Towards a neo-artisanal production model of bespoke digital services?

Alain d'Iribarne
Director of Research at the CNRS, Laboratoire d'Économie et de Sociologie du Travail (LEST), Aix-en-Provence

Thinking about the shifts underway which, combined with the spread of the Internet, are affecting both the content of work and the occupational skills required by employers and, more generally, training/employment relationships, leads us to conclude that contemporary societies are faced with the emergence of a new production paradigm. To decode these shifts and give them a meaning, we suggest that this paradigm be interpreted as the emergence of a production model combining a neo-artisanal system with the production of bespoke digital services. This new model, whose prime mover is more economic than technological, is part of the long-term dynamics of deconstruction/reconstruction of the Taylorist/Fordist model and the welfare state, which started in the late 1970s.

Introduction

Researchers specialising in labour and vocational training observe changes in work taking place over time in various countries and attempt to describe these changes, explain them and give them a meaning. The wealth of wide-ranging research in this field is evidenced by the many articles published in France, in the journals *Sociologie du Travail* and *Formation Emploi*, or those published in the *European Journal* for *Vocational Training*. We are also aware of discussions and debates which have arisen over time on technologies as prime movers of changes in work and skills. With variations in different countries, shaped by the empirical situations observed and the prevailing theoretical premises, these discussions and debates continued throughout the 1970s on the Taylorist organisation of work and mechanisation, and took off again in the 1980s and 1990s focusing on trends in work and skills in 'post-Taylorist' enterprises which were then computerising.

These debates reappeared in the late 1990s and early 2000s with the advent of the new generations of 'Information and Communication Technologies' – the famous ICTs or NICTs – in a context of globalisation and growth of service activities (Iribarne, 2001). But the same questions were being asked continually: what changes in work and occupational activities can actually be observed? To what can these changes be attributed? To what extent do they call into question the occupational skills required so far? To what extent are these changes beneficial? Are they rather 'setbacks by progress' – and for whom and under what circumstances? Which policies should be introduced to remedy or, better, prevent them? These questions are especially difficult for theoreticians and practitioners because they are related to the way in which production organisation will be structured in the emerging 'information society' and 'knowledge society' - which, as we know, has become the credo of the European Union since the publication in 1993 of the White Paper on growth, competitiveness and employment, endorsed at the Lisbon summit in 2000 (EEC, 1993).

Faced with the shifts taking place, within and between countries, our intention is not to propose a new 'theory of capitalism' (Boyer, 2004). It is, more modestly, to propose a framework for analysis and interpretation which will allow us to better characterise what constitutes a new stage in the dynamic encounter between technologies and production organisations in our societies. It rests on the notion that this new stage is much more a continuation of, than a breakaway from, preceding stages: these shifts are being brought about by the ongoing deconstruction/reconstruction of norms surrounding markets, employment, work and skills.

To characterise this new stage, our argument takes a twofold 'regulationist' and 'societal' approach. This approach is intended to link 'universals' formed by paradigms and models with 'specifics' formed by the societies that implement them and give them concrete form. Previous research – especially research based on international comparisons – has shown that the economic, technological, organisational and management models which play a part in forming production paradigms should be taken as 'universals' and national societal constructions as 'specifics' ([1]). The whole is built on systemic bases ([2]), while bearing in mind that, as matters stand at present, the overall system is being driven primarily by the 'economic', that the 'social grasps technology as much as technology grasps the social' and that technologies are 'tools re-engineered' by the other two components of the system, chiefly the economic.

([1]) International comparisons show that each society has its own specific ways of constructing institutions and organisations which structure their modes of production and work in particular (Maurice and Sorge, 2000). Moreover, these constructions cannot be understood without taking account of characteristic traits which may be termed 'cultural'. These traits are in practice stable enough to structure the perceptions and behaviour of their members in their social relations and, in particular, in their ways of 'working together' (Iribarne, 1989).

([2]) To take up the perspective sketched out by B. Gilles (Gilles, 1978).

On this basis, our view is that the shifts underway, concerning work, employment and the occupational skills required as well as education/training, can be better understood if they are located in the interpretative framework of '@-production'. In this framework the stress is on a production paradigm shaped by a newly emerging 'neo-artisanal production model of bespoke digital services'. It is linked to the arrival of the Internet in production models in the mid-1990s ([3]) and follows on directly from a previous model with which it is closely related – what may be termed a 'post-industrial model of standard specificity', which started to emerge in the early 1980s and of which it is a further development. As a result, the 'learning enterprise' is appearing alongside the 'lean enterprise'. Similarly, 'knowledge management' is being superposed on 'participatory management', while network approaches, supported by the allegory of the 'dot-com enterprise', are becoming more widespread and more specific.

Production organisation and market norms

Having called this new model a 'neo-artisanal model of bespoke digital services', we must make explicit its features in relation to the terms used to specify it, bearing in mind that these characteristics are linked primarily to market norms.

The term 'bespoke services' is intended to place the stress on the initiative of production activities for which the production of 'service relationships' is the core of their work (De Bandt and Gadrey, 1994). This relationship may be a complement to the production of industrial goods or may incorporate it: such production is in some ways merged with the service relationship. Faced with customers who are tending to elude them, the main problem for enterprises is to obtain a stable competitive edge by winning customers over and keeping them loyal. As a result, they are keen to offer clients bespoke services to give them the feeling that they are in a situation of hyper-choice; in essence, companies are selling the feeling of freedom. This is why we are said to be moving from an economy of diversity to an economy of specificity. At the same time, as pressures on production costs do not seem set to diminish, pressures for a massive 'neo-industrialisation' of services are not about to slacken off either.

The term neo-artisanal is used because the personalised service relationship, though highly codified and mediatised by technical 'artefacts', if it is to function properly, needs to give customers the impression that they are being listened to and that their problems can be resolved in full, even if assistance may be needed. This mirrors the traditional artisanal sector; enterprises are trying to sell their customers the feeling that they exist as separate personalities; the 'trade' approach is re-appearing (Capdevielle, 2001).

The term 'digital' refers to the fact that new generations of information and communication technologies have become the primary support for these services, either as an integral part of the service offered, or indirectly, as support for its production. In practice, they are completely functionalised, in a model which is seeking to shift away from flexibility/adaptability/creativity towards 'fluidity' or even 'liquidity'.

In this model, the most powerful production structures systematically seek to rid themselves of any material assets. They then use these assets in the form of 'inputs', preferably leased in the case of fixed capital or purchased over time in the case of circulating capital. The functions that they systematically keep to themselves, and do not share, are those which make it possible to generate the production of value and to oversee its enhancement: i.e. the functions of design/creation and the control of property rights. Marketing and R&D functions raise many more questions and are more open to partnerships. For enterprises working in the field of materials, the aim is to move closer to the operating methods of commercial enterprises and especially of financial brokerage enterprises, which have only circulating assets or intangible assets - hence the notions of 'hollow enterprises' or 'virtual enterprises' (Ettighoffer, 2001).

In some ways, the model of the high-performance production company is becoming that of the film production company whose existence is embodied by projects following one another over time. The project has the upper hand over the permanent structure, and the company has no assets other than the resources needed for the 'governance' of projects: i.e. the resources needed to supervise their design and achievement in accordance with a set of specifications, and to oversee the enhancement of the own-re-

([3]) There are major differences between what is being said in the literature on the 'e-enterprise' which is being presented almost as a fait accompli and reality which shows a slow migration of previous IT towards this 'e-enterprise' (DARES, 2001).

sources committed. The shift towards disbanding the permanent enterprise thus continues, while the path of steering ephemeral organisations, combining multi-origin and multi-ownership resources, gains ground, giving meaning to the notion of the network enterprise ([4]).

In this model, SMEs continue to grow in power alongside large enterprises: not only do they form a greater proportion of companies, they are actually becoming the main employers. It is therefore here that the future of employment and labour norms is increasingly being played out. In the literature, these SMEs are grouped into two network models which are in widespread competition:

- model of the 'network enterprise': this is being brought about by the continuation/completion of the disbanding of the large enterprise which, by 'focusing on its core trade', is further reducing the boundaries of its 'hard core' and the resources associated with it. This kind of enterprise takes a network control stance, operating the network on 'vertical' bases and expecting a return in the form of a maximum enhancement of its own assets as a result of a flexibility/adaptability that it lacked. Its competitive edge lies in its might, enabling it to work in large markets and to make economies of scale in R&D, and in its strategic capacity appropriately to position the entire network in value chains and to find the best business models associated with them.

- The model of the 'enterprise network': the aim here is to gain size in order to be able to compete as widely as possible with the preceding networks. In this network, groups of enterprises, generally of small or medium size, join forces on a much more egalitarian basis. These networks derive their competitive edge from their flexibility/adapt ability/creativity in service provision, by pooling their resources, enabling them to make economies of scale while ensuring, through their individuality, local service capacity. These networks are often presented as set up on a geographical basis, taking up the approaches underpinning the industrial districts of northern Italy (Bagnasco, Sabel, 1994)

In both cases, customers are set to be integrated into the networks not just as consumers, but also as co-producers of services as a result of the notion of 'servuction' (Eiglier and Langeard, 1987), especially when the services offered are all 'online services' as is the case with 'e-procurement' and 'e-commerce'. They are considered to be at the core of the 're-engineered' enterprise, in terms of its twofold logic of strategic centralisation and operational decentralisation, listening to and serving their expectations and their needs. In both cases, the technological and technical supports are the same with the same conduits, the same protocols, the same support equipment and the same applications. Similarly, in both cases, control of logistical distribution networks – supply chains – that are equal to the expected services continues to be a key issue. However, the two types of network differ in terms of the ways in which the players are combined, the organisation of their governance structures and the distribution of the value produced by their groupings.

The techniques and technologies used

It has been said that the technical reference system is that of the 'Internet galaxy' (Castells, 2000), i.e. all the 'multimedia' techniques and equipment networked under the 'Internet protocol', reflecting a convergence of speech, data and images in a digital support. In comparison, therefore, with the prior information technology, two details are changing everything: the 'IP' protocol which makes it possible to set up the 'network of networks' and the 'hypertext' link which makes it technically possible to surf these networks using 'search engines' in order to find information uploaded on 'sites'.

However, all the basic equipment - cables, connections, interface supports, software - takes the form of generic technologies and 'cluster' technologies, themselves deriving from electronics, optics, information technology and so on, the overall package being called NICT to distinguish it from previous generations (Caron, 1997). This equipment can be used for multi-purpose information and communication or transaction applications. It may also support workflow to automate data processing procedures as well as websites, forums and various supports for cooperative work. It may also support migrations of e-mail and EDI (electronic data exchanges) already operational in proprietary networks of the previous generation.

([4]) An important feature of the network enterprise is the lack of association between its legal boundaries and its technical and economic operating boundaries, making it very difficult to pinpoint where it starts and where it ends. Determining its boundaries is becoming even more dependent than before on the conventions used.

The most significant development lies perhaps in the architecture of networks and the information systems that they support. In contrast to the previous generation, where they were specific to each enterprise, organised more in line with the main enterprise functions and more focused on technical and management functions related to production, these new systems and the applications associated with them are much more 'transverse' even though they continue to be called by their functional fields of application: e-commerce, e-procurement, e-learning, etc. ([5]) The main vocation of this information technology's 'integrating transversality' through Intranets and Extranets combined with databases is to organise the information systems of enterprises so that they form the backbone of 'enterprise networks' and 'network enterprises' through transverse coordination. It is for this reason that, over and above individual applications, the main software suppliers are selling integrated packages with two complementary orientations which ultimately meet up with one another: 'ERP' (Enterprise Resource Providers) geared to 'back office' management and 'CRM' (Consumer Relationship Management) geared towards the commercial through 'customer relations': marketing campaign management, sales aids, call centre management, etc.

Lastly, the interface supports - chiefly PCs and telephones - are starting to become more mobile, making it possible, through 'roaming connections' to extend the enterprise's boundaries to personnel on the move.

Labour and employment norms

Whereas the previous model tends to make labour and employment norms more diverse, this model, in a reverse and complementary movement, tends rather to unify them around work stations seen as technical supports for economic and social 'network nodes' (Benghozi et al, 2000). The technical work station becomes the universal support for occupational activities, whatever their legal status, function and hierarchical level. The trend toward homogenisation is taking place in both the temporal and spatial dimension.

From the point of view of employment norms, the 'enlarged net company' looking for profitability based on 'liquidity' tends to combine organisational and legal dis-integration with technical and economic integration. Being able to work with others while elsewhere ('distance working'), the reduction or elimination of the need for physical presence, 'intra-trade' project organisation, and 'itinerant' operation, are promoting a whole range of forms of 'teleworking'. They are also associated with clusters of 'independent, responsible and entrepreneurial professionals' ([6]), this occupational autonomy-responsibility-entrepreneurship bringing employment closer to self-employment. There is little to prevent this trend from being mirrored by a shift from waged to self-employed status - and this may signal the return to 'precariousness for all' ([7]).

From the point of view of labour norms, the technical work station, as a mediatised support for coordination/cooperation underpinning the collective organisation and its efficiency, is becoming the pivot of the new working conditions as a result of its reliability, the ergonomics of its man-machine interfaces and operating methods and its multiple network connections. The 'mouse' and the 'double click' seem set to become the source of a new generation of occupational diseases ([8]). Similarly, as work is increasingly being organised in the form of independent projects, the technical work station is becoming the priority place for conflicts of priorities which are particularly difficult to manage when they are subject to the increased constraints on timescales for action brought about by interactivity and the contraction of production deadlines. The anxiety generated by time pressures is therefore supplementing the anxiety of 'precariousness': taken together they are leading to stress on a mass scale (Lasfargues, 2000) ([9]). Lastly, the technical system is becoming the preferred mode of supervising activity - it makes it possible to find out online, at any time, not only working time but also what stage has been reached with the work handed out and what operating methods have been used to achieve it. The fear of supervision is therefore becoming generalised. More globally, transparency and what it means is an issue for everyone ([10]).

In some ways, the typical 'e-working' profile is that of a technician in a call centre with intermediate or higher technical skills, such as someone working in 'customer assistance'. The technician's role is to be able to provide, as rapidly and accurately as possible, replies to questions asked, whether

([5]) In industry, the shift is towards design through modelling and 'virtual design' enabling 'concurrent engineering' networked around a basis common to all the players involved.

([6]) Used here in its broad sense, i.e. not limited to work 'at home'. It therefore provides the possibility of specific forms of 'non-localisation' of occupational activity.

([7]) This feeling is exacerbated by the fact that enterprises wishing to be more strategic are being led to work more on the boundaries of their activity, by buying as well as closing or selling subsidiaries, establishments or departments. This creates more insecurity, which is associated with a feeling of reification of occupational activities.

([8]) The 'double click' is said to cause problems with the hands, wrist, elbow, shoulder, neck and vertebrae. According to B. Valdires, an osteopath specialising in joint problems linked to occupational activities: 'in the history of work, man has never been exposed to such light but repetitive movements', cited in P. Gilly, Double clic, danger public? France TGV No. 44, May 2002, p 12.

([9]) More generally, advances in medical research are increasingly highlighting the interdependences between 'psychosomatic' disorders and 'functional' disorders such as cancers. There is no reason not to think that the new labour and employment norms will produce, in the future, new diseases which are of occupational origin (Iribarne, 2004).

([10]) The extent of the legal problems associated with these issues is well known (Ray, 2001).

these are requests for information or for technical help. For this purpose, he uses his own expertise assisted by the information system which he can access via his computer and possibly also back-up expertise (Institut des Métiers, 2001). He therefore works in a 'neo-artisanal model' since he has to be able to reply to the customer's question in an autonomous way, by mobilising all the 'expertise of his trade'; but at the same time he is entirely controlled by a technical system which guides him and records his activities in real time, in terms both of duration and procedures followed.

More precisely, these technologies are significantly blurring the reference boundaries of 'Taylorist' work constructed around the space/time relationship and the specialisation associated with them - work, leisure, training - and are tending to deprive the 'standards' set by legislative and contractual working times of any meaning (Institut Chronopost, 2005) ([11]). The most novel aspect of the NICTs is that in places where opposites, i.e. exclusives, were combined: centralisation or decentralisation, autonomy or supervision, intensive or extensive, etc. - these technologies make it possible to combine associations, i.e. inclusives in the same way as exclusives.

The 'e-organisation': potential associations

- ❑ Competition and cooperation;
- ❑ strategic centralisation and operational decentralisation;
- ❑ independent operation and online supervision;
- ❑ stable procedures and unstable processes;
- ❑ predictability through scrutiny and unpredictability through instability and strategic mobility;
- ❑ short term and long term (cost control by daily reporting and strategic policies)
- ❑ intensification of time and extension of time (synchronous and asynchronous)
- ❑ intensification of place and extension of place (here and elsewhere or the gift of ubiquity).

Required occupational abilities - hybrid knowledge

Together with these changes in the economic and social benchmarks of production, as well as the tools supporting production activities, the hierarchy and the content of knowledge are also being called profoundly into question: the knowledge formerly required is being largely recomposed by hybridisations (Zune, 2003; Orgogozo, 2004). New generic requirements are appearing in the form of 'required abilities'. These new requirements conventionally include the use of techniques and the relationship between the ability to use techniques and job skills. 'Behavioural' expectations are also appearing, however, in explicit and new ways in relation to 'cultural' aspects and, over and above social norms, psychophysiological attributes. These new requirements have less to do with problems of mastery, connected with the dissemination of the new generations of ICTs, than with requirements formulated in terms of mastery within the framework of the above-mentioned production constraints. Together, these requirements represent a unifying principle as regards this new model, as they are being formulated for all occupational activities, whatever their levels, nature and places of performance.

Knowing techniques and their uses. The massive and widespread dissemination of these technologies to all forms of work means that they absolutely have to be learnt. The need for familiarity with these techniques and mastery of their use at a relatively high level is due, on one hand, to their relatively limited reliability and, on the other hand, to the tightening of production constraints ([12]). However, as these technologies form a system with the older technologies that predated them, learning how to use them cannot take place without their systemic reinterpretation. In practice, this means that a knowledge of the areas in which the different technologies available can be relevantly used in terms of the work to be performed is becoming the basis of occupational skills in this area - rather than simple conventional skills in manipulating these technologies.

Job skills. From a professional point of view, the ability to use these technologies is nevertheless less essential than job skills. In prac-

([11]) This construction is the basis for the legal forms attached to work since it defines the places and times of work, and the rights and duties associated with it. This is perhaps where employment and labour standards may be most destabilised by the NICTs.

([12]) The technical abilities discussed here do not take the form of traditional skills in electronics in relation to hardware, or IT knowledge of the programming type, but are systemic skills. They make it possible to understand the 'parameters', where the system may be constituted of the computer and its program library or, more formidably, the computer and its connection networks. The need for these abilities regularly arises at the time of installation and 'configuration' of the system. It also arises every time one or other component of the initial configuration is modified or every time a problem appears during operation: What kind of problem is it? Is it the result of an incorrect manoeuvre? Is it a crash? Where is it? What do I have to do to solve it? All questions that the user asks with even more apprehension if he cannot call on a local environment possessing the required abilities.

tice, the relationship between generic techniques and jobs is twofold. On the one hand, techniques are used in contexts which may be extremely varied, depending on the jobs of which they are part. On the other hand, they are an integral part of the content of jobs which are themselves being changed as a result of developments in the products/services placed on the market and as a function of the tools and organisational methods mobilised to produce them. Thus, their dissemination contributes to the dynamics of jobs. Contrary to popular opinion, however, basic job skills remain remarkably stable. Developments are much more likely to take the form of reconstructions and hybridisations of existing jobs than of the ex nihilo creation of new jobs based on new knowledge and making 'old' knowledge 'obsolete' (Dauzin et al, 2000; Iribarne and Tchobanian, 2003). The key factor here is that the relationship between usage abilities and job abilities, as a new stage of reconstruction of old jobs, is becoming a major source of confusion of the traditional benchmarks of training and employment counselling. In practice, both the contents of activities and their names lose meaning as the correspondences between them become looser.

Behavioural skills. These are a new component of the required abilities that are being grafted onto other abilities because of the specific problems raised by NICTs when they serve the managerial desire for integrated cooperation in extended networks which go beyond the traditional boundaries of services, enterprises and states. Communication is primarily an anthropological phenomenon; communication tools come up against cultural incomprehension whether in different job worlds or, more broadly, in different countries or cultures (Iribarne, 1998). Knowledge of, or at least the ability to understand, another's world is thus becoming a key component of occupational skills. This ability is not, however, sufficient, as cooperation happens within generalised, strong competition: what is therefore necessary, within competition, is to be able to 'cooperate loyally' while accepting the continual 'challenge of the other' ([13]).

We need to take our examination of behavioural requirements further in relation to what we said about stress. Occupational activities today are unstable and unpredictable, framed by changing relational worlds and generating perpetual conflicts of interest and priority. The ability to cope with this kind of situation then becomes a generic competence as well; all applicants for jobs may be required to possess it.

Required individual behavioural capacities

❑ To be able to find, select and analyse information in order to decide under major time constraints;

❑ to be able to prioritise information and constraints;

❑ to be able to classify information so that it is accessible at all times;

❑ to be able to work effectively, and multi-task on several issues at the same time;

❑ to understand the relation between deadlines set and resources allocated as constraints in formulating one's work.

Required collective behavioural capacities

❑ To be able to cooperate with a variety of people, without the need for moderators;

❑ to be able to perceive one's place in the collective organisation;

❑ to be able to inform/report with discernment;

❑ to be able to impart one's own knowledge to other people in ways that are useful for them.

Education/training and certification

Just as in other production activities, institutions responsible for education/training are not only being affected by the paradigm shift we have examined in respect of service provision, i.e. producing the required abilities, but also in terms of their production organisation - through at least three of the fundamental dimensions of these changes: cooperation/competition, which is spreading to all establishments and is reflected by the formation of national or supranational alliances/consortia (Iribarne, 2002), 'liquidity' which is reflected by the stress being placed on 'lifelong learning' (Iribarne, 1996)

([13]) It is not by chance that we are witnessing a rhetoric of sporting competition throughout the HRM world which echoes the war rhetoric in the business world. The aim is to create a sort of 'soft' and ultimately rather cynical mediation between the players who have an interest in understanding that it is in their interest to cooperate to improve their collective performance and, thereby, their individual performance.

and 'virtuality' with e-learning and distance learning (Kreher, 2001; Formation professionnelle, 2002; Pollmann, 2004).

The learning enterprise. In connection with the NICTs and their uses, the desire of employers to dismantle the Taylorist/Fordist model together with their keenness to speed up the introduction of a new production organisation with the properties sketched out above, is leading them to stress 'knowledge management' and 'e-learning' in order to promote the creation of a 'learning enterprise', i.e. an enterprise which is constantly able to co-produce 'outputs' of services for customers and 'inputs' of production skills through individual and collective learning (Centre for Educational Research and Innovation, 2000; Dierkes et al, 2001). Their aim is therefore to specify, in connection with the production of 'e-services', the production abilities deemed necessary for production, to make them an integral part of operations, and continually to renew their competitive edge.

Certifying knowledge and acquired occupational abilities. From this point of view, it is logical that the certification of knowledge acquired through training courses by State-recognised certificates is also being called into question. There are increasing demands to take part in processes and to be players in assessment and the recognition of acquired learning. On the one hand, there are demands for the certification of acquired occupational abilities by 'third-party certifiers' who are felt in practice to be more rigorous in their assessments of both training institutions and training contents or acquired knowledge and abilities ([14]). On the other hand, demands are also being put forward by enterprises which want to be included in the assessment of acquired abilities.

More globally, this questioning is the result of a shift towards 'competences' within the reference system of the 'qualification universe'. Certification of skills expressed in terms of competences is in practice being shifted in two directions: from schools to workplaces and from teachers to the managers of occupational activities. The view of enterprises, as mentioned above, is that they no longer believe in 'knowledge' which is too fixed to cope with the mobility of the world. Instead, they want to be sure that that they 'can recover in practice' the results of investment in training. Companies feel, in fact, that they are best placed to assess the pertinence and validity of the knowledge acquired within production activity, while unions dispute these claims or demand to be included in the process, in the name of avoiding arbitrary judgments. ([15]).

The status and remuneration of knowledge. We feel there are three key factors here. They are:

- the desire to downgrade the status of knowledge felt to be 'fossilised', which is continually outdated, in favour of operational skills which can be continually put to use in immediate production processes;
- the desire to pay for these competences only if they are effectively mobilised in identifiable production processes whose individual results can be evaluated;
- the desire to pay for work only when it has been possible to put this work to use in product or service markets.

According, therefore, to the well-known approach of analyses conducted in terms of human capital, the return on education – what is commonly known as the 'payback' of training – is becoming a key factor in its evaluation. As a result, there is a tendency in favour of individualised pay.

Social compromises and 'e-regulation'

Lastly, and even more generally, the changes taking place in rules, procedures and norms are destabilising the social compromises which, throughout the major changes of the 20th century, paved the way for the emergence and consolidation of modern forms of employment. This destabilisation is affecting public power by calling into question the welfare state. This tendency is being reflected internationally in the reduction of the boundaries and the legitimacy of state intervention. Free trade agreements seek to equate national laws guaranteeing social protection with attacks on free competition (Arnaud, 2004). Nationally, it is reflected in the desire to give a greater place to industrial relations, seen as the pivot of collective regulation of the Fordist wage relationship, via their role in the production of rules and norms (Le Goff, 2004). In both cases, laws and regulations now tend to play less of a role than agreements and contracts.

([14]) This reflects an extension to the field of education and training of the more global phenomenon of certification, which started in the quality field with the ISO 9000 standards then moved on to the environment with the ISO 14000 standards.

([15]) This trend also reflects another aspect of a return to the artisanal model. In this model, the unity of the place and time of training and work predominated, and the skills acquired were validated and certified strictly within the framework of the professions, albeit organised as guilds.

Industrial relations are also being called into question, in terms of how their levels of regulation of set up, what methods and content govern bargaining, and which actors can take part in drawing up rules. In the European Union there is a twofold move away from central collective bargaining whose legitimacy is tending to decline. In the name of greater flexibility and better linkage with the situation in the field, the first shift, for which employers are pressing, is towards companies and their establishments, and, under the influence of the federal state model, towards local authorities (Jobert, 2000; Tallard, 2000) ([16]). In the other direction, European integration is causing a shift towards the supranational.

Cyber-unionism, whose appearance reflects the emergence of the Internet in industrial relations, is itself a new development in collective bargaining and is raising questions at various levels. The development of new information and communication media brought about by the Internet, with its e-mail and websites, is making the traditional trade unions think about the ways in which they inform their constituents. Mobilisation in the event of disputes is another area, especially with the emergence of 'cyber-disputes'. New players are appearing, gate-crashing regulation processes and thus calling into question the monopolies of the conventional bargaining players – i.e. the unions with an elected mandate – as well as the places and methods of disputes. More generally, as a result of the extension of traditional 'occupational unity organisations', self-proclaimed representational groups are appearing which, focusing increasingly on the Internet and the 'global network', are turning into self-appointed representatives of the grass roots. These players are trying to shift the locus of action by taking them outside the enterprise to the market place. They are trying to involve new players in the game – for instance consumers or customers – with the common objective of changing the relationships of strength in bargaining. The web and the voluntary sector are thus becoming the platform for demands for a different democracy: a participatory democracy that is felt to be more representative ([17]).

The @-enterprise and the production paradigm, termed globalisation, with which it is associated, are causing our post-industrial societies to make spectacular shifts away from the paths they followed in the last century. These shifts started in the late 1970s when the balance of power shifted away from suppliers and towards customers. They continued in the 1980s and 1990s when these about-turns extended to providers of capital and away from providers of labour. At the dawn of the 21st century, a generalisation of the market economy is that it is trying to gain the upper hand against the backdrop of a deepening of Smith's model modernised by Schumpeter's model: the model of creative destruction (Smith, 1991; Schumpeter, 1965). Even more fundamentally, the model of liberal democracy along the lines of the English-speaking world is being proffered as a universal point of reference (Weber, 1987), a model revisited by the ICTs with the typical figure of the 'middle class' as the social ideal of accumulation and distribution of wealth (Sombart, 1966; Ponteil, 1968; Granou, 1977) ([18]) .

Conclusions

Our aim, through this exercise, is to put forward a paradigmatic construction equivalent to what was done in the past for Taylorism and Toyotism - one as a production paradigm of 'standard industrial mass production' and the other as a paradigm of 'post-industrial production of standard specificity'. We feel that the main feature of this new paradigm is that it is widely based on competition and on risk and uncertainty (Beck, 1992). In this world of cutthroat competition, everyone is required to work with everyone and to compete with everyone. Moreover, in this world of risk and uncertainty, no one can promise anyone anything. Everyone has to accept a more fragile situation as a result of the precariousness of the social link, a fragility which extends beyond the sphere of work to affect family life. (Sennett, 1998; Supiot, 2004). In gaining access to unequally distributed wealth, only the 'fittest' are likely to win, while the leading positions are continually up for auction as a result of the play of innovation. Logically, no person and no institution should escape this model of required performance, not even the actors and institutions of education/training (Iribarne, 2002). The typical model of the high-performing individual offered as a corollary is that of the artist (Menger, 2002), or the sportsperson in the 'Top 10'.

We believe that formulating a framework for this kind of analysis and interpretation is indispensable if we are to understand what is

([16]) This comment probably applies more to France where the importance of the central state is well-known.

([17]) It is also possible to see these shifts at a global macro-regulation level with the organisation of the 'anti-globalisation' demonstrations at the various meetings of the WTO or the G7, G8 and so on, in Seattle, Genoa, etc., or at the 'alternative Davos summits' in Porto Allegre. They were also to be seen during the Danone disputes when a pirate site, counterfeiting the enterprise's site and inviting consumers/customers to boycott the enterprise's products, was set up. See on this subject J.-E Ray, op cit., pp. 177-239.

([18]) Or, more precisely, the liberal model which emerged in Calvinist Britain and which set itself up as a 'universal' doctrine. Historically, France has tried to take it up and implement it at various times without ever managing to do so (Jaume, 1997).

currently happening in the EU Member States, with their tensions and issues. This is just as true of changes in the 'quality' of work as of the transition from qualification to competence and the shifts in the occupational abilities required by employers (Oiry, 2004) or, lastly, of the content of training and adjustments in training/job relations. It is only when we relate the dynamics of models and paradigms to societal constructions that we are able to understand what kinds of changes are underway in the various countries, and the difficulties that they are encountering or causing. This applies just as much to management practices at the micro-industrial level as to public policies at the macro-social level.

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