

Innovation Policy as a Substitute for Failing Economic Policies[‡]

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This article explores the ways in which innovation policy can be used to create a more inclusive, diverse and fairer globalization.

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At the start of the third millennium, we must confess that many essential questions remain unsolved, namely poverty and exclusion, nature preservation and care, violence and drug addiction. In spite of a so called economic success, we bear the responsibility for a global failure in civilization, and we must try to find ways which will lead to real human progress all over the planet.

I am not absolutely sure that innovation policy can provide all the conditions necessary to escape the economic trap in which the majority of mankind is now caught, but I believe it will definitely help us to escape from it and find our path to the future.

History of Innovation Policy

What is Innovation policy? The question might appear philosophical and indeed it is. A policy that concentrates on the conditions of change presents a philosophical novelty, because it avoids creating or even proposing creations at the place of creators, and places politicians in such a position that they can no more claim "I did this".

Innovation policy is the result of a slow historical maturation. It took shape in the seventies in Europe, and is now progressively being disseminated world wide through consulting projects like the ones made by Jean Eric Aubert at OECD, audits of the innovation policies of more than 20 different countries, which are now to be undertaken under the umbrella of the World Bank.

After the second world war, success in the development of atomic weapons impressed governments and created a climate favorable to research funding at unexpected levels. Twenty years later, research activity had generated its own bureaucracy, and the scarcity of results regarding practical developments, except military ones, created a climate of disappointment. At that time, Europeans had become accustomed to refer to the 'American model' in order to find solutions to their difficulties.

But the American attitude towards innovation was inspired by other problems. They undoubtedly believed that innovation policy was necessary, not from a disappointment about research but in the context of the American dream of individual success. The 'Charpie report' (CTAB 1967) was an argument for small business and against the abuses of big businesses. It stated that every big company began as small one. Its success is due to the fact that it was creative when small, but this does not prove it is still creative now that it is big.

The foundation of the 'Six Countries Programme on Innovation Policies' by members of the public sector from Holland, Germany, Great Britain and France, and then Ireland and Canada, was in reaction to a visit to Europe of Herbert Hollomon (the former secretary of state in charge of commerce in the United States, who ordered the Charpie report). As a University teacher, he was trying to sell Innovation Policy consulting to European governments through a comparative study. The Europeans figured they did not need him to compare themselves and started to exchange in a very cheerful and open way.

It took some years before they could afford an attempt to explain the nature of Innovation Policy. The Six Countries meetings started in 1974, but the one devoted to the definition of Innovation Policy occurred only in 1980, using the 'metaplan' creativity technique. Anyhow, I assume that time makes things simpler and clarifies what was, at the beginning, a rather complex discussion.

One word came out first: Innovation Policy is *systemic*. What did that mean? It was not very explicit at the time, but it nevertheless referred both to the complex interdependence of factors and to the fact any decision would have not only direct consequences but also indirect ones, which could in fact be the most important. When I think now about what was exactly underlying this word 'systemic', I feel it meant a complete disruption in the approach of technology. By using this word, we introduced a sort of biological approach, in contrast to the former mechanistic one, used during the industrial era to visualize an economy, as for instance in the Leontief tables.

Going further into biology, the metaphor we developed at that time is the one of gardening. An innovation policy would consist of three components:

1-Preparing the ground: technical culture and education

2-Weeding that is removing obstacles and excess domination: eliminate corporatist or bureaucratic practices and break all sorts of monopolies. At the end of the 70's there started the deregulation movement, which was interpreted as a part of innovation policy.

3-Providing water and nutriments to the plants: innovation financing, in which public procurements appeared to play a major role, when looking at the Silicon Valley and Route 128 examples.

Of course, the gardening metaphor can be presented in the line of the systemic approach, thus a garden is obviously a system, and quite relevant regarding the complexity of interactions between the plants. It was really a good biological metaphor, but I do not feel it was so easily accepted at

that time, because it was too different of the usual way of thinking, at least in economics.

I do not remember either that the connection had been made with the last film of Peter Sellers *Being There*, which developed with such a marvelous humor and talent the gardening metaphor in management and daily life. Seen with a philosophical eye, this film, in spite of its simplicity, bears a very deep lesson.

Most scientific approaches are concerned with one question: Why are things what they are? Very few reach the other question: How do things change? A garden is an example of slow change in a living system, that has to be followed by the gardener. The 'laisse faire' attitude is not relevant. If the gardener leaves the garden, the garden turns to decay.

Until now, the benefits of these metaphors have not been totally assimilated. 'When you only have a hammer, everything looks like a nail' says the proverb. This could apply to many economic approaches. The measurements are poorly relevant and the models approximate, but, as far as it serves vested interests, 'garbage in, gospel out'. But regarding innovation, theory is not at the service of vested interests, that are, by definition, conservative.

Innovation policy is still considered, in the line of the two main concerns of the 70's - the European and the American one we mentioned - either as a chapter of research policy, or as a chapter of economic policy. This subordinate position is, to my understanding, due to the fact that there is no innovation lobby, though there are in front very powerful lobbies, namely the research community and the business community. But, of its essence, innovation policy is not at the service of their vested interests. It is opposite, at the service of their future competitors.

Innovation and Economic Success

Let us now examine why innovation policy is a valid substitute for failing economic policies.

The first point is that economic success, in the long term, appears to be the effect of implicit innovation policies and not the consequence of economic policies. The case of the United States during the last 50 years demonstrates this. This country has had, for half a century, a very poor economic policy, with enormous trade and budget deficits, exactly what the IMF recommend to other countries not to do. But the three elements of innovation policy listed before were fulfilled, active and efficient :

1-High level technical universities, where all gifted students of the world could be accepted, and also a world awareness on technical information.

2-A strong anti-trust legislation, properly enforced. In spite of the image exported of a minimal power in government, United States is probably the only country in the world able to break into pieces its biggest company (IBM, AT&T or Microsoft).

3-Enormous public procurements in high tech, mostly military, procurements managed in such a way that a meaningful amount benefited small firms, as set out in the small business act. These small firms, because they were hired for only one operation, had to convert their know how to non military markets, instead of waiting for other contracts, as big defense contractors use to do. Thus the learning process funded by public money was rapidly converted into goods for the public.

Examples than other than the United States could be also given. Most economic successes of the last 50 years have been far from the "best practices" recommended by standard economic theory: barriers to imports in Japan, high levels of social protection in Europe, at least for France and Germany. Conversely, the developing countries who accepted - sometimes under pressure - to follow the international standard liberal doctrine became in most cases poorer and dependent.

Another point must be raised regarding globalization. One of the important features of this new cognitive system is the so-called "globalization". What is presently called "globalization" is merely a current point in a long ongoing process. Historians argue when it began. Most people seem to think that globalization is a very new phenomenon of the past decade or so. However, Immanuel Wallerstein dates it from the emergence of modern Europe from the 15th Century. Many Asian scholars argue to the contrary that the process began in India and China perhaps a thousand years earlier (or at least many hundred years earlier), while Andre Gunder Frank insists upon its going back to the Stone Age, more than 10,000 years ago.

This is not merely a quibble among historians. It is important, in order to understand humanity at the present and future, to acknowledge that we have had a kind of global civilization for a very long time. Anyhow, this quarrel shows that historians are giving different meanings to the same word. Let us look at it through the technical systems approach:

1-Some 100,000 years ago, our ancestors went out the valley of the Omo river in Africa, and spread to Middle East, Europe, India, South East Asia, China and America through the Bering straits. It was the first

globalization process, under the technical system of hunting technology, with self-sustainable village tribal communities.

2-The second globalization started after the Neolithic revolution, when the technical system changed progressively towards agriculture, some 10,000 years ago. It was a commercial globalization, generated by the surplus of agricultural production, exchanged in the first towns in Mesopotamia and China. Market economy appears then. One can see it, for instance, through the first cuneiform tablets, the majority of which are business documents. Trade, after some centuries, grew international. That was the second globalization, concerning market economy. The backbone of it was the "silk road" along which walked the caravans, from China to Middle East.

3-During the first centuries of the second millennium, this road, under military control of less and less tolerant islamic forces, became difficult to Europeans. For this reason, Queen Isabel of Spain, in 1492, sponsored Christopher Columbus, with the mission to open a new road to China going west. Industrialization did not transform the maritime globalization he created. It amplified it with new infrastructures, like the Suez and Panama canal, and it charged enormous quantities, millions of tons of crude oil, minerals and manufactured devices of all sorts. It also increased speed, through mechanic propulsion and, in the 20th century, air transportation.

4-The present globalization, the one of the cognitive civilization, appears different not in quantity but in its very nature. It is a globalization of information, the creation of a world "info-sphere", the instant planetary transmission of news and messages, the infrastructure of which is widely located in space. One can say that the challenge of Industry was production, aimed at basic physical needs satisfaction. The challenge of the cognitive age is consciousness formation, occurring at light speed on a world wide nervous system.

In a sense, what is new now is what was always new when people noticed it in the past: a set of new technologies and the reorganization of the social system around them. They enable more humans to interrelate with each other in ever more physically distant places ever more rapidly and in more and more modes, thereby impacting more and more human behaviors, institutions and values. globalization of this sort will obviously grow over the next century, greatly enhanced by the rapid diffusion of technologies, and then transformed again by whatever technologies follow, biotech and nano-technologies seeming to be the prime candidates to replace or absorb current ones.

A New Situation

But looking at it more closely, we realize that humankind is experiencing a totally new situation. Distances between human beings increased at the first globalization, when the human species left central Africa and spread out all over the planet. At each following globalization, distances, measured in time, decreased. They were reduced to some hours by the development of air transport. They are now reduced to zero. That means instantaneous face to face dialogue at planetary level, which has never been experienced in the past.

Anyhow, the new system should not be referred as generating an “information society”, because the struggle for visibility creates more dis-information than information. One has to realize that society is entering in a very noisy and confuse period in which the classical offer versus demand relation should play a new game involving falsification versus discrimination.

One of the strong points regarding space technology is the forecast of a youth crisis of the emerging cognitive economy. One can already observe the replacement of the ruling class. The net economy behaves differently and makes obsolete many old industrial behaviors and employment. During the 90's, in spite of a prosperous business climate, most great companies have been reducing the number of their employees and redesigning their strategy. If we now remind the preceding technical system change in Europe, we foresee quite a severe period for the next 30 years, resembling to what happened during the first half of 19th century.

At that time, industry competed successfully the former technical system, driving to obsolescence many arts and crafts. To make it clear, industrialization killed more jobs than it created. And a wider part of the population was left aside, reduced to poverty. In 1848, an unexpected revolution broke out. It was felt as an unpleasant surprise by the ruling class. The poors went down to the street, claiming for bread and jobs, all over Europe. Many had to run away to America, pushed by survival necessity.

As a response to this challenge, Bismarck in Germany, Queen Victoria in Great Britain and Napoleon III in France developed similar strategies: an enormous effort in basic education, in order to eliminate illiteracy, and massive investments in public infrastructures like railways and urban equipment. It took two generations, but it worked! By year 1900, Europe had recovered its world leadership.

It is more than likely that the transition to cognitive economy should generate a similar youth crisis, calling for similar solution. Though liberal ideology dominates, as it dominated at the first half of 19th century,

one has to admit that, in case of crisis, public investment still appears as a last resort, justified by Keynes's economic theory. It has been the case in 1929 and it will be the case for the following crisis.

This point will turn out to be central during the next decades. Industrial concern in the past was mainly focused on increasing productivity increase and reducing costs, leading to growth in GNP per capita.

It succeeded in doing so, but precisely because of its increase in productivity, the economy has now to face another challenge: to give employment (or activity) which will allow anyone on earth to survive in proper health conditions.

In agrarian systems, each economic actor could reach survival through self production of food, completed by exchange of surplus at local markets. Industry, particularly in its last phase, the industrialization of agriculture after the second world war, increased the competitive pressure by an order of magnitude, putting aside the majority of the work force.

This phenomenon can be understood as a reduction in diversity. Even if the number of different products available to the average urban citizen is increasing, global diversity of production and survival processes is reduced, since mass production and high productivity processes are in a position to eliminate traditional ones through global competition.

I must here stress an important point: the so-called Ricardo theorem, considered as the doctrinal basis proving the benefit of free international trade, is, to my understanding, a false or at least uncompleted statement. The idea of that theorem is that each country should specialize in production in which they have the best relative productivity.

The well-known example given by Ricardo is that of Portugal and Great Britain, the first specializing in wine and the second in textile. If each produces the goods for which its relative productivity is the best, the result will be a global improvement in the productivity of the two countries. It seems obvious.

But let us now tell the rest of the story: specialization kills the know how of what has been left aside and each country is now dependent on the other for supplying the product that was abandoned. Discussion on the terms of trade has no more relevance in productivity terms, and is now left to lobbying, corruption and even military pressure.

World products - the case of crude oil can be kept in mind - generate at least economic war and in many cases military confrontations. And one can assume, I suppose, that war is not precisely an increase in productivity. It is, obviously, a destruction process, and the late century, a barbarian one, has shown a lot of such processes.

A Biological Metaphor

Let us now return to innovation and back to a biological metaphor. Many unique species developed on the Australian continent because it stayed separated from the rest of the world for hundreds of millions of years. Isolation created a specific ecosystem showing the marvelous creative possibilities of Nature.

Transferring this analysis to economics, we would assume that diversity - i.e. innovation - needs some forms of protection, and is only able to restore an economy in which each individual would find his place. Globalization as a doctrine is an error. Innovation policy is much more subtle. It tends to maintain or increase diversity as a condition for the stability and good health of the economic ecosystem.

The new technical system, based on information technologies and bio-technologies, will obviously, in a first stage, increase competition and generate monopolies. Competitive pressure is increased through the Internet, which allows instantaneous business orders world wide. Monopolies are generated through standards: the most efficient or the best promoted - software turns out to be a standard only because it is used to communicate by a majority.

The Microsoft case illustrates the monopoly creation process. In itself, it is obviously not a demonstration that the market economy rewards the best service to the consumer. Tim Berners-Lee, who developed html internet language, certainly merits more than Bill Gates, though he stays with his ordinary salary. On the contrary, Microsoft, by allowing Bill Gates assets to exceed the annual wages of a hundred million Indian peasants, shows the deep illness of the modern economy. Why? Because, all living systems need to respect a basic rule, the one of food, of temperature, of Carbon dioxide density: not too little, but not too much.

One can foresee that there will be many other cases, as long as intellectual property legislation stays as it is. More generally, agrarian territories were made of land, industrial territories were made of capital, representing the property of production instruments, the cognitive civilization territory is made of intellectual property, representing the place occupied in mental space.

Therefore, the question raised starts with two statements:

- 1- The development of a new technical system leaves aside the workforce which served the preceding one.
- 2- Every human sized community has to find a survival territory inside the technical system.

As far as new territories are defined in the space of innovations - of which intellectual property is the legal expression - the new technical system will need even more than the preceding industrial one, the settlement of effective innovation policies to restore and/or maintain diversity. In such a perspective, though globalization is obviously necessary to stimulate change and update in technologies, excessive, one can say ideological globalization, would reduce diversity and therefore generate increased exclusion.

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