveaux de formation, de la hausse à la stabilisation, *Formation Emploi*, N° 85, pp.7-22
- Behaghel L , 2003, Insécurité de l'emploi, : le rôle protecteur de l'ancienneté a-t-il baissé en France ? *Economie et Statistique*, n° 366, pp.2- 23
- Bigot R, 2003, Le fossé numérique en France : des inégalités qui tendent à se réduire mais qui restent encore élevée in Moati P (dir) *Nouvelle économie, nouvelles exclusions ?* La Tour d'Aigues : Editions de l'aube
- Binde J, 2000, L'éducation au 21° siècle, L'éducation pour tous tout au long de la vie, *Futuribles*, février, n°250, pp.5-21
- Boyer R, 1995, Formation et emploi dans les nouveaux modèles productifs, *STI*, OCDE, n°15, pp.119-147
- Boyer R, 2002, *La croissance début de siècle, De l'octet au gène*, Paris : Albin Michel
- Boyer R, Durand J.P, 1998, *L'après fordisme*, Paris : Syros
- Castel R, 2003, Exclusion ou désaffiliation dans la nouvelle économie in Moati Philippe (dir) *Nouvelle économie, nouvelles exclusions ?* La Tour d'Aigues : Editions de l'Aube
- Céreq, 2001, *Quand l'école est finie, premiers pas dans la vie active de la génération 1998*, Marseille : Céreq
- Chosson Jean François (coord), 2002, Education populaire : nouveaux défis, *Pour*, n°173, Mars

- CNPF, 1998, Objectif compétences, actes des journées internationales de la formation, Deauville
- Colardyn Danielle (ed), 2002, Lifelong learning: which ways forward? Utrecht : Lemma
- Collectif, 1996, *De la promotion sociale à la formation tout au long de la vie*, actes du colloque DGEFP,CNAM,CEREQ, Marseille : Céreq,
- Combes M. C, 2001, *Services : organisation et compétences tournées vers le client, une lecture transversale des CEP tertiaires*, CGP, Paris : La documentation française
- Commission du débat national sur l'avenir de l'école, 2004, *Les Français et leur école, le miroir du débat*, Paris : Dunod
- Commission européenne, 1996, *Construire la société européenne de l'information pour tous*, rapport intermédiaire, Luxembourg : éditions de la communauté
- David P. A, Foray D, 2003, Economic fundamentals of the knowledge society, *Policy Futures in Education*, January
- Dubar C, 1997, La formation professionnelle accroît-elle aujourd'hui les inégalités ? *Education permanente*, n° 129, pp.19-33
- Dubar C, Gadea C, 1999, *La promotion sociale en France*, Lille : Presses Universitaires Septentrion
- Dubar C, 2002, La formation tout au long de la vie, de quoi s'agit-il ? in Baunay Yves, Clavel Annie, *Toute la vie pour apprendre, un slogan ou un véritable droit pour tous ?* Paris : Syllepès
- Dubet F, 1999, *Pourquoi changer l'école ?* Paris : Textuel
- Dupray Arnaud, Guitton Christophe, Monchatre Sylvie (sld.), 2003, *Réfléchir la compétence, approches sociologiques, juridiques, économiques d'une pratique gestionnaire*, Toulouse : Octares
- Duru-Bellat M, Dubet, F, *L'hypocrisie scolaire, pour un collège enfin démocratique*, Paris : Seuil, 2000
- Foray D, 2000, *L'économie de la connaissance*, Paris : La découverte
- Foray D, Lundvall B.A, 1997, Une introduction à l'économie fondée sur la connaissance, in Guillon B, Huard P, Orillard M, Zimmermann J.B, *Economie de la connaissance et organisations, entreprises, territoires, réseaux*, Paris : L'Harmattan
- Foray D, (dir), 2002, La société du savoir, *Revue Internationale des Sciences Sociales*, mars, n°171
- Fourcade B, 2002, Mondialisation, compétitivité et développement des compétences, note du Lihre, 368 (02-12)
- Fournier Christine, 2003, Développer la formation des seniors ? Deux questions préliminaires, *Formation Emploi*, n°81, Janvier-Mars, pp.37-49
- Fournier C, Lambert M, Perez C, 2002, *Les Français et la formation continue*, Marseille : Céreq, Document n°169
- Gadrey J, 1992, L'économie des services, Paris : La découverte
- Gadrey J, 1996, *Services, la productivité en question*, Bruxelles : Desclée de Brouwer
- Gadrey J, 2000, *Nouvelle Economie, nouveaux mythes ?* Paris : Flammarion

- Gaudin T, Hatchuel A (dirs), 2002, *Les nouvelles raisons du savoir : vers une prospective de la connaissance*, La Tour d'Aigues : Editions de l'aube,
- Gauron A, 2000, *Formation tout au long de la vie*, rapport du conseil d'analyse économique, Paris : La documentation française
- Gauter J, Plan O (coord), 1999, La formation professionnelle continue revisitée, *Pour*, Juin, n°162, 274p
- Gensollen M, 2002, Nouvelle économie ou crise du discours économique ? in Gaudin T, Hatchuel A (dirs) *Les nouvelles raisons du savoir : vers une prospective de la connaissance*, La Tour d'Aigues : Editions de l'aube,
- Ginisty D, Volkoff S, Santelmann P, 2001, *Travailler et se former à tout âge*, *Entreprises et Formation*, Sept Oct, N°127, 20-38
- Girard J.P, 2001, Information, production et recomposition des temps in Azaïs C, Corsani A, Dieuaide P (eds), *Vers un capitalisme cognitif, Entre mutations du travail et territoire*, Paris, L'harmattan,
- Goetz A, 2003, *L'immatériel, Connaissance, valeur et capital*, Paris : Galilée
- Goux D, Maurin E, 1997, Les entreprises, les salariés et la formation continue, *Economie et Statistique*, n°306
- Greenan N, 1996 (a), Innovation technologique, changement organisationnel et évolution des compétences, une étude empirique sur l'industrie manufacturière, *Economie et Statistique*, n°298, p15-30
- Greenan N, 1996 (b), Progrès technique et changements organisationnels : leur impact sur l'emploi et les qualifications, *Economie et Statistique*, n°298, p35-44
- Guellec D, 1997, L'émergence d'une économie fondée sur la connaissance, in Guilhon Bernard, Huard Pierre, Orillard Magali, Zimmermann Jean-Benoit, *Economie de la connaissance et organisations, entreprises, territoires, réseaux*, Paris : L'Harmattan
- Guellec D, 1996, Knowledge skills and growth, some economics issues, *STI review*, OECD, n°18, 19-44
- Guilhon B, Huard P, Orillard M, Zimmermann J.B, 1997, *Economie de la connaissance et organisations, entreprises, territoires, réseaux*, Paris : L'Harmattan
- Hatchuel A, 1999, Connaissances, modèles d'interaction et rationalisation, de la théorie de l'entreprise à l'économie des connaissances, *Revue d'Economie Industrielle*, n°88, pp. 187-209
- Hatchuel A, 2002, Gestion des connaissances et capitalisme de l'innovation, in, Gaudin T, Hatchuel A (coord), *Les nouvelles raisons du savoir*, La Tour d'Aigues : Editions de l'Aube
- Hatchuel A, Le Mosson P, Weil, B, 2002, De la gestion des connaissances aux organisations orientées conception, *Revue Internationale des Sciences Sociales*, Mars, n°171
- Hebert Suffrin C, 2002, Les réseaux d'échanges réciproques de savoirs, *Pour*, n°173, pp.126-135
- Iribarne, A d', 1996, Une lecture des paradigmes du Livre Blanc sur l'éducation et la formation : éléments pour un débat, *Formation professionnelle*, N°8-9,
- Iribarne, A d', 2001, Trente ans de Céreq, Des qualifications aux compétences, chronique d'un oubli accepté, *Formation Emploi*, n°71, pp. 71-98

- Jollivet P, 2001, Les NTIC et l'affirmation du travail coopératif réticulaire, in Azaïs C, Corsani A, Dieuaide P (eds), *Vers un capitalisme cognitif, Entre mutations du travail et territoire*, Paris : L'harmattan,
- Labruyere Chantal and alii, 2003, The accreditation of prior learning and experience, *Training and Employment*, Cereq, January-March
- Lichtenberger Yves, Paradeise Catherine, 2001, Compétence, compétences, *Sociologie du travail*, n°4, 33-49.
- Lichtenberger Yves, Méhaut Philippe, 2001, La formation professionnelle continue, bilan pour un futur, *Liaisons Sociales*, n°
- Lichtenberger Y, Merle V, 2001, Formation et éducation tout au long de la vie, 1971-2001 : deux réformes, un même défi, *Formation Emploi*, n°76, pp.169-190
- Liétard B, 1996, Promotion sociale et lifelong learning : même combat ?, *Actualité de la formation permanente*, Mars Avril, n°141, pp.39-42
- Llerena D, 1997, Coopérations cognitives et modèles mentaux collectifs outils de création et de diffusion des connaissances, in Guilhon B, Huard P, Orillard M, Zimmermann J.B, *Economie de la connaissance et organisations, entreprises, territoires, réseaux*, Paris : L'Harmattan
- Martinez M, 2001, La position de la France dans les technologies de l'information, Une comparaison avec les USA, le royaume Uni et l'Allemagne, *revue de Rexecode*, n°71
- Mayen P, 1996, La formation tout au long de la vie, une histoire de filiations et de transformation des compétences, *Actualité de la formation permanente*, Mars Avril, pp. 91-95
- Mayere A, 1990, *Pour une économie de l'information*, Paris, Editions du CNRS
- Méhaut P, 1996, Se former tout au long de la vie ? *Céreq Bref*, n° 120, mai 1996
- Méhaut P, 1997, Se former tout au long de la vie, quelle nouveauté, quelles conditions, *Revue Internationale d'éducation*, N°16, pp.79-88
- Mehaut P, 2003, From firm based vocational training to lifelong learning, The difficult evolution of the French VET system, ESCR seminar, Warwick
- Méhaut P, 2004, Education et formation tout au long de la vie : loin de la coupe au lèvre, contribution au rapport mondial sur l'éducation, Unesco, forthcoming
- Merle V, 1997, Formation professionnelle : un nouveau compromis social à construire, *Education Permanente*, n° 129, pp.63-78
- Merle V, 2004, L'accord interprofessionnel du 20/09/2003 relatif à l'accès des salariés à la formation tout au long de la vie : un accord historique ? *Droit Social*, forthcoming
- Moati Philippe (dir), 2003, *Nouvelle économie, nouvelles exclusions ? La Tour d'Aigues* : Editions de l'aube
- Petit P, 1998, *L'économie de l'information*, Paris : La découverte
- Petit P, 1998, Travail et Emploi dans une économie fondée sur le savoir, Communication au colloque de Vancouver, CEE et Université de British Columbia
- Petit P, 1999, Les aléas de la croissance dans une économie fondée sur les savoirs, *Revue d'économie industrielle*, n°88, pp. 41-66

- Palloix C, 2001, A la recherche d'un nouveau dispositif d'analyse du capitalisme cognitif, postface, in Azaïs C, Corsani A, Dieuaide P (eds), *Vers un capitalisme cognitif, Entre mutations du travail et territoire*, Paris, L'harmattan,
- Paulre B, 2001, Le capitalisme cognitif, un nouveau programme de recherche, in Azaïs C, Corsani A, Dieuaide P (eds), *Vers un capitalisme cognitif, Entre mutations du travail et territoire*, Paris : L'harmattan,
- Pery, N, Secrétariat d'état à la formation professionnelle, 1999, *La formation professionnelle, diagnostic, défis, enjeux*, Paris : La documentation française
- Rope Françoise, 2000, Savoirs, savoirs scolaires et compétences, in Van Zanten Agnes (dir), *L'école, l'état des savoirs*, Paris : La découverte
- Rovan J, 2001, Education tout au long de la vie, le défi du 3^e Millénaire, *Pour*, Mars, n°169, pp.163-170
- Santelmann P, 2001, *La formation Professionnelle, nouveau droit de l'homme ?* Paris, Gallimard,
- Seibel C (pres), Afriat C (rap), 2002, *Avenir des métiers, rapport du groupe Prospective des métiers et des qualifications*, Paris : La documentation française
- Soete L, 2001, Tic, Economie du savoir et Emploi: un défi pour l'Europe, *Revue Internationale du Travail*, avril-juin, vol 40, n°2, pp.183-206
- Supiot A, 1999, *Au delà de l'emploi : transformation du travail et devenir du droit du travail en Europe*, Paris : Flammarion
- Thery M, Quintero N, 2001, Memorandum sur l'éducation et la formation tout au long de la vie, consultation française, www.cereq.fr
- Thery M, Rousset P, Zygmunt C, 2002, L'Europe de la formation tout au long de la vie reste à construire, *Cereq Bref*, n° 187, Juin
- Touffut J. P(dir) 2002, *Institutions et innovations, De la recherche aux systèmes sociaux d'innovation*, Paris : Albin Michel,
- Trautmann J, 1996, Fin de l'idée d'éducation permanente, *Actualité de la formation permanente*, n°159, pp.15-24
- Van Zanten A (dir), 2000, *L'école, l'état des savoirs*, Paris : La découverte
- Verdier E, 2001, La France a-t-elle changé de régime d'éducation et de formation? *Formation Emploi*, n°76, pp.11-34
- Verdier E (coord), 2001, Higher education systems and industrial innovation, final report, TSER, LEST-CNRS, Aix en Provence
- Viginier, P (dir), 2002, *La France dans l'économie du savoir*, CGP, Paris : La documentation française
- Virville, M de (rapp), 1996, *Donner un nouvel élan à la formation professionnelle*, Rapport au ministre du travail et des affaires sociales, Paris : La documentation française,
- Weissberg J.L, 2001, Travail intellectuel, réseaux numériques et présence à distance, in Azaïs C, Corsani A, Dieuaide P (eds), *Vers un capitalisme cognitif, Entre mutations du travail et territoire*, Paris : L'harmattan,
- Zarifian P, 1999, *Objectif compétence*, Rueil Malmaison : Editions liaisons,

