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POLITICAL OBSTACLES TO SCIENCE DEVELOPMENT IN LATIN AMERICA - A TESTIMONY*

by

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The important role played by science and technology in the economic development of the industrial countries has been clearly recognized in the last 25 years. At the same time that the first bonds, in their modern form, between the military and economic forces were established during and after the First World War, the process of institutionalization of science started in these countries with the creation of the first national research councils.

The systematic utilization of scientific and technical discoveries for military purposes during the Second World War gave an explosive development to this process after 1945. National atomic energy authorities, national scientific research organizations, advisory committees and posts of Special Counsellors and of Minister for Science were created, endowed in general with great power and financial resources for the execution of science policies, now explicitly formulated as part of national development plans.

These initiatives converged, in the international scene, toward the realization of the First United Nations Atomic Energy Conference in 1955 - followed by similar conferences in 1958 and 1964 - the creation of the International Atomic Energy Agency in 1957, the First United Nations Conference on the Applications of Science and Technology for the Benefit of Less Developed Areas, in 1963, and the creation of a science advisory committee and a science department and divisions in the United Nations Secretariat and in UNESCO, respectively.

The scientific accomplishments in the advanced countries, the studies which started being published, in increasing quantity, on the new age of scientific revolution, all these initiatives compelled scientists and scholars of the underdeveloped nations to call attention of their governments and public opinion to the significance of

scientific and technological research for development.

In the decade 1950-1960, debates took place, indeed, in the intellectual circles of certain countries in Latin America, on the need for basic reforms of institutions and policies. In 1955, the universities in Argentina were reorganized[1], the system of nomination of professors was modified, so as to allow the formation of several important groups of research in basic science, such as those in the University of Buenos Aires, the Balseiro Institute of Physics in Bariloche and at the Atomic Energy Commission. In Chile, Venezuela and Colombia, the university autonomy was consolidated and faculties of sciences were created.

In Brazil, at the same time that the need for the modernization of the educational system was emphasized[2] and new methods to combat illiteracy were devised, the organization of a new university was studied[3], to be established in the new capital of Brasilia. Thought of as a model for the reform of the older universities in the country, the University of Brasilia was to be formed as an organic ensemble of professional schools, articulated upon central institutes devised as the fundamental units for research and teaching of basic disciplines, so as to avoid the duplication of equipment and staff, as was common in the traditional Latin-American faculties. Students, who would complete the basic disciplines in these institutes, would continue their studies in a professional school, such as medical sciences, agricultural sciences or technology, or in one of the institutes, depending on the specialty chosen. Moreover, the appointment of university professors was to be based upon their specialized publications, on their professional achievements and talent, and not, as traditional in Latin-American countries, upon official recommendation or dependent on special, formally restrictive, competitions.

The National Research Council and National Nuclear Energy Commission were created in Argentina and Brazil in the 1950's, and for the first time funds were available, which were not provided by foreign foundations, for the development of scientific research projects in universities and scientific institutes in those countries[4].

These efforts for the development of science and technology in developing countries had, however, to face a great obstacle to begin with: while in the advanced nations the great industries need science and technology for the conception and development of new products and techniques, to face competition, to survive and to grow, and thus either maintain research laboratories or have contracts with - and contribute to the continuous modernization of - scientific institutes and national universities; in the under-developed nations, on the contrary, industries are almost all branches of the former and import from them finished products and techniques for local assembly. It is in such laboratories, institutes and universities of the advanced nations that basic and applied research is conducted, that inventions originate and become protected by patents. It is there that scientists and engineers of the advanced nations themselves find jobs.

The problem of the significance of scientific and technological research for the developing countries is, therefore, essentially connected with the question of the form of economic development of these countries. While several scientists and scholars preached the need for universal primary education, expansion of secondary and technical education, creation of good universities and scientific institutes and modernization of the older ones, many of them were aware that such a programme had to be included in plans for economic development which would be capable of offering jobs to graduates from schools

at all levels. In particular, inventive engineers and scientists would ultimately have to find jobs in industry, and their success in this field would be an attraction for talented youth to go into these careers. This is, however, not what happens in the developing nations.[5] Industries there do not need to maintain local research laboratories, nor do they feel compelled to have contracts with local scientific institutes and universities. As they are subsidiary companies of big foreign industries, their laboratories are those of the latter, their research and development activities are those performed in the advanced countries. Inventive engineers and scientists of the developing nations have, therefore, no job opportunities in the local industry in their own countries. And as no pressure is exerted by these on the local universities to produce competent graduates, the academic life becomes, in the last analysis, part of the national partisan political games. What industries in underdeveloped countries are in general eager to hire are efficient public-relations men, lawyers, bureaucratic engineers and moreover - and in this they again follow well-known examples from abroad - retired military officers.

Of course, other opinions were voiced and much action was taken, in this field, in Latin America after 1950. At the same time that the budgets of the local national research councils, scientific institutes and universities were kept low and inflation increased, grants were offered to scientists and laboratories by foreign foundations and, more significantly, starting in the late 50's, by representatives of research offices belonging to the Departments of the Navy, Army and Air Force of the United States. A scientist, then, whose laboratory was thus subsidized would find if difficult to engage himself in public discussions on the development of science and the type of economic development in his own country - such scientists are called

"apolitical"; they are praised by the interested sponsors and described as men entirely devoted to pure science.

Atomic research reactors were sold[6] to several universities in Latin America in the late 50's, missions of scientists and officials from foundations and governmental agencies, almost exclusively from the United States, visited frequently laboratories and universities.

Then, in the period 1964-1967, just a few years after the assassination of President John Kennedy in the United States, several coups d'Etat occurred in a few key areas of the developing world, in Brazil and Argentina, in Ghana, Greece and Indonesia.

What was the effect upon the development of science, of the new régimes established in some of these countries?

In his article on physics and politics in Latin America, L.M. Falicov mentions the reorganization of Argentinian universities in the years 1955-1966 and states: "From the point of view of science and the scientists the big disaster occurred in 1966. With a new military coup, which put in power the present military régime, the universities were almost razed to the ground. All the serious efforts of the previous 11 years were essentially obliterated. The police and the army again, took temporary control of the university and a massive resignation of able people immediately followed. All working groups in the physical sciences and the humanities emigrated en masse to more sympathetic places. A large group of physicists and physical chemists moved as a unit to Chile, which was then developing in its universities the first serious effort in the physical sciences; a small group moved as a unit to Venezuela, and individual scientists emigrated to the United States and Western Europe".[7]

In Brazil, successive crises in scientific institutes and universities took place after the coup d'Etat of 1964. In a paper published

in "Science" by H.M. Nussenzveig, of the University of Rochester, one reads: "An avalanche of political persecutions was unleashed in many universities and institutes, where military "committees of inquiry" were installed, often subjecting professors to degrading treatment. Scientists, most of whom were alien to politics, were interrogated and arrested. Several were dismissed from their jobs. "Colleagues" who had always been bothered by the presence of research-minded people in their midst hastened to denounce them as "subversive". In several institutes, the climate of terror and suspicion rendered all research activity impossible. As a result, many scientists left the country".[8]

In Brasilia, where the new University had started two years earlier, the campus was occupied in 1964 by military troops "A new rector was appointed: he succeeded in keeping the University functioning for another year. However, by direct order from the government, new attempts against the autonomy of the University took place. The rector was replaced by another whose mission apparently was to liquidate the University. This objective was accomplished soon enough, with the resignation (in 1965) of almost the whole Faculty".[8]

These repressive actions have, fortunately, been condemned by many scientists and intellectuals in the United States as well as in Europe. These protests, however, have practically no effect on the course of events in view of the basic support given by the government of the United States to the new state of affairs established in these two big countries of Latin America. According to a recent article by H.J. Steiner, Professor at the Harvard Law School, consultant to the Ford Foundation in Brazil, and D.M. Trubek, Associate Professor at the Yale School, formerly legal adviser to USAID mission to Brazil, published in "Foreign Affairs": "The U.S. government, which had encouraged groups opposing (President) Goulart (of Brazil) was enthusiastic

(with the coup that brought him down). So of course was American business with Brazilian interests. Their support of military rule was soon evidenced by heightened bilateral aid and investments".[9] Moreover, in a speech given before the United States Senate on May 9th and 10th, 1966, Senator Robert Kennedy had denounced the existence of secret contracts between the U.S. armed forces and some American Universities for political studies and programmes in certain Latin American countries, such as the Camelot project.[10]

All these events seem to indicate that the mere existence of modern universities and scientific institutes in Latin America, of scientists and scholars free to discuss the significance of their work for their own countries, constitutes a threat to the survival of the dependent political and economic systems which ruled most of these nations since colonial times. To a frame of alienation of national resources, industries and institutions of these countries there corresponds a frame of alienation of their universities - called to educate essentially operational engineers, technicians needed for public works and for routine activities in industry, historians, social scientists, economists who praise the establishment, managers and minor partners of the subsidiaries of the big foreign industries.

Here is what is stated by Professors Steiner and Trubek, referring to the situation in Brazil: "But the government has also made it clear that education must serve the régime. Several hundred academics have been barred from teaching, particularly in the social sciences. Some departments, such as the University of São Paulo's famous sociology faculty, have been decimated. Debate about matters of political sensitivity - criticism of present political authority, or of the basic social and economic values that it fosters, discussion

of unpleasant facts - takes place within cautious boundary. There is a widespread belief that government agents are enrolled in classes to spy on suspect teachers. A new law subjects teachers and students to criminal sanctions if they act against the public order; military tribunals decide what may mean".[9]

On the other hand, bilateral agreements have been signed between agencies of the United States and Brazilian governments to solidify the new order established. Let us only mention the USAID - Ministry of Education of Brazil project for the reform of Brazilian universities, and the U.S. - Brazil Workshop on Science and Brazilian Development, between the U.S. National Academy of Sciences and the National Research Council of Brazil, which provides for sending U.S. science professors to teach in Brazil.[11] Conceived in February 1968, this programme was put to work in late 1969, just after the Brazilian military government had decreed the dismissal of about a hundred University professors.[12] And the Organization of American States, which is based in Washington, although it has only small funds available, has been pressing the Latin American universities to accept so-called multi-national programmes which would "co-ordinate" the activities of scientists in that continent.[13]

At this point we may ask: are the publications on the international co-operation efforts for the development of science in developing countries not incomplete, if they disregard - as most of them do - all these political obstacles, conspiracies and plots for perpetuating the state of dependence of these countries?

When will scientists and scholars of the Third World have the understanding and solidarity of their colleagues of the advanced nations in their struggle for reflecting the basic aspirations of their peoples for material and cultural liberation?

A distinguished scholar in the United States has recently said that "the coming decade is sure to witness the continuing and dramatic evolution of another powerful force for international scientific and technical collaboration, one that could ultimately bring about an actual melding of scientific and technical resources among a number of developed nations: the further growth and proliferation of the great multinational corporations":[14] As to the underdeveloped world in such coming decade, it is stated that "one of the most effective kinds of intangible foreign aid that the developed nations - particularly the United States - could render to such nations would be to assist them in maintaining a *reasonable autonomy* in scientific-technological growth and a balance between a structure of indigenous science and of transplanted technology. This balance, while encouraging the adoption of new pratical approaches, should also *protect* the most important value of all for their *future independence* - the continuing integrity of their own intellectual growth. That is a very subtle kind of foreign assistance indeed, and it is not easy to visualize how it could come about"[14] (the underlining is ours).

Let us only hope that a new, subtle kind of international collaboration and foreign assistance will be found that will refuse to inspire and support the forces of economic oppression and military repression.

Let us vigorously reject a statement attributed to an eminent, Nobel laureate, physicist: "the less of us there are the less we have to tell the poor of the world they must stay that way".[15] For the poor peoples of the world will grow to win their liberation struggles - only then will science be truly universal, an instrument for eliminating poverty everywhere and dignifying the human kind, not a weapon in the hands of a few to help wars and the economic enslavement of many.

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