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Contribution to the clarification of the innovation
phenomenon

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Abstract

Contribution to the clarification of the innovation phenomenon in the " world through the management of the institutions and the management of the knowledge: race of the power and race of the knowledge; obstacles and factors (Dr Saïd "of encouragements of the talent in the developing countries Boumendjel –Algeria – march 2005)

It is a fact admitted, nowadays, that the innovation is the motor of the "durable development" susceptible to allow the small countries as Algeria to face the risks of internationalization. If the results gotten on this day are not satisfactory, the reasons are multiple and, among them, the fact that the very concept of innovation doesn't seem have been discerned, nor appropriately, nor of the same way by all actors of the economic life.

It is about understanding why the innovation exists on a continent and not on the other and what it would be necessary to undertake, from now on before it is too late, to catch up the delays accumulated by the PVD in general, notably those of the Arabian Maghreb and, in particular, Algeria.

The analysis of the economic politics and management of the enterprises in Algeria can illuminate us on the degree of influence of the fashions of production and distribution as well as the models of consumption on the emergence of innovators in the country and on the markets. A comparative preview on the made innovations can give us an idea on the achieved progress and on the challenges that remain in the perspective of the integration of our economy in the WTO with the possibility of a Partnership with the union European.

Eventually, charity begins at home! The innovation must start from our universities, of which the teachers and the researchers will have to, not only to create networks of partnership between the different laboratories of study and research of the Arabian countries, first, and friends, then, but again to reconsider the doctrines and the theories that have been transmitted them by the rest of the world, the west countries in particular that will have consecrated their values while tempting to impose them.

Keywords: innovation, lasting development, internationalization and integration, economic management politics, actors.

General introduction

In a general way, the innovation, which is identified, permits to put back sometimes in value an invention among the sleeping products within the enterprises, of the laboratories of research and universities. To every enterprise, its way of innovate...without any doubt, but, there is a first fundamental distinction to make, between the concepts, and notably between the concept of invention and the one of innovation.

Since Schumpeter, we know that "the evolution" of the economy, that means its growth, rest on two important factors: on the one hand, the innovation and, of the other, the outside trade. According to this author, the fact to innovate consists notably in introducing a change, either in a product or a service; either, in the process of production; either, in the organization of the enterprise; either, in the fashion of merchandising.

If the invention is the moment where the discovery takes place, we can say that the innovation is the moment where its diffusion becomes possible. Well often, several years separate one of the other, and it is not only because of the delays of development (R&D) but it is also because of the previous waiting to the emergence of the need and to the appropriation of the aforesaid innovation, how may be material or immaterial, by its potential users. The innovation requires therefore not only that a discovery or an invention took place but it requires also that this one is in phase with the social acceptability of the moment, what is the essential condition of diffusion as large as possible¹.

It is why, before even to innovate, the modern enterprise must study its economic environment. The modern enterprise must be capable to define the consumer's preferences and must put them in relation with its own motivations. Why did the world press speak often of Asian miracle?" The journalists spoke of it because they wanted to put the accent on the fact that the enterprises must keep one's ears open on the changes which intervenes to the level of the behaviours and the financial choices of the households through the whole world as well as on the variations of the international economic conjuncture. To maximize its profit in a technological constraint by the research of an optimal combination of substitute factors and to find the most efficient growth trail according to the requirement of profitability and the influence of the costs and the interest rate: there is what can constitute a fundamental worry bundle for all competitive enterprise.

Nowadays, the link is quickly made between the innovation and competitiveness. Certainly, the indicators like the one of Standard & Poor's² permit to classify the most effective economic sectors, on the basis notably of their stock gains and their financial results. But these best groups are those which count

¹ Reviewed Management and Social Conjuncture, n°560, of July 5, 1999 - (<http://www.projective.com>)

² Internet site The Tribune.fr - edition of the 22/10/2004

a lot on the research & development because, exactly, the research of the excellence became an universal motivation.

The innovating character results from the fact that the innovation must mark a decisive stage for the product or for the process so that "the after" cannot be anymore as "the before". It is the case, for example, of all big technological innovations as electricity, the car, the bell, the television, and of the organizational innovations as the Taylorism or the norms of quality. Now, we see it distinctly : the strict application of the term innovation forbids to use this one unreasonably³.

The question is then to know reason why we want to innovate and to make research constantly?

All countries note that, either to develop themselves more, either to preserve their level of development, they are forced to open up more and more on the foreign markets. To maintain themselves on the foreign markets, it is necessary to prospect then" and to innovate ". And, to incite the enterprises to make it, the state recommends some stimulating measures . Thus, for what is in France, which is counted into the seven richest countries of the planet (the G7), "at the time of the Conference of the export, that was held the morning of October 25, 2004, the ministry of the economy and Ministry of Finance expressed several propositions intended to throw back the French exports, notably toward the countries of high growth rate as China and India. "The outside trade represents a major stake for our economy", hammered the minister of tutelage, Nicolas Sarkozy, to the opening of this conference⁴.

But, why innovate?

First, because of the internationalization of the production and the tendency to universalization....

Today, the throbbing of activity are internationalized themselves extensively, and the rhythms of growth came closer strongly. Thus, today we give the example which was revealed by the post-war of the Gulf, which means the manifest internationalization of the activity of firemen.

On the economic plan, the national space probably defines itself by the unit of the market, the relative stability of the factors of production and the authority of the state.

But, as organizing on a big scale the exchanges of universal goods, the fluxes of funds and the transfers of technology, the global enterprises finally destroyed the first two elements (that means, the unit of the market and the stability of the factors of production). With regard to the authority of the state (third element), we note all to what point the balance of the powers is reversed itself in the countries of the Third World: in the years 1960, the multinational businesses (F.M.N) were accused to exploit these countries and to provoke a dependent and unbalanced development there. Today, this same countries multiply the concessions to attract these FMN, like Mexico in the years 1980⁵.

Otherwise, we also note that the trade of services has henceforth a big role: it has the tendency to attenuate the current unbalances. Internationalization, it is the exchange which is generalized between the different parts of the planet, because the world space is then the space of transaction of the humanity. Internationalization would be about the generalized exchange of the knowledge and

³ Reviewed Management and Social Conjuncture, n°560, of July 5, 1999 - (<http://www.progetive.com>)

⁴ The Tribune.fr - electronic edition of October 25, 2004 to 15:33

⁵ Encyclopædia Universalis France S.A -1998

the FMN therefore also has a real role. However, who can indeed affirm that internationalization concerns all the countries? Besides, the very bases of internationalization (like an increased competition) don't drag a certain number of limits which stop internationalization from becoming reality and collective profit?

In spite of these questions, we see badly how any country would be able to happen of these contacts with the outside. Today, the economic balance of any country recalls the floating balance of the soap bubble that depends all at once on the air pressure which is inside and of the one that is outside.

B-Then, it is necessary to underline the importance of the frame of mind that is necessary to the innovation (widely speaking that understands the invention also)...

Today, through the revision of the development concept, the economists privilege human variables more and more often as the opening to the other, abroad, to the one that is different - whatever is the origin of this difference (ethnic, cultural, socio-professional, etc.).

The researchers also recommend a bigger confidence and, what seems corollary, a bigger hold of risk. In a word, one says, it is necessary to DARE. Here is really the heart of our problematic: to innovate, it is necessary to dare⁶.

1st part: Would the innovation be a grant of the nature or the one of the structures?

In this race to the research and to the innovation, one is right to wonder why some countries succeed while other countries don't even manage to acclimatize the innovations produced by others. The perception of the obstacles would permit without doubt to give hopes of correction to some PVD and to orient them toward a better management of their ideas.

Probably, in this world whirlwind of the knowledge, the university has an important role to play.

1èrChapter: The race of the knowledge through the world and the race of the power: An insoluble dilemma?

There are some decades of it, Samir Amin, Christian Palloix and of others authors of the third world evoked the idea of the sharing of the planet well already between powerful countries of the Center, country in way of being powerfull countries of the semi-periphery and weaking countries of the periphery. The level of economic power of the countries being function of their degree of scientific and technical knowledge, the race to the power became inseparable of the one of the knowledge.

In this race to the knowledge and to the power, our planet, the World, is not anymore the only one coveted. In the beginning of the year 2004, one has just learned that after several disappointments (notably, the failure of the Spirit robot), the American have just reached the planet March thanks to the Opportunity robot that landed with success in the night of Saturday January 24 to Sunday 25 (GMT hour) on this red planet, three weeks after its twin Spirit⁷. Very lately, France succeeded in making forget its last failures concerning research in the space. Saturday December 18, 2004, its rocket Ariane 5 of generic type succeeded a delicate military mission: it succeeded in putting on orbit seven satellites, of which

⁶ Internet site of the Magazine Management and Social Conjuncture, n°560, of July 5, 1999 - <http://www.projective.com>

⁷ Yahoo! Space! AP, Sunday January 25, 2004

the module spy Hélios II-A. And, according to the own terms of the general manager of Ariespace, "the Ariane system is a global system that is a mixture of aspects of sovereignty and commercial aspects", every shooting of rocket being invoiced around 150 millions euros⁸.

Henceforth, there is a clean convergence between to possess the power and to detain the knowledge. Even the competition, that is required by the present economic Internationalization, prove to be incapable to stop the States from intervening to encourage research and the innovation. To title of example, the Strategic Commercial Politics in France was characterized by the government's effort to reinforce the competitiveness of the French enterprises concerning technology. Since the beginning of the years 60, the French government tried to create "national champions" in the sector of the enterprises while encouraging the fusions and while creating favored markets: the public administrations could not buy any more a certain value of foreign products (what is always true). Several organisms have been created, of which the A.N.V.A.R, that is a national agency of the innovation for the small and middle enterprises (SME) and that can finance the SME in case of costs due to innovations. [Krugman, 1984]. (1)

Although the sacrosanct principle of "let it make, let it pass" imposed the liberty of the markets always and excluded all direction of the economy by the summit, the American government has also played a major role in the promotion of some industrial sectors. Thus, agriculture can act as reference in the American governmental interventionism. The example given by some authors is the one of a farmer that would innovate and would be imitated. The other farmers would benefit from the innovation without having undergone the costs. To avoid it the more, the government itself participated even to research in agricultural technology and to the dissemination of the progress by the "Agricultural Extension Service ". Besides, its role was very important in the construction of infrastructures (irrigation,...).(2)

But, paradoxically, these are the nearest countries of the centre that put more problems than the countries of the "periphery."

On the one hand, their different States deliver themselves a desperate competition in the sphere of the knowledge: thus, according to the Internet site of the Sciences⁹, China gets ready in the biggest discretion for an event: to become the third country after Russia and the United States to send men in the space.

In the same way, a real race would have begun to produce the first cloned baby and to place before the accomplished fact an international community, incapable to get along about the universal interdiction of the cloning as a technique of reproduction. According to what the Italian gynecologist Severino Antinori said, three women would be enclosed currently with cloned embryos, two in republics of the ex-USSR and one in an Islamic country¹⁰.

On the other hand, and it is there the antagonism that opposed these rich States, some States fear the evolution of the knowledge all the same: it is exactly

⁸ Yahoo actuality Sciences of Sunday December 19, 2004, 13h34,: Success of the launching of the satellite military Hélios II-A by Ariane 5

⁹ Internet Sciences - A-PÉKIN - Tuesday May 21, 2002

¹⁰ According to the Internet site (Internet AFP - Saturday May 18, 2002, 18h36) title "Cloning, the new" masters of the living" want to take the world of speed ", several scientists are hired in a real race to produce the first cloned baby and to place before the accomplished fact an international community, incapable to get along on the universal interdiction of the cloning as technique of reproduction. The andrologue American Panos Zavos affirmed in Washington (Internet Wednesday May 15, 2002, 23h54) that five teams of researchers in the world were hired in this world race to make be born the first cloned baby, probably in 2003

the case of the cloning. According to works led by researchers of the university of Pennsylvania, the abnormal expression of the gene "Oct4" could be responsible for 90% of the reproductive cloning failures¹¹.

Before this phobia of the unlimited science that makes to think so much and to hesitate, it happens to wonder what we would do today about limiting the knowledge or simply moralising it.

The morals is not probably a new idea in matter of international relations. But the reference to the moral principles always made itself on specific topics; today, the morals appears more and more as a guide of the international relations. Henceforth, while following a moral guide, the action of the States and the international organisms must lead to a "common good" [Bibelec, Internet]. To this level of the reflection, numerous are the States of the periphery that fear, as for them, the risk to see themselves imposing a western morals which dominates the world without sharing and falls in the shortcomings of its own qualities because it would try to consecrate its values and to depreciate those of the other nations.

It is true that the present evolution of the world gives an impression of international tendency to the general Americanization of all countries of the world: it is it the "globalization" to which we seem to attend it. And, Bouzghaïa doesn't have twisted to mention the General De Gaulle, that had said this: "If we want, around the Mediterranean, to construct an industrial civilization that doesn't pass by the American model and in which the man will be one end and no a means, then it is necessary that our cultures open up one very extensively to the other"[Bouzghaïa,1991] (3)

2nd Chapter: Would the innovation be the appendage of the big powers and their only FMN?

No one ignores that the rich countries concentrate all the wealth because they detain the mastery of the technological processes and because they have the means to invest important sums of money in their search-&-development: but, 3% only expenses of this sector are done in the countries of the South. [Brunel, Friboulet, 1997].(4) Let us signal that the total of the richest 400 American citizens is estimated to 955 billions \$, with a progression of 10% in relation to 2002¹².

To illustrate that, the part of "R&D" in the computer budget of 500 recorded American enterprises doesn't stop increasing. In 2002, it was of 2,5% with 7,9 millions dollars; in 2003, it climbed to 3,3% with a value of 11,7 millions of dollars¹³. At our time, with Bouzghaïa, we note again, unfortunately, that the investments of the Third world in research are 49 times less important than those of the PDI and the report is from 1 to 135 if one takes into account the number of inhabitants. And, consequently, the contribution of the technology to the economic growth is around 50% in the developed North and less of 10% in the under-

¹¹ According to the newspaper Liberation, there was Bush's real haro then against the human cloning (12/04/2002) and according to Le Monde, one would head toward an interdiction of the human reproductive cloning (11/03/2002)-L'Humanité speak then of the emergency to legislate (16/01/2002). Add that it is the man's knowledge that ended up separating the peoples and the nations. According to G. Burdeau (Internet site Bibelec, categories" international relations "), "the idea to lock a human collectivity in steady linear limits in - the borders - is relatively recent. In the ancient Greece, there is neither customs line nor military line; in Rome the file empire is a space where exercises itself the vigilance of the legions. It is only in the XVIème century that the cartographic works, made possible by the math renewal and the geographical sciences make appear the modern notion of border.

¹² The daily of Oran -Sunday September 21, 2003 - page 15

¹³ Journaldunet.com Internet site - Source Information Week Research.

developed south. The potential of research -&-development in the South doesn't pass the 2% of the world capacities in the years 1980.[Bouzghaïa, 1991] (5)

In spite of the economic slowing that touched the OECD zone in 2001, the science and the technology remain essential motors of the economic growth, the industrial competitiveness and the achievements of societies. According to the Report on the human Development in the World 2001, " About 43 billions dollars were invested by the rich countries in the technological research between 1998 and 2000, knowing that 10% of the GNP of the seven richest countries of the planet are reinvested in the scientific research of high tip". (6)

Whereas the countries pursue their transition toward the economy of the knowledge, the decision-makers endeavor to put in place the efficient policies aiming to improve the capacity to create, to absorb, to distribute and to apply the knowledge in a productive way, while stimulating the investments of the enterprises in research and the development, while reforming the scientific systems and the ties that they maintain with the industry, and while encouraging the development of the human resources, the competition and the industrial restructuring¹⁴.

And for example, the government of Canada¹⁵ makes a lot of efforts in direction of the innovation. The developed and industrialized countries (PDI) never disarm with the disappointments of the economic conjuncture and think always to new strategies in their enterprises concerning R-&-D, to the competition and to cooperation in the process of innovation, to the reform of the national scientific systems, to the strategic use of the intellectual property rights in the public establishments of research, to the internationalization of the industry, and to the international mobility of the scientists and engineers. In a way, it is this stubbornness or this tenacity that allows them to innovate and to accentuate the ditch that separates them of the PED of the third world.

The PDI understood the importance of the human capital. As the professor Barre told it [1993]: "The most important shape of the investment in the present

¹⁴ OECD site - Perspectives of the Science, the technology and the industry 2002

¹⁵ Canada Internet site: A brief preview of the balance of the exercise 2002-2003 of the partnership Technological Canada shows us, for example that: 1 he/it invested 60 millions \$to encourage the protection of the environment thanks to works of search for-development aiming to finalize a process of treatment of the nickel to the fine tip. It is about finalizing a process ecological hydrométallurgique of vanguard, named Hydromet, for the treatment of the extracts of nickel sulphide coming from the mining exploitation of Voisey's Bay, in Earth-New Et-Labrador. also has announced the concession of a financing of 330 750 \$to allow to the society Aerospace Hemmingford Inc. to bring important improvements to his/her/its processes of manufacture and administration. This investment, financed by the intervention of Partnership technological Canada in the setting of the initiative of expansion of the suppliers of the aerospace and the defense, appears in a program having for goal to help the small and middle enterprises of the sectors of the aerospace and the defense to elaborate and to adopt the practices and the technologies of world caliber in the domains of the business and the manufacture. 3 It is also question that it invested 177 300 \$in the project Continuous Improvement - AERO of the society Aero Mécachrome Inc. (formerly Shop of machining Aero Ltée). This project aims the development and the integration of a new system of management of the quality according to the principles of the program Six Sigmas.

The countries developed and industrialized (PDI) disarm never facing the disappointments of the economic conjuncture and think always to new strategies of the enterprises concerning R-D, to the competition and cooperation in the process of innovation, to the reform of the national scientific systems, to the strategic use of the intellectual property rights in the public establishments of research, to the internationalization of the industry, and to the international mobility of the scientists and engineers. It is in a way this stubbornness and this tenacity that allow them to innovate and to accentuate the ditch that separates them of the PED of the third world.

world is the immaterial investment" ", that's the human investment; that's the formation of the men and, in particular, the lighting of mentalities and minds by a better understanding of the facts and the mechanisms of the economic and social life; and that's which can drive us, in the future, to the economic progress and to the social progress. " (7)

In the sphere of search-&-development, the unbalance is too flagrant between the developed western world and the world in way of development, and particularly the Arabian world. And, the race to the innovations and discoveries don't stop to the material things. Even the human body is concerned. Lately, an innovation is made about new cells of youth for the man.

Thus, "the discovery of a searcher of the university Minnesota of the Belgian origin exiled to the United States, Catherine Verfaillie, published in the british magazine "Nature" (Nature on line, June 21, 2002.), could mark a rupture in the debate on research about the human embryo. For the first time, proof is given that the original cells extracted from an adult don't have a disadvantage in relation to the original cells of the embryos, that are the forebears of the specialized cells of our organs. This discovery constitutes a "founding work" that opens the way definitely to numerous researchs, with on line of sighting a regenerative medicine where the man would repair his sick cloths from his own cells"¹⁶

3rd Chapter: Why do some countries succeed in acclimatizing the technique and the technology of the industrialized countries whereas others don't arrive?

Amongst 105 inventions or innovations¹⁷ which were made officially between 1907 and 2002 as well as a set of Chinese inventions in 1989 and soviet inventions in 1998, there is not only one that belongs to the third-world, and even less to the Arabian world, whose civilization had yet radiated on the world during more of seven centuries.

Now, the question that arises is to know why these PVD don't manage even to acclimatize these technical innovations at home. According to Brunel and Friboulet, to answer this question, the specialists keep five determining elements [Brunel, Friboulet, 1997]:

- 1-One culture which is associated to the writing and printing,
- 2-The existence of a scientific past,
- 3-A length of service in the industrialization (the countries of Asia began it one century ago),
- 4-The priority which is given by the government to the education and to the formation,
- 5-The will to escape the dependence with regard to the western countries.

These five elements meet all, to various degrees, in the new industrial countries of Asia. They don't exist in the poorest countries of Africa. But, with regard to Algeria, these elements exist. Therefore, we may think that these five elements are not sufficient only themselves to give birth to innovative men in a country. It would be also necessary to have some predispositions to the setting in work of the innovations and to their diffusion.

Section 1 -The setting in work of the innovation.

¹⁶ Bader Jean-Michel - cellular Therapy: A new type of cells capable to turn into all sorts of cloths overdraft in the adult body / Figaro.fr - Sunday June 23, 2002 - article of June 22, 2002

¹⁷ Site Sciences on Internet - Tuesday May 21, 2002: The classified ads; the big inventions.

As Ruddy Ruggles¹⁸ underlines it, the management of the knowledge, that assumes multiple shapes, adds the value in the enterprise while reinforcing the creation and the development of ideas of new products and new processes.

These last years, the management of the knowledge like means to acquire and to share the teachings, the ideas and the specialized knowledge, was the subject of many articles of press. In fact, it is useful only when it reaches a commercial objective of value. As for all commercial activities, the underlying question who must guide the efforts of management of the knowledge is therefore "to what end?". It has been proven that the innovation was creative of essential value for the organizations, because, at the time, it generated some improvements in the efficiency and an enormous growth. Thus, the innovation distinguishes itself like an excellent objective of management, in general, and of management of the knowledge, in particular.

According to Rudy Ruggles, the setting in work takes place when an idea of product is marketing or when a new process is put in place in an organization. It is to this moment that the ideas can create the value and can be considered effectively like innovations.

The management of the knowledge plays at least two important roles at the stage of the implementation.

The first, told us Rudy Ruggles, results from the preliminary work that has been done to determine how the idea can adapt itself to the existing elements of the organization. When the new product or process is not bound closely to the needs of the users, the merchandising and the implementation have little luck to be successful. The deepened knowledge of the users which is gotten by a survey of market, the management of the relations with the customers and other techniques which is integrated to the product or to the process since the beginning, that's which constitutes a first factor determinant of success or failure.

To this consideration, the PDI encourage the organization of official contests during in which the best innovating projects are kept, studied, compared and finally rewarded. Thus, in France, there is the "National Contest of Creation of Enterprise of innovating technologies".¹⁹

The second way of which the techniques of active management of the knowledge can push the implementation is the manner of which the knowledge about the product or the process come with the exit of the product or the process itself.²⁰

¹⁸ Internet site: <http://www.lesechos.fr> - Rudy Ruggles is senior manager in Ernst's CBI & Young (Center heart Business Innovation), in Cambridge, specialist of the research carrying on the innovation and the knowledge - The cycle of the innovation - The échos.fr of the Web of the economy

¹⁹[http://jinnove.com/site/actualite/detail_actualite.asp?actualite_id=350]Récemment, according to the news of November 5, 2004, seven projects of creation of enterprise of innovating technologies for the North-Not region of Calais have been kept on 52 set down files: a system of reproduction and three-dimensional resonant synthesis on helmet, a project of elimination by biologic deterioration of oils and dangerous solvents, the creation of a boatyard monoshell innovating, the creation of computer tools of assessment of the management of the human resources, the creation of a society specialized in optimization and the reliability of components microsystemes, the clarification and merchandising of innovating solar sensors for the hot water production..

²⁰ Silicon Graphics, Inc., (SGI) the director of computers to high performance that weighs 2,9 billions of \$, finalized a system integrated intranet/audio/vidéo named "Webucator" that, in his/her/its first use, permitted to present a new product to a few 2000 of his/her/its sales representatives and dealers, all over the world, in two days, for only 200.000 \$. in the past, such a program would have cost a few 3 millions of \$and would have required to make come by plane of the staff for several days of formation. SGI used this association of delivery mechanisms to train people in a profitable manner and nearly

Thus, the example of this last innovation²¹ concerning means of financial communication: a new portable terminal in Finance (the Blackberry) has just been put on sale in October 2004. This terminal, gathering the functions of a moving phone and a personal helper, is indeed the new toy of the managers of the finance. It allows the financial directors and the analysts to exchange electronic mail with a customer, to consult a course of Stock market, to verify the hour of their next appointment or to discover an article of the daily press. Its house-mother, the business Canadian R.I.M (Research In Motion), is also a phenomenon on the Nasdaq, where it is quoted since 1999. And, its course has more that doubled since January and taken 295% in only one year!

Section2 -The diffusion of the innovation.

However, the setting in work means and indicates that a particular idea has been elaborated and introduced on a market. According to Rudy Ruggles, the diffusion is a measure of the extent of the impact of the idea and finally it results in the total value which was pulled from the innovation. It is about putting in place, within the enterprise, of the processes which permit to determine the value of the new ideas and especially their economic value on the market. And these activities go together with the efforts of the societies to measure the value economic of the knowledge and to manage it, and they can constitute interesting sources of back information in the processes of decision concerning exploitation.

Thus, in the OECD²², every semester, we can read a publication named PIST which presents a game of indicators reflecting the level and the structure of the efforts led by the countries of the OECD and by eight non members countries (Argentina, China, Federation of Russia, Israel, Romania, Singapore, Slovenia, Chinese Taipei) in the domains of the science and the technology. It is about definitive or temporary results and about forecastings established by the governments. The indicators cover more especially the resources dedicated to the activities of search-&-development, the families of patents, the balance of the technological payments and the international trade in the industries of high density of R-&-D. This work also integrates some economic statistics of basis which are used for the calculation of the indicators. The sets cover one year of reference and the last six years for which the data are available.

In 2003, the OECD published a table named: "The logtable of the science, the technology and the industry 2003" ; it gathers the latest data having milked to the economy founded on the knowledge and permitting international comparisons. It is the sixth number of a biennial set thrown ten years ago and it gathers more than 200 indicators, of which many are used then for the first time. There is even an electronic version in English language especially adapted to the Web. Since several years, the OECD publishes this type of tables.

The indicators, that we can find of it, are interested in particular in the four following themes: the growth of the basis of knowledge of economies of the OECD; the economy of information; the world integration of the economic activity; the productivity and the economic structure. As in the previous editions, the logtable "STI 2003" gathers some indicators of the OECD about the research and the development; the human resources in science and technology; the diffusion

simultaneously, while making so that the knowledge about this new product come with its introduction effectively.

²¹ The Tribune - electronic edition of the 25/10/2004 to 8:16

²² OECD site - Science, Technology and patents - Main indicators of the science and the technology (PIST): edition 2004/1 - Science, technology and industry: Logtable of the OECD 2003

of the technologies of information in the countries of the OECD; the role of the foreign subsidiaries; and the economic structure of the countries of the OECD.

New indicators take in account a certain number of new questions that lands to the public authorities: the international mobility of the researchers and scientists, the innovation measured by families of patents, the importance of emergent domains as the biotechnologies and the nanotechnologies, the part of the economies non members of the OECD in science and technology; the use of the technologies of information by the enterprises and the households; the growth of the productivity in the countries of the OECD; and the demography of the enterprises.

While enhancing the essential data graphically and while proposing methodological notes on the indicators and the sources of data, the logtable associates statistical rigor, accessibility and legibility. An electronic version permits also to reach the different sections easily, to a detailed statistical annex and to the ties with the data bases. The reader also can, by a simple click, to have access to the data used in the diagrams and figures.

The logtable 2003 offers to the user a big easiness of access. Every topic is presented according to a standard format understanding the diagrams representing the indicators, the key points putting in relief the most prominent results, a framed containing of the methodological notes and a statistical annex containing raw data.

It is of this manner that the innovation circulates easily from a place to another and it is thanks to a good organization and management of the information in a country that it is acclimatized by its agents. Thus, the technology puts in play various factors (cultural, worship, human, social, politics, etc.): it is also a dynamic process that modifies the social relations. In the same way, the growth of an enterprise as the one of a nation implies a strong and positive interaction between the immaterial investment, so to speak the physical investment, the demand and the saving whose sequence triggers and maintains a "virtuous spiral."

Certainly, the Report on the development in the world 1998-1999 of the World Bank, published under the following title: "The knowledge to the service of the development ", notifies at least 24 countries in development, among which the Bostwana, Djibouti, Gambia and Maurice, whose telephonic network is already entirely numeric.

But, in this report, it is also put the accent on the world inequality in the sphere of the knowledge and the technological innovation and it observes that a new widening of the gap of the knowledge between rich and poor countries will have the effect of" making flow the capital and the other resources in the countries which are endowed with the fund of knowledge the strongest, aggravating the inequality thus. "

There are three essential means, said the president of the World Bank, to facilitate the acquirement of knowledge from foreign origin,: 1° an opened system of commercial exchanges; 2°-The stranger investment; 3° - and the patents of technology exploitation. " [Wolfensohn J., 1998] (8)

There is no mistake about it for us, the Arabs. It is necessary to reinforce our economic, political, cultural and other ties more and more. The expenses of R&D are relatively not only petty, but again the few countries, organisms or institutions that were capable to make some works in R&D don't make more of them practically since some years. It is the case of the national super-enterprise that is the SONATRACH in Algeria. Will be it capable to hold head to the western multinational enterprises (FMN) or of other zones?

In the years 1960, these F.M.N were accused of exploiting our small countries and to provoke a dependent and unbalanced development there. But, nowadays, we note that these are our own countries that go to the meeting of the FMN. Thus, while attending their world summits and their international meetings, our policy makers multiply the concessions to attract them, like the example of Mexico in the years 1980 and of Algeria in 2000-2004.

But, it seems that multiplying the concessions risk not to be even so much sufficient become the dilemma between race to the knowledge and race to the economic power becomes insoluble. The innovation is not only a grant of the nature, but it became the fruit of our own structures. Labour and Science go together.

2nd part: The factors of (de)mobilization in PVD and in Algeria

Certainly, the history of the industrial revolution showed that no country can keep the monopoly of a technique. But, if the diffusion of the technology is hindered in the PVD, the reason results from the existence of a certain number of obstacles.

1st chapter: The delays and the challenges in Algeria

The analysis of the economic politics and management of the enterprises in Algeria can illuminate us on the degree of influence of the fashions of production and distribution as well as the models of consumption on the emergence of innovators. All evolution of the economy founds itself in principle on the satisfaction of the needs expressed on the market. The culture of the minds influences therefore the one of the markets. An economy of merchants doesn't mean an economy of market. (9)

As for a comparative preview on the made innovations, it can give us an idea on the achieved progress and on the challenges that remain to rise in the perspective of the integration of our economy in the WTO with the possibility of a Partnership with the European Union.

It is unhappy not to be able to undertake any such analyses so precious for the simple reason that there is a general phenomenon of retention of information. It is already there a serious handicap for the innovation in theoretical matter.

Section 1-The financial obstacles to the innovation and its diffusion

At first, the obstacles to a better diffusion of the knowledge and the science are at first of financial nature : let's mention notably the raised cost of the licenses and patents of the innovations. Between, on the one hand, the fact to repay their external and public debts or the fact to import the food subsidies and some spare parts for their equipments practically all obsolete and, on the other hand, the fact to finance the investment in research and the innovation, the governments of the PED don't have a choice anymore.

Unlike the PVD, the PDI don't skimp on the means to make advance the scientific research. (..) So, Europe in 1980 (without the USSR) counted at least 1743 scientists and engineers for one million of inhabitants whereas the Arabic World only counted 207 of them for a million of inhabitants and the Third world on average 125. Still in 1980, the Arabic World participated for only 0,9% in the total of the world investments in the domain of research. [Bouzghaïa, 1991] (10)

Apparently, the innovation is discouraged by the prices practiced on the world markets. Thus, as for the public company Sonatrach, its major problem is the determination of the price of the barrel on the world market. Certainly, the barrel had reached lately, and even was beyond the 40 dollars. But, with the decrease of

the value of the dollar in relation to the euro (1,25 to 1,30 dollar), one can say that a decrease of 20 to 25% of the change would make that a barrel worth 40 dollars of the year 2004 would be equivalent eventually to 32 dollars of the year 2000. Therefore, to have the equivalence of the year 2000, the barrel of 2004 should be paid to about 34-35 dollars. Probably that the maintenance to the increase in prices with a minimum doorstep worth 28-30 dollars (instead of the fork 22-28 that had been decided by the OPEC in the year 2000) and the return to the calmness of the environment to reassure consumers and producers could bring the Sonatrach to invest more and more in the exploration and in the development of the small closed layers.

While waiting, the question that arises to us is to know what discourages the innovation in other sectors or, rather, what would be susceptible to encourage it.

Section 2-The structural obstacles to the innovation and its diffusion

Indeed, the technologies of information, the technologies of the environment, the biotechnologies and the technologies of the new materials of synthesis not only require the facilities and the expensive laboratories (investments of strong intensity in capital), but also a highly qualified staff (therefore, narrow ties which would be organized between the university and the industry). For what is the first requirement, it is necessary to underline in parallel the statutory or tariff obstacles with, well often, the absence of coordination between the users of the technologies and the political decision-makers. On the other hand, for what is the second requirement, some essays are made to recover some strengths of the emigrant manpower or technicians formed abroad, but the used stimulants are not strong enough, especially since the choices of the scientific research are not made indeed according to the fundamental and concrete problems of the development as the food, the health, the energy, the education and unemployment.

Eventually, the question of the channels of diffusion of the innovations rests whole in most countries of the Third-world. Of this fact, one can say that the innovation in the PVD is far from being valorised whereas it represents, all at once, a lasting development tool for the enterprises, a strategy to generate some profits and, finally, an opportunity for the creation of enterprise.

Therefore, the fact to catch up their delay in relation to the PDI means for the PED/PVD at first the fact to search for what discourages them to make it and then to put an end there. The innovation is moulting to 90% by the training and the knowledge; the whole process of innovation is a set of training cycles²³.

In the years 1970, in fact, the Algerian politics of industrialization had encouraged the teaching as well, and therefore the knowledge, that the formation and the retraining within the enterprises, and therefore the training. To this time, many qualified workers and Algerian technicians arrived, notably, to repair some breakdowns in the equipments which were acquired from the stranger countries thanks to personal innovations. However, this positive impetus seems to have jammed since the advent of the years 1980.

The innovation is also blocked by the system of "rent of the situations", that means by the absence of budgetary constraint.

So much as an income is assured to him, nobody is incited to improve a situation which is judged by him the best at present. However, the rent-mind won all sectors of the economic activity, because during three decades (and for some

²³ Site Internet : <http://www.lesechos.fr> – Rudy Ruggles est senior manager au CBI d'Ernst & Young (Center for Business Innovation), à Cambridge, spécialiste des recherches portant sur l'innovation et le knowledge –Le cycle de l'innovation.

branches again on this day) they were financed by the returns of the hydrocarbons (90 to 95% of the returns of Algerian exports).

However, in a system of competition, it is the emulation that encourages the research and the innovation and even the competitive cooperation. Currently, we can say that the innovation is at the heart of the development of the markets, even though, in a lot of PDI even, 80% of the innovations are in fact of the adaptations of products which were existing already and in 25% of the cases, these adaptations concern only the conditioning and no the product itself.²⁴

However, the number of their enterprises which do launchings of new products on the market, in order to position themselves on gaps that they didn't occupy up to here, has been multiplied by two in one year. Thus, the innovation goes together with the market and with its competitive evolution. It touches practically all domains of the human activity.

In fact, we can say that in itself, the innovation is a culture, that drifts of the culture of enterprise but that doesn't be hold by all citizen of the world. Thus, in the PDI, one never sticks to what already exists. But, one always tries to deepen the knowledge of that exists. To title of example, in Los Angeles, in the USA, in April 2004, the NASA placed in orbit the space probe Gravity-B, loaded to verify the theory of the general relativity of Albert Einstein²⁵.

In the Third-world as in Algeria, the people are a lot more carried on the commercial activity, which means on an activity more mercantile than productive. As for the responsible citizen, he prefers to take pleasure in his post of responsibility and refuse to open his mind to all innovative initiative, for the simple reason that his behaviour may be interpreted like a disturbing act (example of the complex Plastic in Chleff which is closed since the years 1990)

Yet, in principle, the innovation is encouraged (and vice versa) by the system of sanctions put in place. But, in the PVD as in Algeria, one prefers to speak of "D system", therefore the system of self-help, what is far from being determining and nor competitive.

The transition toward an economy based on the knowledge (the knowledge economy) requires a considerable effort of education, of the men but also of the enterprises; the enterprises must, one by one, make the training of new behaviours and of new know-how. It is necessary to learn to innovate, and for it to take advantage of the whole knowledge offered by the environment of the SME²⁶.

2nd chapter: Can the countries of the Third World hope for catching up in relation to the countries of the North?

Among the countries of the third-world, there are some that vie and compete with the PDI concerning economic growth rate or productivity of work and industrialization.

Thus, the economic growth of the Asian NPI²⁷ was very strong, not only during the years 1960 and 1970 (often more of 6 to 7% per year), but also during the years 1980 and 1990 (about 5%). The industrialization was the essential lever of the transformation. The industrial device increased considerably and varied, since the industries of basis (steel industry, petrochemistry) or the industries of

²⁴ Site Internet : <http://www.carrefouralimentaire.com>

²⁵ Yahoo Actualités –Espace –Los Angeles–AP, mercredi 21 avril 2004, 4h50

²⁶ Site Internet sur l'innovation : <http://www.cgm.org/chabbal/plan2.html>

²⁷ Données encyclopédiques –Hachette Multimédia –Site Yahoo

manpower-using (textile, confection, agroalimentary) until the industries of high technology (electronic, data processing, robotics).

Being located firmly on the way of the economic liberalism, most of these countries adopted very early the measures which are favourable to the foreign investments, to the enterprises, to the exporters and to the formation of conglomerates. They benefited from an important help of the United States and the help of international organisms of financing as the World Bank. Because of the confidence that they inspired, they attracted a lot of funds coming from the western countries, from Japan and the Chinese communities of overseas.

At the doorstep of the third millennium, the countries of the Arabian Maghreb, as so many other countries, have a considerable gap to fill to catch up the advanced economies in terms of incomes and technology. The challenge is very important in particular, considering the fast demographic growth, for the population aged of 15 to 30 years, of which one waits the more. At the same time, a young population is bearer, and the region can also make use of its rich cultural inheritance and its exceptional endowment in natural resources. [Chabrier, 1999] (11)

The development of the " human capital " of the region is, therefore, indispensable if one wants that this region hoists itself to the level of their future partners of the European union.

According to some authors [Benjamin Stora and Akram Ellyas, 1999], the Maghreb has the potential to "be a dragon" of the next century, and yet he "risks strong to be one of these regions in too much", excluded of the big movements of internationalization.

Are the handicaps of Maghreb therefore so immense? What are the elements that would permit to consider a positive development?

Yet, the Arabian Maghreb possesses important assets : a young population, a literacy that progresses, an exceptional "layer" in grey matter and considerable natural resources, even though this last point must be varied when one sees the "malediction" of the choice by Algeria to base itself on the rent of the hydrocarbons without developing its agriculture or one coherent industrial cloth." (12)

The researchers in economy of the development imagine easily an economic takeoff for the most of the countries in the Third-world, as those of the Arabian Maghreb, with the help of real partnerships with the rich West and with Europe in particular, by branches of activity. But fundamentally, the takeoff will only operate itself by democratization.

It is for lack of democratization that the union of the Arabian Maghreb, founded in 1989, is always in breakdown, whereas the populations, who compose it, share the same language, the same culture, the same faith and even a common history that forged powerful ties during their fights against the Colonialism.

It is about, therefore, to pass the political cleavages of neighbourhood and to think about to create, in addition to the economic partnerships, a Maghrebian scientific union while bringing closer the various centres and academic laboratories of research: scientific collaboration and partnership from the Maghreb without, for as much, to disdain the collaboration with the foreign statistical services and the international organisms and the integration in the European statistical system.

Section 1-The role of the agent of enterprise in the innovation and the development

It is known that the innovation is encouraged by the partnership: the subcontract or the direct implantation. To title of example, since 1990, the PECO

(Country of Central and Oriental Europe) became a real textile pole. The region represented 28% of the total imports of textile-clothing (TH) of the union European of the fifteen, before the Mediterranean countries (21%). Its innovation was to orient its positioning rather toward the means-top of range, while they lead the low of range to the Asian countries, and above all for the export. The integration of the PECO zone in the European industrial circuits of the sector of textile-clothing was fast since the subcontract contributes for 80% of its Textile and Clothing Exports. The subcontract, which is strategic to discern some mottos quickly, represents more than 50% of the production capacities in Czech Republic, 58% in Hungary, and until 90-95% in Croatia.²⁸

In the PDI themselves, the fusions and absorptions play the same role practically. The hour is to the convergence of the interests. In a general way, the scientific and technical cooperation is always fruitful. The big powers use it continually in spite of their very substantial advance.

Thanks to the partnership with foreign enterprises (European and French especially for Algeria), the political decision-makers think that the habits of some sectors of the economy can change positively, notably while accelerating the replacement of their products.

Even though the competition gives to some effective enterprises the fears about the closeness between them, it is now admitted that the big enterprises don't always have interest to choke the small innovating enterprises that revolve around them. The state is, for its part, solicited to help to constitute around the big enterprises some subcontracting and small innovating suppliers who would be susceptible to contribute to their reciprocal competitiveness. On this plan, the Arabian and African countries should consider the creation of multiple partnerships between their respective economies, what would encourage the innovation in all sectors of production.

To innovate is not a dream, and it is really possible for all enterprises, whatever are their size and their sector of activity. For numerous SME, to innovate takes place every day, by prompt improvements that allow the enterprise to differentiate itself of its competitors and to strengthen its position on the market²⁹.

The deep changes that shake the international economy since 20 years and their disastrous consequences on the employment in many rich countries of Europe, like France, made discover the key role of the SME. Progressively, one says, that dry up the big sources of jobs that the big enterprises and the public function constitute, the SME appears as the only economic agent susceptible to grow and to engage manpower.³⁰

This analysis is even more valid for PVD as Algeria that longs for aspiring the unemployment of the young and the graduated students at the moment where

²⁸ Revue Elargissement, numéro spécial de novembre 2001- Sachant que le prix de la minute de production y est parmi les plus faibles au monde et que les salaires pèsent jusqu'à 35% des coûts de production dans la confection et que le travail sur la machine à coudre représente encore 75% du temps de fabrication - 10% dans les tissus, beaucoup plus capitalistique -, certains autres donneurs d'ordre, au lieu de sous-traiter, préfèrent parfois l'implantation directe, limitant ainsi le nombre d'intermédiaires. C'est ce qu'ont fait par exemple Archimode et Levi-Strauss en Pologne, Pierre Cardin et Steilmann en Roumanie, ou encore Chantelle et Lafuma en Hongrie. L'accélération du rythme des nouvelles collections, produites en petites séries, exige une grande réactivité ainsi plus facile à gérer.

²⁹ Site Internet : <http://www.aditec.org/>

³⁰ Site Internet sur l'innovation : <http://www.cgm.org/chabbal/plan2.html>

the economic public corporations (EPE) give obvious signs of panting or are in way to be privatized in their majority.

In the present context of economic internationalization, the development must, to be lasting, to be able to lean on a governance of quality, as well to the international level that national. The governance of the North-American enterprises became a major element of that development since it appeared in 1937 in an article "the nature of the firm" written by Ronald COASE, an American economist. The 'good governance' became a universal imperative; but the Anglo-American Model weighs strongly on its definition.

The countries of Asia, for example, knew how to pull from their customs some virtuous behaviour that allowed them to manage their enterprises with efficiency. In the same way, decentralization has been recommended by most donor countries of help fund for the development and by the agencies of development like an important factor of incitement to a larger involvement of the citizens and to better local governance, thus facilitating the emergence of the initiatives and the innovation from the basis.

Thus, founding on the democracy, on the integration, on the training and on ingenuity, that is especially by its quality that the governance of enterprise determines strongly the capacity of a country to increase its real productivity for a long time, as well as the success of its long-term development efforts.

To manage well, it is necessary to banish the mediocrity where it is necessary; whatever is the sector of activity.

Section 2-How to manage the innovation in relation with the working of the enterprise?

It would also be necessary to finance the innovations and to define the modes of financings as well as the accompaniment of the files. To finance the innovation evidently means at first an assessment of the costs of development of the project and a survey of financial valorisation of the Industrial Property to reinforce the very funds of the enterprise.

It would be necessary to be able to protect the invention also and to define the best means of its protection: it is what one calls the technological eve. Nowadays, the innovation is omnipresent, but no without problems, notably of piracy and flight of ideas.

Thus, to a new strategy of search -&-development must ally a new management of the human resources to allow possible innovative to emerge on the stage.

A-R&D strategy: its effects on the innovation and the invention:

Algeria and its neighbours of Maghreb have a certain potential of qualified workers, cheap manpower that in the developed West. In spite of the delay of some infrastructures, these countries are situated to a sufficient proximity to answer the politics of tense fluxes of the backers. Finally, their markets became more liberal, more or less, since various taxes and different quotas have been decreased or eliminated since the end of the years 1990, following the applications of the IMF measures. The partnership is becoming possible if the political divergences are levelled, and these countries will be able to think about a common and specialized strategy of R&D according to the negotiated sectors or branches.

But, a strategy of Research & Development requires, at first, financial means. On this plan, we told it, the western don't move back and stay bound. Thus, there is hardly one year, in 2003, one learns that a consequent envelope (either, 228 millions of euros) has been decided by the fifteen countries members of the

European space agency (ESA) to help Arianespace to come out of its crisis and to make steal the version ten tons of Ariane 5, after the failure of its launching in December 2002. According to the German minister of Research (Edelgard Bulmahn) the ministerial council of the ESA, united in Paris, decided to inject 960 millions of euros until 2009 in the Ariane program in order to guarantee the access of the space to the Europeans otherwise.³¹

The R&D strategy in work, which was encouraged by the political powers, encourages the innovation which can bring the researchers, framed well and very gainful. It is what will to make Iraq before the first war of the Gulf of 1990, because this country had understood the terms of Bodin (16th century): "No wealth without men! "

B-Exploitation of the information upstream and downstream

Today, we all know that the innovation is encouraged by the acquirement of foreign patents and, at least, by their knowledge and their consideration.

As the researchers of the OECD³² underline it, the documents of patent represent a rich source of information on the inventions, and notably on: their technical features (demands, state of the technique, classification of the patents); the inventors and depositors (their addresses); and the historic of the protective demands (date of deposit, date of delivery). Besides, a very big number of patent documents is published every year, and then constitute one of the most important sources of information on the activities of innovation.

The patents provide a very measure of the results of research concerning innovation. The indicators based on the patents reflect the performances of the countries, which were undertaken at the level of their resourcefulness, and they cover other aspects of the dynamics of the innovation process (cooperation in the activities of innovation, internationalization of the technologies, etc.). While collecting these patents, the enterprises can create a sort of " bank of ideas" that permits to account for the recent tendencies in the activities of innovation for a big number of countries.

In the same order of ideas, we noted that a lot of our enterprises often collect a return important of information on the processes and the products, notably following the signature of contracts "product in hands" or contracts "keys in hands". However, after the achievement of the project thanks to the technical support of the strangers, our enterprises don't think anymore about to take account of it and let themselves be going to function while repeating repetitive gestures merely without asking the questions nor on their process of production put in place, nor on their outputs.

However, as Rudy Ruggles³³ underlined it, a key element of the management of the knowledge consists in learning, thanks to the permanent integration of the results gotten in the bases of knowledge. At the end of every project, an enterprise requires from its teams to spend several days in establishing reports of their mission, to look for new previews and to increase its own knowledge and, after recording them, those of the society. Besides, this enterprise dedicates a fabulous sum of times and efforts to get a return of information from its customers during the whole length of the clarification of the product. Then, these information

³¹ Yahoo ! Actualités ! Sciences ! PARIS (AP) - mardi 27 mai 2003, 16h37

³² Site OCDE –Science, technologie et brevets

³³ Site Internet : <http://www.lesechos.fr> – Rudy Ruggles est senior manager au CBI d'Ernst & Young (Center for Business Innovation), à Cambridge, spécialiste des recherches portant sur l'innovation et le knowledge –Le cycle de l'innovation

become elements of reflection for the tentative of ulterior innovation, like the process of the kept lessons in the army.

Finally, the enterprise could organize, to regular intervals, many sessions of the "brainstorming", during which often come to light happy ideas given by its employees that it rewards then understandably.

Nobody ignores that the most of big enterprises and organizations of the World generate, otherwise, more ideas than they can treat some. Also, they put in place a system of "management of a wallet of ideas" which is the process by which these ideas are gotten, definite and financed to be exploited.

A Direction of "technological eve" is created in several among them: this direction is not only charged of the management of wallet and bank of ideas, but also to preserve them of all flight of ideas, flight or diversion of their own innovations.

C-The government of the human resources (GRH) and the improvement of the performances

Whereas since two decades the polemic on the decline of the Algerian economy entered in the public debate, it is only lately that it is finally question, within the superior processes of the state, of the real and direct tie that could exist between the intensive use of the new technologies of information and the communication (NTIC) by the enterprises and the competitiveness of our economy. Certainly, we organized many symposia and seminaries to put in relief the importance of these NTIC, but one especially put only the accent of their importance through the World. But, the delay of our national, public or private (if there was some indeed) SME, did not been pointed seriously in this domain.

However, it is henceforth an established fact. Now, the computer becomes an indispensable tool, and for example at the level of the secretariat of direction of the enterprise, where the whole mail, external and internal, comes daily to cram. Then where are the propositions destined to help our enterprises to equip themselves, to form themselves and to create better, the innovation becoming the key weapon of competitiveness in a greatly competitive universe?

A new organization and management of resources human of the enterprises and administrations appears today more that indispensable. It must found on the knowledge and the use of the NTIC to improve the productivity of work not only, but also to encourage the innovative initiative of the workers.

This knowledge could come from the university if a real bridge is thrown between it and the real world of the economy.

It is necessary to recognize that a huge effort has been agreed since these recent years thanks to the new chief of state, Bouteflika Abdelaziz, and to the politics of the ministry of the higher education, but thanks also to the secretariat of state of the scientific research. These last two governmental structures have the merit to have elaborated the national Program of research (PNR) and begun to apply it to the profit of the Algerian researchers.

However, even though this measure has been taken seriously while increasing him the financial means, it remains nevertheless that the composition of the research teams continues again to pose some problems. The researchers are not all nominees on the basis of the only criteria of their quality.

Yet, it is necessary to recognize that the honest teachers don't miss now in Algeria and expertises exist in Algeria. Unfortunately, since the situation of security in the country improved, it seems that the state loses interest in some of them. Within the structures of the higher education and the scientific research,

these are generally careerists and mediocre administrative managers that occupy the controlling functions, while having the monopoly and the impunity to manage the material and financial means to their manner and to the profit of their clientele.

3rd part: The primordial role of the Universities

The innovation must especially leave from our universities, of which the teachers and the researchers should not only create networks of partnership between the different laboratories of study and research of the Arabian countries and friends, but again to review the doctrines and the theories that have been transmitted them by the rest of the world and by the west in particular that will have consecrated its values while tempting to impose them.

The question is therefore to know how to manage the innovation in relation with the working of the university: 1-The research within the university; 2-The communication university-enterprise.

Chapter 1st - Role of the university in the concrete management of the knowledge:

We will never repeat it enough: the management of the knowledge increases the innovative talent very much.

In the developed societies, the question of the innovation is omnipresent in the daily works of their research laboratories. Very often, in collaboration with the leaders and managers of enterprises and of various administrations, their university organizes many seminaries during of which we have rich and interesting proceedings with outside intervening parties on a big diversity of topics in relation with new products, new techniques, new methods of work, etc.

It is about valuing what exists and, among the novelties that emerge, to eliminate those that don't work now, while comparing the practice to the theory.

On this basis of discussions and confrontation of the ideas, the seminarians (academic men and practitioners) tempt to appreciate the perspectives of change corresponding to a sustained growth and to a lasting development. Thus, they review, among others, the transformations which were committed to the different plans of the structures of organizations, of the fashions of incitement, the actions of sensitization and formation done or to lead to adapt the qualifications and to modify the behaviours, and, finally, the problems which appear or the easiness which are noted in the setting in work of these actions according to the different social partners of the enterprise, managers, mastery agents, execution agents, unions, women, young...

In Algeria, these meetings are difficult to organize, the whole time or everywhere. Yet, it is clear that Algeria, or more precisely the Algerian university, must exploit its talents more concerning research, finance and enterprise, with the intention of making the ideas that will emerge beneficial at first for the Algerian market. The innovation, the enterprise and the knowledge are more and more decisive for competitiveness and for the success of the development strategy.

However, currently, only Algiers, the capital of the country, emerges out of the set while organizing such meetings. In spite of it, the discussion remains superficial and the Algerian university called on the socioeconomic partners only to sponsor its symposia, since its own budget doesn't always allow it. Thereby, the management of the knowledge and the ability by the university remains under of the expectations which are waited by the population who wishes to have the

opinion of the academic on the features of the innovations made there or imported, notably in relation to the morals or to health.

And contrary, these are the PDI that watch over such features. Thus, against the innovations of the OGM, once again, the partisans of José Bové and the party of the Green of Noël Mamère³⁴ and the clandestine mowers of Montauban responsible of the extraction of plantations of genetically modified corn, destroyed, on July 25, 2004, in High Garonne, in France, the quasi-totality of the 40.000 feet of corn planted on a parcel of about 5.000 m². The populations of the PDI refuse the marketing of their health. In the same way, the research and innovations made concerning cloning must stop to the limits of the morals and the religious. It is not about creating any station of employment and to meet, then, with other types of social scourges.

Therefore, research in the university has its word to say. It is going to be necessary to think henceforth on an academic research program on the two levels, national and regional. The candidates to the doctoral research should choose their themes of research in this precise setting.

The university must be an institution of research "citizen" or it is guest to become it, and supposed, therefore, to lean for the welfare of the enterprise. It is to this title that it will be able to see itself offering the subsidies, exonerations and multiple possibilities of advantageous contracts for it so that it increases its potential of pedagogy and research.

It is not anymore about loading the national enterprises of all pains. Our enterprises don't hire for the excellent reason that they don't have need of it or, rather, they don't see some what they could have need of it. As Vivianne Forrester³⁵ told it, "the vocation of the enterprises is not to be charitable ". It is to the academic research to show them the necessity of it before the hour and to convince them" to participate in the national effort for the employment"

Indeed, it is less true than all action of enterprise includes technical risks of exploitation or merchandising. The technological innovation, considering its complexity, is an operation" to high risk" : will the new product reach the waited specifications; and won't its reliability depend it of non controlled variables; and, the maintenance won't it be more important than foreseen? [Pichat, 1998]. (13)

"It is well known that, if a country wishes to invest efficiently in human capital, it should attempt to meet a simple standard. This standard is that each individual's social return to his marginal human capital investment should be equal to the market rate of return for a low risk investment in other capital." [Hoxby, 2002]

[Translation: he/it is known well that, if a country wishes to invest efficiently in the human capital, it should try to satisfy to the conditions of the simplest standard. it is about the standard according to which every individual's social output to his/her/its marginal investment in human capital should be down at least equal to the rate of market of the output of another vested interest risk.] (14)

Only the narrow collaboration between the two types of rationality, the one of the intellectuals and the one of the managers, could succeed to reliable results.

It is going to be necessary to turn the back to the vision of a " pure and hard" science of a system that locks our managers of enterprise in their towers of ivory and our academic in their theoretical reflections without possibility to cash the

³⁴ Yahoo Actualités - on the front page - Tuesday August 3, 2004

³⁵ Internet site: (<http://olivier.hamam.free/imports/forrester/horreur08.htm>) - Viviane Forrester: The economic horror - Bookstore Arthème Fayard, 1996

results of their research and to increase the means of financing of their research laboratories, in addition to the public means of research affected to the scientists themselves. Henceforth, it is this type of research based on the collaboration between the various parts that gives back its importance to the territoriality of research. The local space (that means, among others, the support of proximity to the SME) and the Maghreb Union which is in way to make itself (on the sectors of economic cooperation, the exchanges of know-how, the biotechnologies) would permit to imagine new and more efficient sharing between the public action and the private markets and, of this fact, they open a range of very rich new incitements.

2nd chapter: Redefinition of the university in context of internationalization

During a recent international symposium in Adrar (Algeria), it has been put the accent on the fact that, "the modern economy tending to encourage the jobs of the new tertiary based on the data processing, the robotics, the electronics and the space, that means the sectors to added strong value, it is the university that especially permits to reorient the job hunting toward sectors more sophisticated and better gainful... It is true today that the education creates the human expertises that have a "economic value" because they permit to produce" the value". (15)

The university must look therefore for itself of the problematic news. From an optics of the research "topic" (school of the classic economists) to the one of its "object" (neoclassic school), it could fear the utility of research better.

The mistake which was committed until there by the Algerian system is to have conceived the university like a national shop of manufacture and initiation, which means like a factory to produce some graduates for the industrializing industry of the years 1970-1980. But, with the repeated failures of this strategy that will have entailed the bankruptcy of the Algerian productive system after the years 1980, not only the interest for research has been choked completely, but again the university started rather in producing qualified unemployed person . Today, it is recognized that, in spite of its wealth and its enormous potentialities, "Algeria is classified to the 58th world rank of the indicator of the technological development". (16)

In Europe, there are many universities and big superior schools that changed occupation in context of internationalization. Found in 1967, the Centre of sociology of the innovation (CSI) in France³⁶ is one of the eighteen laboratories of research of the civil engineering school of Paris. Since several years, the CSI prolonged its theoretical and convenient research effort, from the sectors where its expertise was recognized as the science and the techniques, toward other domains new for it, to the border of the disciplines, where the products and the uses redefine themselves, always through the invention of technical devices mingling heterogeneous elements, but always nearer to the users, to the patients, the amateurs, the associations, the political decision-makers...: environment, transportation, security, services, health, communication, tastes, etc.

The CSI has will therefore to throw into question the acquirements of the sociology of the innovation while confronting them to problems which are in part new, and while making evolve its objects of interest toward more general axes of reflection. The politics, the users, the associations, the tastes...: the idea is that the socio-technical analysis of the devices and objects mobilized in these domains

³⁶ Internet site: csi@csi.ensmp.fr - superior national School of the mines of Paris-ARMINES - Center Sociology of the innovation (CSI)

permits to think in renewed terms of the classic problems of sociology, as the invention of the collective and the production of the subjectivities.

Its researchers or its candidates to Doctorate got back in reason, because in a characteristic way, while coming closer of the final users, they call to prolong the socio-technical analysis toward the social techniques of construction of the body and the collective, the processes of legal definition of people and, notably through the associations, the new shapes of organization of the politics, the democracy and markets.

In the same way, at home and in all Arabian countries, the university must get back in question to be able to answer the new requirements of the economy of the 21st century. Certainly, in Algeria, the system of the teaching, from the primary level to the superior level put the accent on the quantification to try to take advantage of our natural demographic advantage (70% of our population having less than 30 years).

Unfortunately, force is us to underline that today; the comparative or relative advantage is competed by the competitive. Today, in Algeria we would have hundred real researchers for a million of inhabitants against one thousand in the NPI (industrialized new countries) whereas we find three thousand of them one to three thousand five hundred in the PDI (developed country industrialized) ". (17) And these some researchers don't make some socially useful research even, the students in post-graduating and the candidates to the doctorate only think about the realization of a thesis that will materialize by a diploma.

On the other hand, in the work of research of the PDI of the west³⁷, for example, the accent is put on the fashions of reciprocal definition of the actors, the analysis of the coordination mechanisms put in work (between laboratories, SME, big groups of companies, political actors...) and the theoretical implications of this setting in network on the justifications of the public action and the formation of the political instruments that encourage the innovation.

For example, many rich countries have created mixed laboratories between public research and industry and their state encourages the creation of enterprises by the researchers, young enterprises whose problem is not the difficulty to extract themselves of the university but on the contrary the capacity to keep these ties in their new human and professional reports that their research in laboratory brought.

In the CSI, for example, the researchers insist on the collective dimension of the research activities in the goal of a setting up of a regional observatory of research, and achieve in cooperation a set of international comparisons and analysis of sectors (as searches in agronomy)

It is on this type of universities that it belongs at the Algerian university to take example.

Conclusion

New efforts must be agreed to make attractive the careers in the scientific professions and in the research functions - it is mainly a task of the private sector but the public authorities can also play a role in this respect. Besides, it is essential that the voice of the scientists makes itself hear more strongly in the choices of the public authorities but also that the voice of the citizens should be sensible in the permanent debate on the science and the society³⁸.

³⁷ Internet Site: csi@csi.ensmp.fr –ENSM Paris–A. –CSI

³⁸ Internet Site on « Research, innovation et entreprise» – Actions for Stockholm – European Council of Lisbon

We think that to arrive there, it is necessary to reconsider the system of distribution of the incomes and wealth in the country as well as the one of the allowance of resources to the different sectors of the human, social and economic activity. But, one doesn't go without the other, because, actually, it is about changing the present nature of the social and economic reports.

Personally, we thought to arrive there by an indirect way while proposing our equals in the universities to think on a theoretical innovation that we brought: the thesis of the "énergoïsme". Since 2002, date to which we had exposed it officially, we always wait for the reaction of the researchers to this subject.

Annexes of the communication

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Per Student Expenditures on Education in the United States, 1959 to 1999
(Dépense en éducation par étudiant aux États-Unis de 1959 à 1999)

School Year	Elementary & Secondary Schools		Higher Education	
	Public (Gov't)	Private	Public (Gov't)	Private
1959/60	\$2,557	\$1,117	\$13,622	\$16,921
1965/66	\$3,302	\$1,516	\$13,854	\$20,523
1967/68	\$3,740	\$1,742	\$14,434	\$20,355
1969/70	\$4,003	\$2,037	\$13,261	\$20,663
1970/71	\$4,225	\$2,145	\$12,675	\$19,971
1971/72	\$4,291	\$2,294	\$12,333	\$20,398
1972/73	\$4,484	\$2,452	\$12,184	\$20,483
1973/74	\$4,552	\$2,469	\$12,099	\$20,062
1974/75	\$4,703	\$2,615	\$11,829	\$20,147
1975/76	\$4,809	\$2,747	\$11,080	\$19,425
1976/77	\$4,830	\$2,791	\$11,440	\$19,972
1977/78	\$5,014	\$2,997	\$11,140	\$19,554
1978/79	\$5,036	\$3,062	\$11,400	\$19,838
1979/80	\$5,024	\$3,140	\$11,257	\$20,384
1980/81	\$4,978	\$3,006	\$10,917	\$20,134
1981/82	\$4,995	\$3,042	\$10,673	\$19,710
1982/83	\$5,163	\$3,172	\$10,663	\$20,227
1983/84	\$5,403	\$3,347	\$10,899	\$20,540
1984/85	\$5,593	\$3,482	\$11,543	\$21,463
1985/86	\$5,864	\$3,696	\$12,093	\$22,235
1986/87	\$6,160	\$3,992	\$12,078	\$23,820
1987/88	\$6,308	\$4,081	\$12,082	\$24,586
1988/89	\$6,708	\$4,371	\$12,282	\$24,951
1989/90	\$6,997	\$4,531	\$12,314	\$24,725
1990/91	\$7,037	\$4,712	\$12,364	\$25,595
1991/92	\$7,022	\$4,759	\$11,910	\$25,635
1992/93	\$7,016	\$4,729	\$12,182	\$25,835
1993/94	\$7,067	\$4,698	\$12,452	\$26,236
1994/95	\$7,119	\$4,707	\$12,956	\$26,575
1995/96	\$7,176	\$4,761	\$13,140	\$27,227
1996/97	\$7,314	\$4,753	\$13,374	\$27,429
1997/98	\$7,586	\$4,840	\$13,714	\$27,891
1998/99	\$7,721	\$4,811	\$14,030	\$28,642
1999/00	\$7,703	\$4,783	\$13,792	\$29,890

Source: The source for this table is United States Department of Education. Digest of Education Statistics 2000.

Expenditures per student are put into 1999 dollars using the Consumer Price Index. (Département de l'Éducation des États-Unis . Abrégé des Statistiques de l'éducation 2000. Les dépenses par étudiant sont exprimées en dollars courants de 1999 repérés par l'indice des prix à la Consommation.)

Intervention of the government in the financing of the education - Caroline Mr. Hoxby, Professor of economy and Director of the teaching program in political

economy - University of Harvard and national Office of the economic research - Meeting of Representatives of the national organizations of the Economic Research, General headquarters of the OECD, Paris, July 1st, 2002,; Theme: Investment in the Human Capital - Picture N°1 - p23 (Intervention du gouvernement dans le financement de l'éducation - Caroline M. Hoxby, Professeur d'Économie et Directeur du programme d'enseignement en économie politique – Université de Harvard et Bureau national de la recherche économique – Rencontre de Représentants des organisations nationales de la Recherche Économique, Quartiers généraux de l'OCDE, Paris, 1er juillet 2002; Thème: Investissement dans le Capital Humain – Tableau N°1 –p23)

Examples of supports to innovative persons

(Site Internet [javascript:ow(‘/Inc/copyright_afp.html’450’,’150’)].Le moniteur du 16 novembre 2004) : The Lounge of the mayors and the local collectivises, which was organized from the mid-November 2004 until the 19 in the same way to the Convention of the Mayors in Paris, awarded its "prices of the innovation" to the winners of the contest: a hang-bicycle, an area of games for adults and a seat of swimming-pool for people to reduced mobility. These prices reward some products, processes, material, services or innovating techniques. "Developed by suppliers of goods and services of the sector of the local collectivises, these innovations bring concrete answers to the present problematic that land to the local elected citizens", explain the promoters of the demonstration.

(Site Internet de La Libre Belgique 2004– Salon Eureka 2004, 16/11/2004 – : http://www.lalibre.be/article.phtml?id=12&subid=121&art_id=193195): In the 53rd world Lounge of the innovation, Research and the New Technologies which was held in November 2004 in the palace 11 of the exhibitions in Brussels and which gathered about 800 participants who come from about forty countries, more than 1200 inventions have been presented there. Convincing or merely funny, the invention has the grant to trigger, at the visitor, two recurrent questions,: 1-The incredulous or unbeliever one: "but where they go to look for all that"? 2 and the evident one: "how we did not there thought it earlier?"

(Site Internet de la FINB [http://www.nbif.ca/français/press/pressrel_detail.cfm?id=29]): Sponsored by the Foundation of the innovation of the New Brunswick, the contest of a value of 70.000 \$ in price is open to the students, girls and boys, of university or communal college whose will receive their diploma in 2005 and whose are arranged to commit during one whole year to develop their new enterprise in the New Brunswick. It is about the "Price of student corporation 2005" that aim to recognize and to push the students whose think about establishing and to exploit an innovative enterprise centred on the knowledge in the New Brunswick. The New Brunswick is one of the Atlantic provinces of Canada, of a surface of 73.437 km², composed of 710.000 inhabitants and having the city of Fredericton as capital.

The innovative markets in the World



Site Sciences sur Internet – mardi 21 mai 2002 : Les petites annonces ; les grandes inventions.
(in French)

Les récentes innovations :

01-Un nouveau type d'éolienne silencieuse

02-Une nouvelle technique brevetée, domaine gravure par superposition

03-Un parapluie et un parasol originaux respectivement déposés sous les marques Pluierapa et Solrapa (2 innovations ayant reçu une médaille d'or au Concours Lépine 2000), ainsi qu'un parasol forain, un protecteur de lances à incendie ou à pulvérisation, un grappin récupérable et un ramasseur de fruits

04-Un Système de loupe intégré en lieu de vente : Il faut savoir que de nombreuses personnes ont des difficultés visuelles (fatigue de la rétine, myopie...) et n'achètent pas certains produits, car les notices d'utilisation ne leur sont pas accessibles, elles sont souvent rédigées en caractères trop petits. Ce manque à gagner est préjudiciable pour les commerçants. L'intégration d'un système grossissant les notices dans différents points de vente (grandes et moyennes surfaces par exemple) permettrait de gagner un pourcentage important de clientèle. Ce nouveau produit permet une lecture plus aisée des notices d'utilisation des produits. Il a été remarqué que ce système de loupe, intégré en lieux de vente, serait bénéfique pour les utilisateurs et pour les distributeurs. En effet, il serait d'une grande aide pour les personnes qui ont des problèmes de vue et sont dépendantes des informations que doivent leur fournir les vendeurs. De plus, il permettrait à ces personnes d'être autonomes dans le choix de leurs articles sans demander conseil pour la lecture de chaque notice de produits. Il s'agit, de plus, d'un produit simple, d'utilisation rapide, à la portée de chacun. Ce système s'intègre à un caddie ou à un panier. Il peut être tenu en main pour lire les notices des produits difficiles à déplacer.

05-Un « véhicule monte pente été-hiver » est un dispositif de transport en site montagneux permettant de se déplacer aisément en toutes saisons sur sol difficile et en région inhospitalières. Son moteur électrique, son mode de transmission nouveau lui confèrent toutes les qualités d'un véhicule respectueux de l'environnement : 51-Légèreté ; 52-Maniabilité ; 53-Facilité de mise en œuvre ; 54-Implantation simplifiée sans terrassement, ni ouvrage particulier. Le « véhicule monte pente été-hiver » s'intègre parfaitement dans le milieu naturel qu'il dessert. Ce nouveau mode de locomotion serait aimé parce qu'il est si proche de la nature, glissant à la surface du sol (l'été) ou le manteau neigeux (l'hiver) sans troubler le silence, ni défigurer le paysage montagnard. On utilisera ce « véhicule monte pente été-hiver » particulièrement pour :

55-tous travaux afférents aux sports d'hiver (traçage et damage des pistes pour ski nordique) ; 56- l'entretien de la prairie en été ; 57-l'entretien et la visite des parcs naturels ; 57-l'approvisionnement des refuges de montagne ; 58-l'accès facilité pour les soins vétérinaires aux alpages; 59-la création de circuits touristiques ou pédagogiques (classes de neige, classes vertes) ; 60-enfin, rendre la montagne moins dangereuse car plus accessible.

06-Un Système de casiers en plastiques pour ranger les chaussures. Principal avantage : ces casiers permettent de ranger facilement 30 à 40 paires de chaussures dans l'escalier de votre cave ou de votre garage.

07-Un Spacère (nouveau système de transport automatique) : invention primée.

08-Un Navyspace (nouveau concept de dirigeable à structure dynamique) – invention primée.

09-Un Cinéspace (nouveau système de visualisation dynamique d'image, films, dessins animés) –

10-Un Élément de construction porteur de végétaux : L'invention concerne un élément de construction pour mur doté d'une cavité destinée à être garnie de végétaux. La cavité est en forme de bac à lèvres débordantes et suffisamment hautes pour pouvoir contenir la terre d'apport et la végétation. L'élément de construction est conçu pour pouvoir s'imbriquer avec les parpaings traditionnels lors de la construction d'un mur.

Les grandes inventions du siècle dernier :

1907 : M. BIMM ; Aspirateur BIRUM.

1908 : M. PORCHET, Stylographe à pointe amovible. M. BELLOT, Aéroplane RB Dirigeable BELLOT.

1909 : M. LABBE LEDANTÉE, Modèle d'Aéroplane "L'AVION". M. MARQUER, Hélice à multiplication et à pas variable.

1910 : M. THIERS, Moteur à "deux temps". M. FOREST, Changement de vitesse progressif adaptable aux automobiles et à l'industrie.

1912 : M. DEFLEBER DERRE, Parachute automatique pour aéroplane. Mme LABROUSSE, Appareil à laver la vaisselle.

1913 : M. CHAMPEIX, Appareil récepteur de T.S.F.

1916 : M. ROBERT, Parachute individuel pour aviateur.

1918 : M. LAUGE, Matelas pneumatique et machine à laver le linge.

1919 : M. PASQUIS, Le stylo à bille-

1920 : M. LEBERTE, Inhalateur nasal contre les poussières et maladies infectieuses. M. LALIE, Machine à écrire en caractère BRAILLE.

1921 : M. CARONI, Fer à repasser à vapeur.

1922 : PIGIER, Machine à sténosyler. M. SAVOYE, Machine à laver le linge

"FRANCE".

- 1923 : COMPTOIRS MADELEINE, Aspirateur électrique.
- 1924 : M. LARGUEZE, Le berceau pliant. M. BOUTET, Machine à écrire portative.
- 1926 : M. CHAPELAR, Marmite à fermeture hermétique à vis à pression.
- 1927 : M. DELBON, Semelle crêpe.
- 1928 : M. ALDEBERT, Four électrique.
- 1929 : M. CORNIBERT, Le couvercle chauffant électrique.
- 1930 : M. POULAIN, Tondeuse à gazon.
- 1931 : M. MANTELET / MOULINEX, Moulinette presse-purée.
- 1932 : M. PORNANSKI, Cafetière automatique réveil matin parlant. M. ROUSSEL, Machine à faire le yaourt chez soi.
- 1933 : M. JEANBAT, La poupée marchante LA LOUISETTE.
- 1934 : M. HENRY, Appareil pour la transfusion sanguine. M. ANDRAULT, Tente aérodynamique "POLAIRE", expédition Paul - Emile Victor, tente "ANTAR", expédition Terre Adélie.
- 1935 : M. DEFLEUR, Stylographe détacheur d'encre.
- 1936 : M. GIRAUDET, Humidificateur d'air. M. COULY, Phonographe électromagnétique à changement de disques automatique.
- 1937 : M. HENRY, Le cœur artificiel, le poumon d'acier. M. COMPAIN, Le laryngoscope-
- 1938 : M. GASSMANN, Dispositif radio-électrique destiné à prolonger par T.S.F. les réseaux téléphoniques actuels automatiques ou non.
- 1948 : M. ROUVEREAU, Verres de contacts.
- 1950 : M. LECLERC, Appareil pour cyclistes et piétons rendant leur présence visible la nuit.
- 1952 : M. LAVERGNE, Auto-cuiseur "MELANIE" en aluminium moulé à couvercle plat formant plaque chauffante.
- 1953 : M. CARONI, Couveuse électrique transformable.
- 1954 : M. ESPINASSE, Duplicateur BRAILLE. Mlle BOREL, Support de téléphone articulé.
- 1956 : M. DEMAUX, Canne lumineuse pour aveugle. M. DUJARDIN, Jeu des 1000 Bornes.
- 1957 : M. FERRAND, Bac Riviera.
- 1958 : M. LEBRE, Poignée de manutention à prise rapide.
- 1959 : M. SUARD, Système de commande à distance. M. CHAVANON, Appareil à dessiner en relief pour aveugle.
- 1964 : M. LASSERRE, "SOMNIDOR", appareil à provoquer le sommeil.
- 1965 : M. BORDET, Manche outil vibreur. Appareil utilisé en sculpture, gravure, ciselage et chirurgie osseuse.
- 1967 : M. LEBRE, Marchepied élévateur.
- 1968 : M. LEBRE, Dispositif pour soulever une charge TRANSLEV..
- 1970 : M. MORLET, Dispositif pour enlever les bas et chaussettes sans se baisser.
- 1975 : M. HATAYAN, Le guide-clou.
- 1976 : M. de NEUVILLE, Ceinture antiviol TREKKING.
- 1978 : MM. de BARRIN & GUIDECCELLI, Appareil de contrôle optique de documents notamment des faux billets.
- 1980 : M. GRAND, Guide pour non-voyants.
- 1981 : M. DOREY, DOPI 2000, récupérateur d'ordures ménagères.
- 1982 : M. BERNIER / AXERGIE, Pompe à chaleur solaire. M. ASSOULINE, Chasse - pigeon VILSEN.

1983 : M. PAYET, Pain "PAILLASSE". M. EMERIT, Aspivenin.

1985 : M. DANNEMARD, Dispositif de transbordement de quartiers de viandes entre un appareil de manutention et un véhicule de transport.

1986 : M. LUERE, Pompe contrarotative. M. LEBESSIS, Couteau de précision ARIS.

1987 : M. LAZZARONI, Dispositif de sécurité d'échelles.

1988 : M. SAUSSEREAU, Dispositif d'immobilisation de malades. M. PAVARD, Traceur en relief pour non-voyants.

1989 : M. LEFEUVRE, Turbine thermique. DELEGATION CHINOISE, Ensemble des inventions.

1990 : M. LORENTE, Bras hydraulique pour transfert de fonds.

1991 : M. DUMAS, Escalier escamotable. M. CANGELOSI, Alarme anti-vol pour tableaux.

1992 : M. GARCELLE, clavier de piano et notation musicale "chromatique et proportionnelle". M. LE FAUCHEUR, "SESAME PARK", borne électrique de parking.

1993 : M. LAFFARGUE, Dispositif associant des ingrédients à un produit panifié. M. VOURC'H, Siège articulé à pression d'eau pour baignoire. Mme KERJAN, Vélo électrique à énergie solaire.

1994 : M. POCHON, Dispositif élévateur de fauteuil roulant sur véhicule automobile. MM PASTOR & MALESSET, Détecteurs d'objets volés. M. MESSIN, Assistant toilettes.

1995 : INSTRUMENTATION & MESURES SUR SITE, Dispositif de mesures de déplacements des ouvrages d'art. M. DUMAS, Lit à pistons. M. LOISSEL, Dispositif télécommandé de rangement de véhicules dans une enceinte de faible surface.

1996 : M. PIEMONT, "NOMIX" identificateur de carburants. M. LEFEVRE, "HELIOSPHOTON", chauffage électrique par rayonnement solaire. M. LAGRANGE, Catamaran de sport comportant un système pour déplacer les coques.

1997 : M. RIERA, "CALCAIRATOR", dispositif antitartre à champ magnétique tournant. MM PITOUX, "MAGIC'HUITRES", dispositif pour ouvrir les huîtres. ARMEE DE L'AIR E.S.T.P. de Luxeuil, Dispositif de récupération autonome de paramètres d'enregistreurs de vol.

1998 : M. GARREC, "DIAPOS", chariot de manutention. DELEGATION RUSSE, Ensemble de ses inventions. M. MOCQUOT, Fauteuil électrique pour handicapés.

1999 : M. BONIFACE, "CAS ROC", excavateur à marteaux oscillants. M. DOYET, Lavabo à hauteur modulable. M. GRUELLES, Crochetage pour blocage de bennes.

2000 : M. DURAND, Armoire sèche-linge à circuit frigorifique. M. JAUDON, "BI", cycle pour ergonomie verticale. M. DAOUK, Nacelle de secours.

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