

## SKILLS AND COMPETENCIES NEEDS IN THE INFORMATION SOCIETY\*

Planning initiatives of human resources development of strategic nature (aimed at satisfying the foreseeable demand of the productive system in a not-so-immediate future) is a difficult exercise for two specific reasons: *a)* all education and training processes take time to produce the desired effects and require a non-negligible time to design and to implement; *b)* planning itself is based on scenarios of specifications that we are never sure will correspond to the actual evolution of needs.

On the other hand, when trying to foresee changes in society to occur in the future, induced by innovations in technology, experience shows that reality frequently is even more different from the present than was expected. However, it is sometimes useful, when dealing with futurology, to look back and try to learn from the past.

### LOOKING BACK

The last quarter of this century has seen major changes in the economic, political and cultural landscape around the world. For the sake of brevity we shall characterise some of this changes with the help of chosen examples, without trying to lay a complete and proper foundation to prove the corresponding statements.

1. What has been called the *modernistic (or industrial) society*, born with the Industrial Revolution in the XVIII<sup>th</sup> and XIX<sup>th</sup> centuries was firstly based on a permanent tension between capital and workforce; on a liberal approach to economy; on the onset of democratic governments and the first struggle for establishing the respect for human and political rights of the citizens. From the beginning of the XX<sup>th</sup> century onwards, two different models were set for the government of Nation-States: one based on the free enterprise and conventional democracy, adopted by the West, the other consisting of a State-controlled

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and centralised economy, characteristic of the Communist regimes of the Soviet Union and its satellites in Eastern Europe and many others in different regions of the world.

2. The last quarter of the XX<sup>th</sup> century has seen drastic changes in this dualistic situation: global communications, interchange of ideas and the development of world trade, together with the collapse of production in State-planned economies, have led to the fall of the Iron Curtain. In several points of the Globe, autocratic regimes have been substituted by incipient democracies. This new situation has developed into something that some authors have named the *post-modernistic society* and which I would rather call the *post-dualistic* model of society. Its main features are, in a nutshell: the recognition of the market economy as the driving force for productive activities; the reduction of the role of the State, some of its former responsibilities (like, for instance, full-coverage social security) being progressively transferred to the civil society; the increasing importance of the regional integration of national economies and of its relationship with world finance; the increasing pressure towards recognition and respect of human rights in all regions of the world; global trade; global communications; the notions of sustainable development and sustainable environment.
3. We are not implying that this post-dualistic society is either fully developed or satisfactory: there is an enormous gap (possibly increasing rather than narrowing) between the so-called Centre and the Periphery, in terms of national or regional economies, political stability and citizens participation, individual quality of life, respect of human rights. This lack of equity is also present, even if in a lesser degree, between individuals and groups within advanced democracies of the Centre.

### LOOKING AHEAD

Many economists and political analysts have been trying to define the path, or the trends, of the present model of society for the years to come, well across the boundary of century and millennium. This is a difficult exercise, for the present situation is far from stable and sometimes even the short-term foreseeable evolution have been denied by unexpected events. Some current examples are in order: while in post-apartheid South

Africa a major change in political and social rules has been achieved almost without unrest, a bitter war of nationalistic, ethnic and religious nature has broken in former Yugoslavia; while the loss of credibility of the ruling Communist Parties in Central and Eastern Europe would have led us to think that they were actually finished - they seem to come back to power in some cases, even having their position reinforced by popular vote; countries wherein democratic values seemed to be definitely acquired have turned into foci of intolerance and abuse of human rights.

Some forecasts have been based on the belief that innovations in information and communication technologies (ICT), occurring at an increasingly fast pace, by their capacity to change the scale and the power of telecommunication networks, will lead to dramatic changes in everyday life, as well as in production structures, methods and services provided, thus changing the fabric of society itself. This new *Information Society* will have characteristics somewhat hard to predict.

The scope of the present text is to contribute to the design of such a scenario, in what concerns the evolution of needs for education and training in the new society and the mechanisms (in some cases, already available) to cope with them. We shall keep in mind that the new society will have new categories of both providers and users of these technologies, as well as different populations of excluded from its benefits.

#### THE PACE OF CHANGE

Globalisation of trade, finance, communications and the exchange of ideas have produced different approaches to the general aims of keeping enterprises healthy and competitive, to avoid unemployment, to fight inflation, to lower interest rates — while increasing production and productivity. These seemingly contradictory requisites are sometimes made compatible through changing the structure and organisation of enterprises and adopting new methods of production, possibly by introducing more sophisticated technologies; or by creating new market niches and different products and services.

The net result of these innovations is the need for new qualification profiles, either due to the technological erosion (making some qualifications obsolete) or due to the closing of some sectors of activity as a result of a serious drop in demand. Due to streamlining of enterprises, to outsourcing, to reconversion of activity or to bankruptcy, the qualified and specialised worker of the new century is expected to be subject to an increased mobility between jobs and between profiles of qualification — or risk redundancy.

Lifelong training is the only asset against unemployment, by keeping qualifications updated, upgraded or reconverted, according to the needs of the employment local markets, for emigration is becoming less and less of an answer. From the point of view of individuals, this means that all members of the active population will need to be finely tuned to the qualification profiles required by the marketplace. Seen from the perspective of enterprises, in order to keep themselves competitive they have to increase productivity, to keep abreast with technological or methodological changes in the production processes and to be able to adjust, at comparatively short notice, to fluctuating markets. This can only be achieved through providing frequent opportunities for re-training the whole population of enterprises, with a large spectrum of qualification profiles.

#### INITIAL EDUCATION AND TRAINING

In direct relation to the above argument, basic education and initial training must include, as an ever-present strategy, a drive to educate for change, for flexibility, for mobility. The values of security, stability and regularity will be no longer relevant or adequate in terms of both the individuals' adjustment to everyday life and of their long-term economic survival.

If basic education is supposed to have the strategic purpose of endowing young individuals with the intellectual and affective capital necessary for them to become full, active and participating citizens, with a real capacity for intervention in the society they belong to, the whole contents and aims of this initial education should be matched, as much as we possibly can, to the new characteristics society will have ten years ahead. In that society, we expect the individual to be less protected by the State; more subject to the pressure of interests that can not be individually controlled; less secure, more mobile, more self-determined.

The capacities and skills that will be considered valuable include the following:

- Capacities for interpersonal communication, including understanding and expression in more than just the native language;
- Understanding of, and interest in, both conventional and innovative technologies, from the point of view of the enlightened user;
- Computer literacy and the ability to access and manipulate data and to manage the corresponding overflow of information;

- Basic skills on planning, accounting, business administration and self-management;
- Tolerance for change and capacity of adaptation to changing environments (of all kinds);
- Capacity and motivation for self-learning;
- Capacity for working in small groups, sharing tasks and responsibilities, accepting or respecting leadership;
- Understanding society, its social fabric and organisation and possessing a drive for social, cultural and political intervention and participation;
- Understanding values and building references.

This set of all-purpose abilities and competencies should provide young individuals, irrespective of gender and social/economic origin, with basic tools for a smooth integration in the society and for adjustment to its continuous evolution. On the other hand, vocational training will have to follow a similar strategy, even if narrowing the focus on specific skills (which will be known, from the very beginning, to be short-lived).

Enterprises will feel the absolute need to provide frequent opportunities for training their workforce; individuals will demand not only this but also to have access to learning at their own initiative, independent from the interests of the organisation they belong to, as a common social right.

A possible outcome of this acquisition of new skills will be, for small groups of individuals, families, or even isolated persons, to create their own enterprise, in order to fit a given niche in the marketplace, either as a liberal professional or as a sub-contractor for larger organisations.

#### TOOLS FOR HUMAN RESOURCES DEVELOPMENT

The Information Society will supposedly provide the tools that make possible this new pattern of specifications in education and training for all, by giving access to learning products and services through the communication networks. The most current methodology for education and training will be a careful blend of teaching in a conventional classroom, workshop or laboratory environment and learning in a *distance education mode* by using multimedia products and telecommunication services.

Distance education is a multipurpose designation that may include different models of organisation of the corresponding systems. They may be large dedicated institutions like Open Universities and Training Agencies, supported by national governments, and smaller operators, usually in the private sector, all of them acting in a pure self-learning mode. Others have the character of dual-mode organisations, combining conventional educational strategies and distance education methodologies; many European Universities have recently adopted this model of organisation. Other solutions may consist of channelling through the media the recordings of face-to-face events for the benefit of faraway users.

We suspect that the number of institutions and organisations dealing with distance education and training methodologies exceed 10,000 existing in most countries and all the continents. The global organisation that confederates the co-operative interests of these systems is the International Council for Distance Education, representing more than 5,000 organisations by direct membership or through their regional or national associations, in 109 countries all over the world.

The production of learning materials is one major component of the distance learning operation. Taking for instance the case of written materials, they should be designed taking into account the self-learning mode they will be used in, by including all relevant information, as well as providing opportunities for applications and self-assessment. Video and audio provide alternative discourses designed to complement the written information, as well as to motivate the users and to fight monotony.

However, distance education systems can not afford to just being producers and distributors of learning materials; they need to establish a dialogue with students, assuring a positive interaction that makes possible feedback and reinforcement of newly acquired knowledge. This dialogue also plays the role of helping to break the typical isolation of the distance learning student, by providing psychological support, encouragement and guidance.

Interactive learning products include the feature of being powerful sources of structured, ready-to-absorb knowledge, with the capacity of an imbedded (even if virtual) interactivity with the programme's author. When possessing multimedia functions, they are able to combine audio and video with the written word, thus increasing the capacity for educational communication with the student.

By combining the use of such products with an added functionality of network communication, student-system interaction becomes real instead of virtual. Not only students will become able to communicate with their tutors but also among themselves; delayed

e-mail being already a major asset, computer- and video-conferencing opens the field of something closer to reality itself than virtual reality is.

The expression "Open Learning" appears currently associated with its parent concept of Distance Education, because both are based on the same principle, this being that a mature person is able to learn by him/herself, by being given access to suitable learning materials and if some amount of external support is provided.

Nevertheless, there is a connotation that associates Open Learning with an entrepreneurial environment (like in-service training), while Distance Education is used mostly in formal educational contexts. (In Europe, a pragmatic approach to this question of not-so-precise nomenclature has been solved by using currently the expression: Open and Distance Learning, ODL).

Whatever the designation, the use of the distance education approach in training situations does not postulate, in most cases, the situation of an isolated trainee, struggling alone for some kind of quality qualification. Current solutions are based on the existence of a training resources centre wherein the user can have individual access, combined with face-to-face, short duration training actions in small groups, with the presence of a qualified trainer.

#### RIDING THE SPIRAL IN THE INFORMATION SOCIETY

We believe that the new communication and information facilities to come, providing easy and inexpensive access to networks and to new learning products and services, will boost dramatically the number of learners acting on their own initiative. This increase in demand will feed in the still incipient new industry of cultural products, diversifying the offer and proposing innovative services. Mass consumption will provide the economies of scale necessary to lower the cost of these products and services, until the spiralling of the number of consumers reaches a planetary dimension.

Existing open and distance education systems (and many more to come) will provide contents, student support and, whenever relevant, accreditation. The capacity of these organisations to transfer learning materials, credits and diplomas across national and regional borders will be greatly increased by their interconnection through the global communication networks.

We are not excluding the possibility that the mega-operators resulting from the merger or co-operation between the existing networks dealing with communications, hardware and software production, publishing, news, entertainment and all kinds of tele-services, will become major players in the field of distance education and training, given the huge amount of prospective clients for an integrated industry of this kind. However, we believe that there will never be too many providers for so many prospective users.

### THE EXCLUDED

There are not only roses, even in this vision. We should absolutely consider that, besides an expectation of many more providers of learning products, services and benefits in the Information Society to come and the many millions who will become their current and faithful users, there will be all those who will be kept apart from these benefits, just because they will not have access to the new technologies involved in the process. We can count today, as a projection for tomorrow, the poor, the illiterate, the unemployed, those who neither own nor have access to given technologies, by reason of regional, societal or individual situation of underprivileged.

Thus, for the development of the Information Society to be as little unfair as desirable to the ensemble of humankind, strategies have to be devised to include in this society as many of the potentially excluded as it possibly can.

One of the ways of *feeling excluded* (which is a less grievous situation than actually *being excluded*) is for common citizens to find suddenly, in everyday life, a new technological device they are not, either in material or in affective terms, prepared to actually use. This is not a hypothetical situation: in the last decade, the introduction of electronic automatic equipments instead of human mediators to some public services have caused confusion, withdrawal and rejection in some segments of the general public, just for their lack of a basic technological education. It will be unfair to design the organisation of day-to-day life in our society just for a technology-oriented part of the citizens (like, for instance, the younger generations) and to ignore the inevitable handicap of the remaining, even knowing that their life will become more complicated.

Let us take another example, unfortunately considered as a positive scenario. Based on the argument that, in a number of years, there will be a more blurred distinction between person-to-person communication and broadcast-like interactive communications, some

authors have advanced the physical possibility of a "true" direct democracy, to replace representative democracy as we know it. In this scenario, decisions would be taken on the strength of communications received, its sense being determined by the majority of those in favour (or against) of a proposal of law or regulation. Besides the fact that this argument reveals a sad ignorance of the history of democracy, another question remains: what about the opinion of those unable to use (for whatever reason) this process of communication?

Let us take another example, taken from the field of distance education practice. Most such systems provide student support mechanisms to help in the learning process: fax and telephone communications, computer conferencing, de-centralised study centres, where face-to-face tutorials can take place. It is thinkable that, if and when non-procedural (non deterministic) computer facilities are available, some of the student support scheme can be fully automated. However, experience of many years has shown that, in many instances, students are more looking for moral support, encouragement and the opportunity to talk about their own problems, than searching for solution of contents difficulties. That role can only be played by a human tutor, capable of introducing an affective dimension in the scene.

Exclusion can also occur in ways more subtle than advertising a job position with an age-limit requirement (instead of, more properly, a required specification of skills). Asking for the e-mail address of a candidate is an efficient filter to deny entrance access to whom ever does not possess, not only the skills but also the personal equipment necessary for it. Age discrimination may easily become technology-ownership discrimination, including its social and economic pre-requisites.

Underprivileged, leading to this type of exclusion, does not affect just individuals but also socio-economic groups, unfavoured areas (even within a given State) or whole countries and world regions. If the possible negative societal consequences that act as the counterpart to the expected benefits of the Information Society are not taken into account, globalisation taken *latu sensu* may mean also the globalisation of the excluded, widening the gap between the *haves* and the *have not*, be they individuals, communities or nations.

To introduce corrections to undesirable tendencies in this field we just need to keep in mind one basic principle: even while taking into account the general interests of States, Administrations, productive systems and collective structures of society, the final aim of all this complex organisation is to serve humankind - meaning each and all of its citizens.