INSTITUTE OF CURRENT WORLD AFFAIRS

DGD-12
Reddy for a New Technological Order

P.O. Box 1615
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October 30, 1980

Mr. Peter B. Martin
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Dear Peter,

While attending a workshop on energy problems in developing countries last summer, I had the opportunity to hear a presentation by Dr. Amulya K. N. Reddy, one of the foremost proponents of appropriate technology, that is, a technology specifically adapted to the physical and socio-cultural conditions of the recipient community. Initially trained as an electrochemist, Reddy became interested in the concept of appropriate technology during the mid-seventies in the course of preparing a critique of the Indian government's program on science and technology. During his investigations he was struck by the fact that in imitating the West, researchers largely overlooked the needs of the majority of the population, especially the rural poor. Seeing an urgent need for technology addressed to the problems of rural people, he pushed for the establishment of a research unit dedicated to the Application of Science and Technology to Rural Areas (ASTRA) within the Indian Institute of Science at Bangalore in southern India. In recent years, ASTRA researchers under the guidance of Dr. Reddy have focused their investigations on various aspects of rural life, including housing technology, water supply schemes and energy systems.

Dr. Reddy's interests, however, extend beyond the mere technical aspects of technology development to the socio-economic and political ramifications. He maintains that "the pattern of technology is shaped by, and in turn shapes, the society in which it is generated and sustained. More specifically, technologies respond to social wants, which are in turn modified and transformed by technology....[Western technology, he contends] is specifically designed to respond to and evoke demands from those privileged with purchasing power."* Furthermore, Reddy explains, society's wants as registered in the marketplace are subjected to a "filtering process" controlled by decision-makers in research and development institutions, or by their patrons, especially government and large national and multinational corporations. As conscious and unconscious agents of the political, social and economic forces that spawned them, these decision-makers explicitly and implicitly shape research programs in such a way as to reinforce their position and privileges. Thus, he points out, one finds in many developing countries, small groups of politically powerful, westernized elites

* Reddy, A. K. N. 1978. The Nature of Western Technology. Mazingira, no. 5, p. 20.

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"living in conspicuous affluence amidst the abject poverty of the political weak masses."*

Every technology is distinctly a product of its times and context, argues Reddy. Thus, it is both improper and impractical to transplant Western technologies to developing countries where the physical and economic contraints of raw materials, energy, labor and capital may differ dramatically. Reddy claims that the introduction of western technology into developing countries has resulted in the perpetuation and consolidation of dual economies with the most modern and most primitive production processes existing side by side. Characteristically polarized along social and political as well as economic lines, the dual society, he asserts, is the antithesis of development. In order to reverse these trends and advance socio-economic development, especially in rural areas, a radically different pattern of technology is needed. In response to this challenge evolved the concept of appropriate technology, where appropriate is taken to be synonymous with advancing development objectives through promoting:

(1) the satisfaction of basic human needs, food, shelter, clothing, inter alia, starting with the needs of the neediest in order to reduce inequities;
(2) popular participation and self-reliance; and
(3) environmental harmony to ensure long-run stability of the development process.**

In addition, it is generally considered important that appropriate technology be small-scale, relatively inexpensive and labor intensive, maximizing the use of local skills and resources. Moreover, the new technology should be highly accessible, easily understandable and readily adaptable to the changing needs of the community.

The appropriate technology movement is not, however, without its detractors, both north and south. Skeptics in developing countries attack the movement as merely an attempt to subvert the process of industrialization in developing countries, a ploy of the West to keep developing countries backward, dependent and submissive. Moreover, powerful elements in the government, business and scientific communities of many developing countries are dedicated to promoting inappropriate technology. In addition, research teams staffed by foreign-trained elites often are alienated from rural conditions. Much of their research, Reddy argues, is oriented to please their peers in Western institutions. Many obstacles face even the most dedicated scientists and technicians in the selection, generation and dissemination of appropriate technology. Insufficient funding, ill-furnished laboratory and library facilities and poor logistical support impede the development program. A lack of research models and inadequate technical, socio-economic and environmental criteria for proper assessment of new technology slow the

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* Reddy, A. K. N. 1979. Background and Concept of Appropriate Technology in India. Olympus, p.1

** Ibid., p. 5

selection process. Should a new technology emerge, its field application and widespread distribution are often hampered by poor extension services, antagonistic government policies, distorted terms of credit and wary Western advisors.

Despite the many problems facing developing country scientists in the development of appropriate technology, Reddy sees only a limited role for technicians from more developed countries. Lobbying of funding agencies to support research and development by and in developing country institutions and the promotion of research on traditional technology in Western institutions in order to boost its prestige are two courses of action he suggests. In Reddy's view "westerners should try to strengthen the technical capability of developing countries by performing basic research and technology assessment,... but they must not undermine groups such as ASTRA by collaborating with them. The cultural hangover of colonialism is such that if there is an institutional collaboration any credit for achievement will always go to the Western institution."* In even stronger terms, he declares that the poverty of the developing world has become a natural resource for intellectuals in developed countries. Every year hordes of eager graduate students embark on a pilgrimage to developing countries in order to gather information for dissertations which all too often never return to the country in question. Likewise, national and international aid agencies support seeming armies of consultants who regularly invade developing countries to advise on any number of topics.

On many points, I definitely would agree with Dr. Reddy. Certainly information collection, organization and dissemination is very poor in most developing nations. Consequently, theses prepared by many foreign scholars never achieve circulation in the subject countries. The limited copies that do appear, I find, often are harbored, unused, in dusty bookshelves of high level government officials, thus, virtually lost to the research community. Moreover, I readily acknowledge that I have encountered several expatriates in Nepal who appear to have very little genuine concern beyond their pocketbook or professional laurels. Making almost no attempt to understand the social and political realities, they grow impatient with the local bureaucracy and charge through their assignments recommending policies and programs that appear more relevant to conditions back home, or even last month's consultancy. Very understandably, local officials resent these so-called expert advisors on apparently paid holidays.

With an obvious, but admitted, bias, I must say, however, that I think Dr. Reddy overstates his case against foreign collaboration. Certainly, I have met many dedicated individuals who tenaciously and optimistically continue to wrestle with the status quo long after their local counterparts have retreated in frustration. Individuals who have diligently studied the local language and culture often appear to move as easily, if not more easily, in the field than many of their native city-bred, foreign-trained associates. In my experience, pragmatic rural villagers seem less concerned with who —fellow

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* Holden, Constance. 1980. Pioneering Rural Technology in India. Science, vol. 207 (11 January 1980), p. 159.

citizen or foreigner — helps them introduce a technological improvement than whether that person or group will be available in the future to answer questions and to assist with adjustments, repairs and maintenance of the new facilities.

One notes that although many fine phrases grace official policy documents and public statements in support of appropriate technology, the translation of these works into deeds often proves to be a very difficult task in many developing countries. Clearly, if the concept of appropriate technology, in the fullest sense of the definition, ever would become effective, it would threaten the status quo. In some instances, expatriates through their contact with the administration may be able to prod some rather staid elements of the establishment into considering questions, such as popular participation in technology development, which, coming from other quarters, might seem blasphemous and heretical. Additionally, foreign advisors can offer badly needed support to eager, qualified young people facing a bureaucracy rife with nepotism and bribery.

Despite Dr. Reddy's strong arguments, I maintain that a well-designed cross-cultural collaboration in the realm of science and technology can benefit both developing and developed countries. Most definitely, I do not believe that foreign scientists can lobby effectively or render relevant counsel in isolation, both geographically and experientially, from their developing country colleagues. Furthermore, I would argue that the failure of many advisory missions and technological innovations lies in just this physical and intellectual remoteness of scientists and technicians from the target community. It appears to me that what is needed is a greater personal commitment, in terms of time and presence, as well as intellect, on the part of Western scientists to the problems of rural people in developing areas.

If Dr. Reddy's rhetoric seems a bit strong, it is not without provocation. There are numerous tales of new technologies and development projects that, in ignoring the complexities of local conditions, have failed miserably.* Moreover, I imagine that Dr. Reddy and his cohorts must spend a good deal of their time warding off the advances of perhaps well-meaning, but often misguided, latterday carpetbaggers eagerly promoting technological panaceas created in laboratories halfway around the world. As one of the foreign devils associated

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* Farvar, M. T. and J. Milton, eds. 1972. The Careless Technology. Natural History Press, Garden City, New York.

Hirschman, A. O. 1967. Development Projects Observed. Brookings Institution, Washington, D.C.

Timmer, C. P. 1975. The Choice of Technology in Developing Countries: Some Cautionary Tales. Harvard Studies in International Affairs, no. 32. Harvard.

with a local science and technology research unit in Kathmandu, I was not unstung by Dr. Reddy's reproofs. More than chastened, though, I felt reminded of my responsibilities to my colleagues and hosts in Nepal. All told, I enjoyed very much Dr. Reddy's very thought-provoking presentation and our personal exchange that followed, and I look forward to meeting him again.

Sincerely yours,

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Received in Hanover 12/11/80