

# **The contribution of higher education and research to the knowledge society**

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## **1 – The history**

The evolution of society in the last three centuries has been amazing and has proceeded by many steps: from the agriculture society, to the first industrialization, the second industrialization, the post-industrial society, the information society, and, last, the knowledge society.

The interacting context for people has changed dramatically. From the village, to the region, to the nation, to the continent, to the whole world, that characterizes the knowledge society and the globalization phenomena.

In the agriculture society, the larger part of the population (up to 80-90%) lived and worked in the countryside or in small villages. Most of them could not read or write, they were taught by their relatives how to cope with the problems connected to cultivation and breeding, and learned on the job. Few people went to school and only very few reached a higher education level.

During the 17<sup>th</sup> and 18<sup>th</sup> centuries the development of science and technology produced the industrial revolution, with less and less people involved in the hard work of agriculture and more and more people leaving the countryside to live in big cities and to work in manufacturer industries. The industrial work asked for workers able to read and write and therefore primary education became soon compulsory in all the industrialized countries. The French revolution produced the new concepts of national state and citizenship.

The organization of the society changed and new professions aroused to tackle the new needs of the population. Higher education institutions, and in particular universities, provided the professional skills and training, and educated the leaders for

the new society. Universities became also the institutional places for producing knowledge through research activities.

Nevertheless in Europe up to the mid 20<sup>th</sup> century only a few percent of young people attended the university courses to reach a professional degree.

After the Second World War the fast and widespread development of scientific knowledge and the impressive technological innovations produced a new displacement of people from the countryside to the cities and the new manufacturer industries asked for more and more educated workers. Therefore in Europe the compulsory period of studies of 5 years changed and shifted first to 8 years, then to 10-12 years. In the 60's and 70's the number of students attending the university courses was growing, reaching in some countries like USA the 50% of the age rank and in Europe about 20-30%.

The development of ICT (Information and Communication Technology) and the great progress in transports – as high speed trains, cheap cars, larger and faster airplanes – improved a lot the mobility of people, goods, news, and ideas, giving rise to what we call today ‘globalization’.

Information society in fact has been characterized by the spread of information that can bring to each person, every day, news about the whole world.

These developments affected deeply the geopolitical situation of the world and extended the complexity of the society. Today we talk of Asia, Europe, North America, etc. more than of single nations. Events like Olympic Games, world championships as well as regional wars like those in Kosovo or in Iraq are followed on television by billions of people all around the world.

In the developed countries only a few percent of people are still involved in agriculture and only between 10-20% in industry. More and more are in fact engaged in the so-called ‘third sector’ in which are included all the services like national health services, teaching, research, transports, information and communication, sport and leisure activities, etc.

## **2 – The knowledge society**

The incoming knowledge society (a society in which the way the information is exploited is crucial) puts on the table new problems and asks for new solutions.

Land and natural resources have become less important; on the other hand human resources are crucial and strategic for the future of each country, thus making the investment in education and research the most fruitful.

Through the media (television, newspapers, internet, etc) people share every day what happens in every part of the world and often the dramatic events prevail in this information.

Therefore those who still live in undeveloped countries in poor conditions, becoming aware of their low level of living, ask for a better living environment and expect to reach the living standard of more evolved countries in a short time.

At the same time people belonging to definite cultures and religions get in touch with people of different cultures and religions and the problem of how to manage a multicultural society arises.

The degree of development of one country is measured as the percent of growth in GNP (Gross National Product) and also as life expectation for the new generations. In fact the economical parameters are often the only ones taken into account. On the other hand the world resources limits do not allow the six billion people living today in our world to consume the average resources per person that is used in USA.

Other problems as air pollution, drinking water availability, waste management, etc. can be faced and solved only at global level through global collaboration.

## **3 – The wisdom society**

These are the reasons why the information society is becoming the knowledge society and the ‘knowledge society’ should evolve in the ‘wisdom society’ in order to face properly the new world situation. This asks for a deep change of mind and behaviour primarily in developed countries. For example I think that it is not reasonable anymore to measure the degree of development of a country only through

the growth of GNP. To preserve the level of quality of life reached by developed countries it is necessary that other people improve faster their living conditions to reduce the gap between rich and poor countries. We can maintain our better conditions, but because of the limited resources in the world, we should at the same time reduce energy consumption, pollution, waste production, etc.

In other words to measure the degree of comprehensive development for a country we have to introduce other non economic parameters such as the degree of education, the efficiency of the public health systems and of the public transports system, the impact on environment, etc.

An award should be granted to the countries that increase such parameters using less energy, producing less waste and keeping stable their GNP!

#### **4 – Education of the person in all his/her dimensions**

Knowledge is an aware utilization of information; wisdom means to behave following a shared knowledge in order to enhance the well being of everybody in the awareness that personal actions have a social consequence, and that today each part of the world is connected to the others.

The knowledge is not only the scientific one which refers specifically to the natural world. It concerns also the artistic and humanistic world, and last but not least the spiritual and metaphysical world. In particular the spiritual and humanistic dimensions of the human being play a major role in giving meaning to the human life and contribute a lot to improve the quality of life.

If we want to contribute to realize a ‘wisdom society’ in which there is a wise use of knowledge it is necessary to develop in each person, in a well balanced way, the different dimensions of his/her being, i.e. the knowledge and economic dimensions together with the creative and spiritual dimensions.

Each person should be aware of his/her responsibility to fully exploit his/her own potentialities and at the same time to act as a member of a society. In other

words, everyone has to recover the consciousness of the social impact of his/her actions.

If these are the real frames and the most likely perspectives of our society, it is very important to educate and train people for living and acting properly in this new, dynamic, and more and more complex society in the global context.

## **5 – The role of higher education**

Universities, colleges, higher education institutions, research centres have therefore to play a crucial role.

As for information and knowledge society twelve years of school have been considered necessary, to shift from the knowledge to the wisdom society it is very important to extend as much as possible the higher education, both providing university courses and/or post baccalaureate courses to the largest possible number of young people (from 50% to 70% of the age rank) and providing the opportunity to resume education many times during the life (lifelong learning).

The Bologna process was set up to provide a new common frame of teaching and learning for the European universities in order to proceed from elite institutions to mass higher education institutions. The main objective is to raise and widen the level of education for as many as possible people.

The wisdom society is a continuous learning society: every person has to act at the same time as learner and teacher in every context, therefore everybody must be taught how to learn and how to communicate; this should be not only the task of primary and secondary schools, but in particular the goal of higher education.

In a knowledge society as well as in a wisdom society knowledge is expected to disseminate quickly and easily. This may create a tension between the needed knowledge certification and the needed knowledge diffusion. Many examples can be given: the knowledge on nuclear energy production and safety, the knowledge on the risks in the diffusion of GMO (Genetically Modified Organisms), or on the propagation of electromagnetic fields.

Thus, how to facilitate and accelerate knowledge dissemination without impairing knowledge certification?

Certainly more and well educated people are necessary although this can not be sufficient. Therefore we have to extend higher education (through different channels and ways) almost to everybody.

## **6 – Higher education organization**

Higher education in my opinion should be supported mainly by public funds, because of the general needs that it has to fulfil and also to guarantee more independence to education and research. On the other hand I judge positively the payment of some fees by the students (between 20 to 50% of the real costs) as thus they become more aware of the value of acquiring new knowledge and professional skills and therefore they feel compelled to a stronger engagement in their studies.

Of course the principle that the students should contribute to the costs of their studies is a strong conflicting issue which needs to be reconciled with the possibility of access for everybody. Different solutions are possible with good results, provided they are coherent with the particular context.

The Bologna process is going on in Europe with different trends but to the same goal. A problem is still there: how to implement the teaching and learning for the cleverest people in order to exploit completely their potentiality? This is their own interest but also the interest of the whole society. In other words, how can we fulfil both the needs of mass education and the necessity to prepare good leaders? This can be done differentiating the institutions in mass and elite institutions or organizing in the universities different support and opportunities for the best students, but both solutions can also be applied together.

## **7 – The goals of higher education today**

Other problems have to be solved by higher education institutions. For example, what kind of competences should be developed by higher education, considering the

fact that society is in fast evolution and that we have to provide young people with competences that must not become obsolete too fast?

Higher education in my opinion should be focussed in developing primarily the ‘core competences’, i.e. the skills necessary to live in a complex, very interacting, and continuously changing society. Some of these ‘core competences’ are the capability of learning, listening, interacting, communicating, being active and proactive, solving problems, understanding other cultures and religions, etc. This implies for example to be able to manage the information and communication technologies, to speak and understand other languages, to be aware of one’s own cultural identity.

Curricula and the teaching methods need to be changed and shaped for the new objectives. A greater flexibility in curricula is necessary, as well as more personalized interactions between students and teachers. A multidisciplinary approach to the problems should also be encouraged.

Moreover ‘education’ must not remain a theoretical learning but the transfer of knowledge must be integrated with practical experience. Stages in working contexts are unavoidable means to educate young students to act, to be proactive and to learn how to evaluate themselves.

The new young generations in Europe come from families where the parents have been more engaged in realizing themselves than in educating their children; they live in a continent where the traditional values have become weaker and people are opportunist and consumers.

When they enter the University they seek the meaning of their life: they dream to meet the right person to create a real family, they hope to find a good job after graduation, and they also would like to contribute to change the society they know in a better one.

Universities have to take into account all these expectations and hopes, and provide their young students suitable opportunities and new means in order to

facilitate their search of the meaning of life. Young students have to learn how to distinguish what is more important from what is trivial for their life.

Universities should also present to the students models of behaviour, how to build up their own personality, and how to strengthen their own independence.

## **8 – Research and innovation**

A word which synthesizes well the need of new approaches, new solutions, and new educational targets is ‘innovation’. It is necessary to innovate in every field: technology, social sciences, politics, organization, etc.: to innovate we have to develop in all these fields research activities, and we have to train more and more people to have an active role in research, in research transfer, and in exploitation of research results.

At the Lisbon meeting (Mars 2000) the European Union leaders committed themselves to “make Europe the world’s leading knowledge-based economy by 2010”. To reach this goal Europe has to support more effective basic research and its follow up in industry and society.

Intensive research universities are the main agents for basic research; they have the capability to be dynamic and effective engines for the development of knowledge society and economy, and a magnet for international talents.

Europe must invest more money in basic research which is the source of creation of new knowledge and of most innovation in society. A clear and acceptable balance should be reached between the pursuit of knowledge for its own sake and the demand for basic research aimed at a tangible return to the economy and society at large.

## **9 – Research and higher education**

Framework Programmes, new funds for basic research distributed by a European Research Council (ERC), and structural funds can provide an adequate support to the building of a European Research Area (ERA). The Bologna process,

the mobility programmes (Socrates, Tempus, etc.), the creation of universities networks and the bilateral collaborations are important tools for creating the European Higher Education Area (EHEA). The EHEA and the ERA must be integrated to optimize their contribution to the knowledge society.

Research not only provides the necessary background for innovation but also creates a suitable environment for education, as was pointed out by the Berlin document in which the third cycle (PhD) was explicitly included among the priorities in the Bologna process.

The knowledge society not only needs excellence and top rate research but also depends on a larger number of highly educated people who, while not engaged in active research, have sufficient knowledge to make good use of the latest research results.

To learn ‘core competences’ and to be trained in employability skills more and more students should have the opportunity to make stages in research groups and in other working environments, not only at doctoral level but also at graduate and undergraduate level.

As higher education and research are becoming more and more strategic activities for a new kind of development for our knowledge society (my dream is to see the dawn of a wisdom society!) the governments should proportionally increase their investments in research and higher education institutions.

Universities seem to be the most suitable institutions for developing integrated activities of higher education, research, and innovation, and therefore they should be the main destinations of new public and private funds devoted to development.

On the other hand, to optimize the exploitation of public and private funds given to universities it is necessary to enlarge the universities autonomy, to introduce both internal and external evaluation procedures, and to improve the social responsibility awareness of teachers, researchers and students. The European University Association (EUA) is strongly committed to these challenges, and state governments as well as European Union Commission and Parliament have to act in this direction.

## **10 – Funding research**

The governments at single state and European level have the responsibility for the allocations of public funds and therefore they have to incentive and support the transfer of research results from laboratories to society. This can be done in different ways: certainly the more effective is through the mobility of people involved from labs to industry and society and vice versa. Again this can be enhanced if bureaucratic obstacles are removed: the mobility of researchers should not have negative consequences on their careers and in particular on social benefits as health care and future amounts of pensions. This asks for a new legislation at European level that overcomes the single state present rules.

Due to the limitation of public funds for research, also in case they would be increased as everybody asks for, the problem of setting the priorities is ever present. In my opinion the public funds for research should be divided in three categories: the first should be devoted to fertilize the free research, and allocated according to the quality of researchers. The second should be devoted to basic research and allocated to the large fields evaluated more important for society growth (for example: natural sciences, humanities, social sciences, etc). The third should be devoted to applied and finalized research, taking into account the actual needs of society (for example: energy production, health care, communication, transports, environment preservation, etc.).

In a democratic country the division of research funds between these categories must be responsibility of the government and the parliament. Then the allocation of each part should be decided by the scientific and academic community for the first two categories; for the third, the academic and scientific community can decide jointly with people coming from industry and other productive realities.

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The ‘wisdom society’ should be characterized by a greater institutions autonomy, more personal responsibility, and fewer rules: the governments must facilitate and fund more research in humanities and social sciences to educate people to manage properly at personal and global level science achievements and technological development, in order to foster the personal and social growth.

Finally, I am also convinced that to improve personal responsibility based on shared strong values it is better to trust the role of faiths and religions as traditional regulators of good personal behaviour than to try to control the growing complexity of the society and the personal actions only by augmenting the number of laws and rules approved by parliaments or governments.