

# **RESISTANCE TO TECHNOLOGY TRANSFER: REMARKS ON CULTURAL DYNAMICS\***

BY  
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I would like to say at the outset, a few words about the fact that, above and beyond all the things that have been said after years of reflection, the very concepts of technology, cultural change and development still tend to escape us. Let us contend solely with the concept of development, to say nothing of culture and cultural change.

The American sociologist Fred W. Riggs, of the University of Hawaii in a text still to be published by the United Nations Educational, Scientific and Cultural Organization (UNESCO) in collaboration with the Columbia University of New York, but already made available in a major portion of the Centre's journal, *Laboratorio di Scienze dell'Uomo*<sup>1</sup>, has discovered more than ninety definitions of the concept of development in political science textbooks.

Needless to say, we face a real paradox here, since on the basis of the concept of development, plans for intervention are organized, investments of human and financial resources are made, and annual social programs are launched. The difficulty in defining the concept of development strongly affects, in a negative way, the very possibility of operating in the direction of development. Evidently, a radical turn is required in the way one knows, deals with and solves such very important problems for the whole of mankind. Otherwise one risks a failure of global dimensions. To avoid such a deep crisis, we must re-think the concepts of technology, culture and development.

At this stage, two observations seem necessary. The first is why a new way of thinking, rather than a new way of acting, is so important. The second concerns the characteristics that a new way of conceiving technology, development and culture ought to have.

I now formulate the first explicit observation, asserting that the experience of cooperation in development, which I studied sufficiently in vast areas such as the eight Sahelian countries (Senegal, Mali, Mauritania, Niger, Gambia, Chad, Cape Verde and Burkina Faso), has

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largely shown that a merely technical and economic trend of programs of cooperation often produced effects which were the antithesis of those hoped for. We can state, for example, that major parts of agro-alimentary projects in the Sahelian area have failed even in their economic objectives precisely because they were thought of as mere technical-economic programs.

## RESISTANCE

With regard to this, three examples are of value. The first represented by the relationship between commercial and non-commercial resources. In almost all Sahelian countries, the incentive of commercial resources such as cotton and livestock has reduced the non-commercial resources, which are so indispensable for the survival of the population (e.g. cereals). The major part of the fertile land has been allocated for the expansion of commercial resources, together with the requisite trade network and infrastructures. This has contributed to the severity of the famine, and desertification.

The second example is represented by the ecological paradoxes caused by technological interventions. Uncontrolled import of cattle and expansion of the network of water wells contributed, on the one hand, to the destruction of the vegetation and the increase in desertification and, on the other hand, the lowering of the level of the Niger river and overall reduction in water supply.

The third example refers to the impoverishment of countries caused by relationships with the international market. The whole economy of these countries is organized in view of the international market, thereby giving pride of place to only two or three products. The case of Burkina Faso is a classic example. In the year 1978, Burkina Faso's gross domestic product (GDP) was 862 million dollars, 38 percent of which (approximately 314 million dollars) was represented by the country's agricultural production. In the same year, the country's exports were 107.8 million dollars, 95 percent of which was represented by the sale of agricultural products and 79 percent (approximately 86 million dollars) by the sale of three products only: livestock, cotton and oil seeds. For the same period, public aid to development was 223 million dollars. Out of this 47 million dollars were allocated to agricultural and rural development, while the food aid amounted to 23 million dollars.

A comparison of these data shows that about a third of the agricultural production was set aside for export. Over three quarters of the exported products came from three major commodities set aside for foreign trade. This has brought about a production system based on exploitation of the best soil and resources with sophisticated and intensive techniques and huge capital investments. Furthermore, the priority given to such products in the use of insufficient infrastructures, for the purpose of favouring exports, has damaged the economic balance of the country as a whole. This kind of economic policy not only

disturbs the balance of trade, but also causes economic and political dependence, especially when the demand for the privileged products decreases in the international market.

Development based on a cold consideration of facts, defined in some classics as the sociology of modernization by virtue of which development coincides with the diffusion of railway networks and the level of electric energy, steel production, or Gross Domestic Product (GDP) cannot be anything but childish and politically dangerous. Such a way of proceeding never takes into account the fact that electric energy, railways or GDP, are not just names we attribute to mere technological or economic processes or material objects, but are complex human and cultural phenomena.

We must grasp the humanistic nature of technological processes, or the non-economistic perspective of development, and the fact that in every instance of cultural change, human psychology is involved. From this perspective, the theoretical, scientific and hence measurable relationships between technology, cultural change and development should be considered.

I intend to speak about resistance to the introduction of new technologies or to the change of technologies even in already industrialized societies. It will be possible to discover, for example, how a dam with its effects on energy and food production, is never just "a thing" but always a cultural system that requires to be designed as such.

The second explicit observation derives directly from the above and can be summarized in the aphorism that technology, culture and development are often just different facets of the same human existence. A new way to get close to such an existence is therefore required, keeping the positive analytic attitude of the scientific treatment while trying, both from the methodological and operational points of view, new forms of synthesis. These forms will not bind culture to a system of mere variables, but will allow technology to be seen in terms of culture and culture in terms of technology.

It is now advisable to examine some cases which have been observed through a decade of research and surveys carried out by the Centre in America, Africa and the Middle East as well as to describe summarily and rapidly some empirical data from research on planning in the Sahel, committed to us by our Ministry for Foreign Affairs.

With reference to the surveys carried out in Africa, America and the Middle East, I can point out the following data, which are exemplary of the different types of resistance to technological change and technology transfer.

1. Resistance of a religious origin:

- a) Navajo revolt in 1978 at Shiprock against uranium mining which, by upsetting the soil, violated the myth of sacredness of Mother Earth.

- b) Violation of compulsive participation by Indians in family and community religious ceremonies (in contrast to work timetables), as ascertained during 1979-81 surveys, involved loss of heredity rights or family status.
2. Obstacles deriving from space alteration:
- a) Illness of a social origin (such as anorexia and heart attack) among Egyptian Nubians caused by the reduction of housing space and removal to a desert zone after the construction of the Aswan High Dam in 1964.
  - b) The abandonment by polygamic social groups of villages that were built according to the pattern of the nuclear family in Algeria as observed during the survey in 1981.
3. Inadequacies in the management of service: In the city of Kinshasa, Zaire, with a total population of nearly three million inhabitants, only 134 of the 1349 buses were running in 1977, while 1215 were out of order due to lack of spare parts.
4. Marginalization and destruction of ethnic groups:
- a) The Bushari nomads on the boundary between Egypt and Sudan have lost pastures, wells and markets without any indemnity since the building of the Aswan High Dam.
  - b) The Tuareg nomads in Algeria have been egged on, without any success, to become peasants. Instead, they have become smugglers, unemployed and dependent on social welfare.
  - c) The Maasai nomads in Tanzania are facing extinction due to regulations concerning hunting, herd mobility, weapons use, and nomadism, but continue to refuse any form of technological progress.

With reference to Sahel, some empirical data is presented below:

A recurring problem is lack of materials and technical assistance, both during the interventions and after their conclusion. In Senegal, during a USAID (United States Agency for International Development) intervention, 100 percent of the irrigation pumps broke down due to lack of maintenance caused by shortage of maintenance staff and facilities.

Negative reaction to technological innovations is often tied to the very scarce involvement of the local population even as unskilled manpower. Furthermore, of the 800 interventions in Sahel, not one is exclusively directed by local personnel.

Training courses fail due to various social and cultural factors. For example, people do not want women to be trained in production skills or students have little respect for low status teachers. This happened in Mali because the teachers were mere civil employees or were too young. This is to say nothing of the case where the personnel are inadequately trained or the courses are badly carried out. In another USAID project in Mali courses in functional literacy and the training of 160 rural villagers, divulggers and farmers for the production of millet lasted only three days.

Often the tradition of every family to cultivate its own field has been an obstacle to the success of interventions (such as in Niger within the framework of a French program in Dosso) which aimed at introducing cooperatives and forms of collective ownership. Particularly recurrent is the refusal of new forms of time organization involved in all technology transfer. In 1978, within the framework of the Anambe project in Senegal, the population refused a new agricultural calendar, indispensable for the new irriguous agriculture, which was replacing the previous alluvional one, thereby practically causing the whole project to fail.

I spoke above of the need for a scientific approach which would permit technology to be thought out in terms of culture and culture in terms of technology so as to attain correct information about the problem of development. The cases which I have briefly looked at are all cases of resistance--mostly unexplainable in accordance with common sense--toward operations of technological change or technology transfer which seemed to the organizing bodies or the governments concerned during the project stage to be positive.

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## NOTES

1. Centro di Ricerca e Documentazione, Febbario, Italy.