Appropriate Technology and Local Self-Reliance

Many of the publications reviewed in this book contain evidence that community involvement and increased self-reliance in problem-solving go hand in hand with appropriate technologies. Together they can make a large contribution in solving the problems of poverty, particularly in the South. But one should not forget that the community exists within the political and economic confines of the nation state. Because of the great economic and coercive power of these states, national decisions about development strategy and allocation of resources will deeply affect all the choices open to communities.

This fact of life—that decisions and choices made "at the top" crucially affect what is possible "at the bottom"—is the focus of this section. **Appropriate Technology: Problems and Promises**, *Part I (see review in the BACKGROUND READING chapter) provides an insightful examination of what this means for the development of technologies. Many other publications reviewed here give concrete evidence of the importance of integrating high-level development policy with locally based decision-making if a project is to be successful (see, for example,* **Participation and Education in Community Water Supply and Sanitation Programmes**).

If a genuine effort is to be made to support community-based development of skills, problem-solving capabilities, and institutions, it will be necessary to reorient current structures that channel technical information and assistance, training and education, capital, government revenues, research and development work, and political power. If the point of initiative and problem-solving is to be at the

community level, then the community must have access to these supportive systems that make it possible for things to happen. The writings in this chapter address these issues by discussing the most practical sizes of political and economic units and illustrating how the level at which initiatives are taken is a determining aspect of any development strategy.

Leopold Kohr has done some of the pioneering thinking on the differential nature and functioning of social organizations—communities, cities, nations—as they grow larger and larger. In The **Breakdown of Nations** *he argues that as social units increase in size, social problems increase faster until these problems reach a magnitude and complexity at which they can no longer be understood and controlled by human beings. He urges a return to small political states, small cities, and small communities, in which problems can be broken down to a manageable size.* **Rural University** *describes an exciting program in which a university in rural Venezuela has had success in addressing local needs.*

Some of the environmental benefits of smaller states are suggested in **A Landscape For Humans**, *which examines the potential for "ecologically guided development" in a region of the southwestern United States.* **Local Responses to Global Problems: A Key to Meeting Basic Human Needs** *describes many local initiatives that are being undertaken around the world to solve what are often described as being primarily global problems.*

Appropriate Technology in Social Context *is an annotated bibliography that reviews the literature on the socio-cultural aspects of technological choice. The author concludes that to ensure that socially appropriate technology is chosen, it is necessary to involve "the community itself in the mechanics of technology choice, even if new procedures and institutions have to be created for this purpose."*

Three books reviewed here reveal the importance of rural self-reliance in increasing agricultural production and developing rural small-scale industry in China. The decentralized production of cement has been an important factor in enabling the Chinese communes to carry out at reasonable cost a wide range of public works projects such as irrigation canals and building construction. Small cement plants also employ 10 times as many people as modern large-scale plants. (See **Small Scale Cement Plants: A Study in Economics**.) **Rural Small Scale Industry in the People's Republic of China** *reports on the decision-making process which has supported the remarkable growth of rural industries. These industries have brought with them the development of valuable technical and managerial skills among the rural population, and allow better support of agriculture and more productive use of rural person-power when it is not needed in agricultural activities.* **Learning from China: A Report on Agriculture and the Chinese People's Communes** *examines the participatory structures (such as research and development teams that include farmers as members) that have been keys to the advances of Chinese rural development.*

The possibilities and potential pitfalls that surround intermediate technology when applied in the context of Tanzanian ujamaa villages are explored in **Technology for Ujamaa Village Development in Tanzania**. *A look at the many and complicated factors likely to affect the success of appropriate technologies at the local level is provided in* **Soft Technologies, Hard Choices**.

The last three entries in this chapter are concerned with the identification of policy measures that can foster the development of appropriate technologies and support alternative, people-centered development strategies. Conventional development strategies are criticized and the assumptions underlying a different approach are described in **Alternative Development Strategies and Appropriate**

Technology: Science Policy for an Equitable World Order. *Need-oriented, culturally-linked development that aims at liberation is the topic of* **Another Development: Approaches and Strategies**. *The ILO volume* **Technologies for Basic Needs** *notes that decentralization has particular advantages in carrying out basic needs strategies, and points to lack of contact with the real problems and experiences of farmers as a major reason for the disappointing contribution of R and D institutions in the South.*

There are a number of particularly relevant entries that have been placed in other chapters. Many of the entries in the NONFORMAL EDUCATION AND TRAINING chapter provide insights into effective roles and strategies for outside groups that wish to support the growth of community-based conscientizacion and problem-solving.

The Breakdown of Nations, MF 03-71, book, 250 pages, by Leopold Kohr, 1957, reprinted 1978, out of print in 1985.

It is in this volume that Kohr first develops, and in delightful fashion, his theories of scale. Despite his unconvincing attempt to explain away all social problems as due to bigness, he ably defends his thesis that scale is an important variable and that systems and institutions that are too large inevitably fail to function properly. The author's humorous tone at times distracts the reader from the seriousness of his points, but makes for a book that is hard to put down.

"If the great powers had at least produced superior leadership in their process of growing so that they could have matched the magnitude of the problems which they produced! But here, too, they failed because, as Gulliver observed, 'Reason did not extend itself with the Bulk of the Body.' "

"Neither the problems of war nor those relating to the purely internal criminality of societies disappear in a small-state world; they are merely reduced to bearable proportions. Instead of hopelessly trying to blow up man's limited talents to a magnitude that could cope with hugeness, hugeness is cut down to a size where it can be managed even with man's limited talents."

Rural University: Learning about Education and Development, MF 03-80, book, 71 pages, by F. Arbab, 1984, $8.00 from IDRC; also in French and Spanish.

"A population must contain proper institutions that can lead the search, without losing touch with the realities of the region or the state of scientific and technological progress worldwide. In most rural populations, such institutions do not exist; the rural university, as a learning institution of the region, was a logical candidate to assume the responsibility and face the challenge."

"Early—with the first project on domestic water—the FUNDAEC group realized that access to information worldwide was indispensable if the rural university was to become an efficient agent of technological change. Many groups reinvent what is already known by others, and much energy is lost in working with solutions that have already proven worthless elsewhere. A most important element of the 3-year plan, then, was to develop a documentation centre and incorporate it fully into technological change."

A Landscape for Humans, MF 03-72,149 pages, by Peter van Dresser, 1972, $12 plus $1.50 shipping and handling from The Lightning Tree, P.O. Box 1837, Santa Fe, New Mexico 87504, USA.

Here is "a case study of the potentials for ecologically guided development in an uplands region." Chosen was an area in the northern part of the state of New Mexico, USA, long a secluded zone of Spanish culture. "It is no longer possible to 'solve the problems' of such a regional community by expediting wholesale out-migration and assimilation of its population into the urban, metropolitan, or industrial areas of the nation .... Neither is it possible to rehabilitate provincial regions such as the uplands by importing big industry and its works. The dominant characteristic of modern primary and extractive industry (including 'agribusiness'), geared to the national market, is labor-conservative, machine-intensive, and moving towards maximum automation. Very large investments are required per job created (e.g., $175,000 for a modern pulp mill). Regions dominated by such industries tend to depopulate except for company towns of varying degrees of cultural and social impoverishment."

Van Dresser suggests a variety of environmentally sound, community-supportive economic activities that could be carried on or expanded within the region, to fill the needs for goods, services, and employment. He notes, for example, that a decentralized timber industry would be well-suited to the existing distribution of timber resources and population. It might be possible to "vertically-integrate" such a timber industry, so that more employment and value-added would remain in the region, when processed timber products are sold outside the region.

"... The bulk of the livelihood needs of such a region must be met within the region itself by skilled, scientific, intensive, and conservative use of the lands, waters, and renewable biotic and environmental resources of the region. The long-term strategy for economic development should be gradual de-involvement from the mass logistic machinery of the continental economy, with its enormous and ever increasing consumption of energy and irreplaceable natural resources."

The author's recommendation of gradual de-involvement from the national economy is contrary to the thinking of most economic development institutions. The conventional wisdom of the latter is that increased trade is primarily beneficial. Van Dresser makes a persuasive case that the recent effects of such economic ties have been, on balance, quite negative.

"Such an evolution calls for a new technological, agricultural, and industrial orientation, stressing small-scaled and diversified primary production, adapted to the land and natural resource patterns of the region, to the ecologic balance and health of the total biotic community, and to the needs of a decentralized and dispersed population of effective and vital small communities. This type of productive economy will be manpower-, skill-, and science-intensive, rather than capital-, energy-, and machine-intensive."

Van Dresser argues that an important part of the foundation for building such an economy is the high level of non-commercial "primary production" already taking place in the region. This is particularly strong in the growing and processing of foodstuffs and in the construction of homes and farm buildings. The author's observations about road building, education, and other aspects of a practical plan for ecologically-guided development would be relevant in many rich and poor countries. This short book offers a remarkably broad and stimulating introduction to these issues that affect appropriate technology efforts.

Highly recommended.

Local Responses to Global Problems: A Key to Meeting Basic Human Needs, Worldwatch Paper 17, MF 03-74, booklet, 64 pages, by Bruce Stokes, 1978, out of print, a few copies still available from Worldwatch Institute, 1776 Massachusetts Avenue N.W., Washington, D.C. 20036, USA.

Self-help and self-reliance are the important keys to better living conditions and broader opportunity for people the world over. This paper shows how individuals and communities are meeting their basic needs with little or no help from outside institutions.

In housing, carpentry, plumbing, and bricklaying, skills shared at the neighborhood level provide the technical basis for self-help home building in urban slums around the world. Successful projects have often involved the government providing land, credit, and basic services to poor families who can then build their own dwellings.

For food production: "Whether judged by yield per acre or by the cost of production, small farms compare favorably with large farms on all continents. Most of the economies of scale associated with size can be achieved in units small enough to be farmed by a family .... A 1970 survey for the United States Agency for International Development (USAID) showed that small farms in India, Japan, Taiwan, the Philippines, Mexico, Brazil, Colombia, and Guatemala had higher productivity per acre than large farms."

Energy conservation and examples of self-reliance in small-scale energy production and consumption are also discussed.

The author concludes that while foreign aid and other forms of international cooperation can be constructive, problems of basic needs must be addressed at the local level. "In 1975, public and private official development assistance ... totaled $18.4 billion, not even enough to meet yearly basic housing needs according to the (World Bank's) estimate. The political will does not exist to solve problems through large transfer of resources. Any development strategy based on the assumption that the rich will more than double their foreign aid is doomed to failure. This does not mean that foreign aid should be abandoned. But if the resources to fully meet basic needs are not forthcoming from national and international sources, then they must come from communities and individuals. While ready capital is scarce at this level, there is a reserve of labor and ingenuity that money cannot buy."

Appropriate Technology in Social Context: An Annotated Bibliography, MF 03-70, 33 pages, by David French, 1977, VITA, out of print.

Lists 180 books, articles and papers, with short paragraph annotations. Many case studies are identified, and a number of important issues are raised. This is not a review of the technical literature.

"Harmony between technology and social context is important. Abundant evidence shows that implanting a socially 'inappropriate' technology in a village has the same result as implanting a foreign object in a person: either the technology is rejected or the village may 'die' as a social organism .... Novelists and anthropologists have long recorded the disruption of traditional societies by new technologies."

"To take full account of context implies involving the community itself in the mechanics of technological choice, even if new procedures and institutions have to be created for the purpose."

The materials in the bibliography are "abstracted from four separate literatures, those of development agencies, the applied social sciences, village-oriented programs, and sources of technical information .... There is a need to break down the walls (between these groups) if appropriate technology is to be kept in social context .... Perhaps the first job here should be design of an appropriate institutional technology for 'technology' transfer."

The author uses a relatively full definition of appropriate technology, noting the importance of people's participation, low costs, and use of local resources; thus, his reviews are more interesting and valuable than those in many other bibliographies.

Recommended.

Small Scale Cement Plants: A Study in Economics, MF 03-76, booklet, 28 pages, by Jon Sigurdson, 1977, ITDG, out of print, microfiche copies available for $8.00 domestic, $16.00 foreign, from NTIS (accession no. PB 297-377/4).

"Small scale cement plants have recently been attracting more and more attention from international agencies and industrial economists concerned with rural development. In China there are more than 2800 active small scale plants and more than 200 in Europe (Spain, Yugoslavia, France, Germany and Italy). This booklet examines the criteria which would justify the establishment of mini cement plants in developing countries and specifically compares the situation in India with that in China, where more than 57% of cement is produced in small plants .... A short bibliography is provided as well as designs of vertical shaft kilns taken from a Chinese book on small scale cement plants."

In China, "the initial smallness of a plant enables the capacity of the plant to grow with the local demand. This may make overall costs lower than if a large capacity plant had been set up from the very beginning."

"When deciding location, size and technology for the cement plants it appears that in China transportation costs are much more important than investments costs per ton of finished product." (Other studies of the Chinese rural development effort indicate that the savings to a public works program can more than offset the investment in a small kiln within a year or two.) Sigurdson notes that the freight policy in India makes cement the same price at all rail depots. (Transport costs are "pooled" and assigned equally to all cement sold in the country.) This eliminates the advantage that small kilns would have in local marketing areas, as the substantial costs of transport are not reflected in the price of cement produced by distant large kilns.

"The viability of small cement plants is at least partly a reflection of demand created through substantial public works programs and other construction activities in rural areas." (Conversely, it must be noted, in many countries the high cost of cement prevents the undertaking of rural public works programs.)

The author raises the question of "appropriateness of product." The Chinese small vertical shaft kilns apparently do not produce cement of Portland Cement quality (in strength and uniformity). However, for most rural area uses, higher quality is not needed.

The small rural cement plants employ at least 250,000 people directly. "This number is at least 10 times higher than employment would be in a small number of modern large scale cement plants producing the same quantity of cement."

A short but important case study that illustrates many of the issues surrounding appropriate technology.

Rural Small-Scale Industry in the People's Republic of China, MF 03-75, book, 310 pages, by Dwight Perkins et. al., 1977, $10.95 paperback, $45.00 clothbound, from Univ. of California Press, 2120 Berkeley Way, Berkeley, California 94730, USA.

Much can be learned from the remarkable success of the Chinese efforts to develop grassroots skills and innovative capability, and improve the standard of living through promotion of rural small-scale industry. This report of a distinguished group of American visitors in 1975 offers many valuable insights into the successes and problems of these efforts.

The authors discuss the administrative systems, worker incentives, economies associated with small-scale industries, the relationship between these industries and agriculture, and their impact on Chinese society. Special treatment is given to agricultural machinery, chemical fertilizer technology, and small-scale cement plants.

"First and foremost, China is developing a rural small-scale industry because this strategy is believed to be doing a better job of supporting agriculture than did the large-scale strategies of the past."

"The rationale for the use of small-scale factories in rural areas begins with a recognition of the inadequacies of China's rural transport and marketing systems .... Reinforcing the effects of high transport costs is the nature of China's rural commercial system. Even when communes are prepared to pay the going price for some desired item, it won't necessarily be available .... It may get it faster if it builds one on its own."

"The planning system seems to be in part a nested or hierarchical system of rationing of technically advanced products in such a way that the demand for scarce, high-technology products in the production of products for rural life is minimized." To the extent that rural production units can meet their own equipment and other capital needs, the Chinese can avoid "wasting Shanghai talent producing small threshers for the whole country."

"No research institute in Peking will be able to design machines suitable for all environments and conditions. Local production facilities coupled with design inputs from two directions have largely alleviated this problem. Assistance from above is readily available—e.g., for 12 h.p. diesel engines—or for electric motors and pumps. From below comes a flow of comments and suggestions as to how trial machines perform and what tasks need to be mechanized. The local factories, especially the commune level machine shops, seem ideally suited to wed these two inputs into locally adapted machines.

"Instead of leaving innovations to technicians alone, 'three-in-one' groups consisting of administrators, technicians, and senior workers are organized to attack technical problems and produce innovations in factory technology."

"A reasonably strong argument can be made that the major contribution of the agricultural machinery industry ... has been through an indirect process of 'scientification' of the rural masses. A hand tractor imported from Japan would have the same physical productivity as one made in China, but it would certainly not have the same impact as one made in a brigade or commune machine shop where every peasant knows someone who helped build it."

The Chinese have deliberately followed a strategy of starting rural industries small and gradually making them bigger and more modern. The larger, more modern stage could not be reached "without the industrial experience, the chance to mobilize the masses in technical renovation, and the capital funds from profits in

the meantime, that are the products of its first period."

The demand for electricity that has accompanied the spread of rural small-scale industries has led to the construction of a very large number of small hydroelectric plants, some 60,000 in south China alone.

"It is not the techniques themselves that the Chinese are adding to the world's storehouse of knowledge, but the fact that these techniques can be adapted to rural conditions on a widespread scale."

Highly recommended.

Towards Village Industry: A Strategy for Development, MF 03-81, book, 100 pages, by Berg, Nimpuno, and van Zwanenberg, 1976 (revised edition 1979), £5.95 from ITDG.

This book supplies the contemporary appropriate technology enthusiast with a whole new perspective—one which can be a good deal more valuable than other contemporary approaches. By analysis of what existed in the past (pre-colonial Tanzania is the example), the whole picture of a well-integrated naturally flowing economic order emerges—an order which is precisely what so many developing nations have intended to retain, but have lost due to colonization or media and physical exposure to Western societies. The authors state that one must have a genuine reverence for the technological and cultural history of the population—and give it at least as much emphasis as is placed on current economic and technical analyses. Completely local production in a labor-intensive process is stressed.

This book cites Tanzania's pre-colonial industrial/agrarian specialized technologies and local trading patterns, to develop a historical basis for appropriate technology. Western appropriate technology development specialists often seem to introduce, the authors claim, a technically and even economically suitable technology, but a technology out of context with the culture and history of the people—which is often a reason for its failure to spread. The implication is that economic interdependence existed among the Tanzanian people before the colonial period, and that by reinvestigating the period important considerations for A.T. will be found.

Examining the products of East African village craftspeople today, the authors note the effect of the introduction of city-trained craftspeople into the villages. These people are commonly producing copies of devices they were trained to make in Western-oriented technical schools. Where mass-produced items are copied by craftspeople, the product is usually inferior in quality to the original. Superior products can be made through the craft processes, but only when following the methods that correspond to these processes and materials. The authors assert that the craftsperson should once again become a creator or innovator of technology responding to the needs of the rural people—which implies a major overhaul of the selection and training process. Ways in which this overhaul could be accomplished are suggested. Strong emphasis is placed on the development of useful village workshops. Equipment, workshop requirements, and types of training are identified.

This perspective could be valuable to many people working in the field today.

Technology for Ujamaa Village Development in Tanzania, MF 03-79, book, 64 pages, by Donald Vail, 1975, out of print, photocopies $8.25 postpaid from FACS Publications, 321 Sims Hall, Syracuse, New York 13244-1230, USA.

A thoughtful discussion of the social/political/economic circumstances that affect intermediate technology in one country of Africa attempting to develop a decentralized, self-reliant village socialism.

There is an interesting look at the potential for creative exchange between a testing unit and both 1) international sources of ideas and information, and 2) local people using adapted tools in real farming activities. How can a testing unit learn from both the enormous variety of small tools already in existence worldwide and from the farmers themselves? (Learning from the farmers ensures their participation and greatly increases the chances that the equipment developed will be relevant.)

The relationship between intermediate technology and the strengthening—or undermining—of Ujamaa village development is explored. The author argues that without policy backing for Ujamaa as the dynamic mechanism for A.T. development, new small-scale technology seems likely to strengthen private enterprise at the expense of the cooperative Ujamaa villages. This in turn would have the effect of a concentration of land holdings and stratification into a relatively small group of haves and a much larger group of have-nots.

Soft Technologies, Hard Choices, MF 03-77, booklet, 41 pages, by Colin Norman, 1978, out of print, a few copies still available for $2.00 from Worldwatch Institute, 1776 Massachusetts Avenue N.W., Washington, D.C. 20036, USA.

A good overview of the arguments in favor of the development of appropriate technology. Full of sensible observations such as: "Skewed income distribution leads to the development and adoption of technologies that meet the demands of the privileged. Without social and political changes that redistribute income, overhaul inequitable land ownership patterns, reform credit systems, and provide support for small farmers and manufacturers, appropriate technologies will be difficult to introduce. Powerful vested interests support large-scale manufacturing, mechanized farming and other symbols of modernity .... By stimulating local innovation and reinforcing other development efforts, simple technologies can lead to self-sustaining development .... No technology—however appropriate—will solve social problems by itself .... Nevertheless, the choice of inappropriate technologies can only exacerbate social, economic, and environmental problems .... The entire innovation process, from basic research to the production of a new technology, is conditioned by such factors as the profit motive, prestige, national defense needs, and social and economic policies. Those forces must be understood in any discussion of appropriate technology .... The unfettered workings of the market system cannot be relied upon to promote the development and adoption of appropriate technologies."

Learning from China: A Report on Agriculture and the Chinese People's Communes, MF 03-73, book, 112 pages, by a U.N. Food and Agriculture Study Mission, 1977, $10.00 from FAO or $14.00 from UNIPUB.

"This is a nation that, within the short span of 27 years, has succeeded in banishing starvation. It is now providing food, clothing, shelter and reasonable security for over 800 million people. It has mobilized the world's largest agricultural labour force, reversed the flood of people into cities and kept people on the land." A multidisciplinary team of FAO officers compiled this report, which is focused on the participatory structures that have enabled China's dramatic achievements in meeting basic human needs. Present-day organization of production along commune, brigade, and production team lines is presented as part of the history of traditional and revolutionary Chinese collectivism.

Much of the report is devoted to the educational, research, and mechanization strategies employed by the collectives to boost agricultural output. Mobilization of the productive workforce is key to this strategy: "Most other developing countries ... are impaled on the horns of a cruel dilemma: there is massive unemployment precisely at a time when so much needs to be done. China has largely solved this dilemma through a development approach that, among other things, designed the commune. In the process, it unleashed a tremendous force for development."

An important conclusion emerging from this report is that technological changes cannot substantially change the position of the small farmer unless they are part of a genuine structural or organizational reform in the countryside. "The Chinese experience suggests that developing countries should consider a temporary and selective moratorium on current plans for comprehensive diffusion or 'transfer' of technology, among these most disadvantaged farmers. These farmers need instead more intensive policies of tenurial improvement and selective, if not widescale, measures of land reform; progressive upgrading of traditional tools and equipment; more intensive use of local resources such as organic manure, and compost and small bio-gas plants; and the mobilization of traditional forms of peasant cooperation and mutual aid for both production and rural capital formation."

Alternative Development Strategies and Appropriate Technology: Science Policy for an Equitable World Order, MF 03-68, book, 255 pages, by R. K. Diwan and D. Livingston, 1979, out of print, microform only from Pergamon Press, O.P. Books Dept., Maxwell House, Fairview Park, Elmsford, New York, 10523, USA.

Here is a summary of the criticisms of the conventional industrialization-led, GNP-measured development strategies, and a description of the elements of emerging alternative development strategies. Despite the subtitle, the authors do not really explore science policy except in the broadest sense, arguing for the development of indigenous capabilities to generate environmentally sound, culture-linked appropriate technologies for the poor. Some science policy issues and other political and economic issues are identified, but specific policies are not proposed. Nicolas Jequier's **Appropriate Technology: Problems and Promises** (see review) gives the policy issues associated with appropriate technology a deeper look.

The authors draw from a broad relevant literature, touching on so many problems and issues that many sections seem too brief. (An extensive bibliography is included.) Useful distinctions are made between high-income developing countries,

high-technology developing countries, and the rest of the developing countries. Insights into the behavior of the international organizations will be of particular interest to many readers.

Because the authors have taken a broad view of the concepts of "development" and "appropriate technology," their conclusions are not crippled by the timid definitions that tend to emerge in international conferences and the publications of U.N. agencies, where polite fictions must be observed. "In the literature on international science and policy, there is a tendency to confuse the 'interests' of the governments with the 'appropriateness' of technology .... However, the concept of 'appropriateness' as discussed in A.T. literature is quite different, and may even be poles apart."

"The conventional development strategy ... leaves the bulk of Third World peoples dependent on institutions and forces, within their countries and abroad, that are unreachable and unaccountable." The authors recommend "delinking of developing countries from debilitating global networks dominated by the affluent." They observe that much of the international debate on codes for technology transfer and the New International Economic Order are simply part of the failing conventional development strategy; unless domestic structural change takes place the elite will reap all of the benefits.

A basic assumption of the authors, which lies at the heart of the emerging human-centered concepts of development and appropriate technology, is that "people, even those who are poor, illiterate, and unemployed, are intelligent. They are capable of defining their own needs and given opportunities, they can and will solve their own problems."

This is an inherently optimistic book. Diwan and Livingston identify areas for cooperation where many might see inevitable, tragic, sources of conflict. "It is ... in the self-interests of the governments and elites of both developed and developing countries to work cooperatively towards the formulation of an alternative international order which reduces and eventually eliminates inequalities, armaments, biases in the price system, and technological inappropriateness, both nationally and internationally."

Another Development: Approaches and Strategies, MF 03-69, book, 265 pages, edited by Marc Nerfin, 1977, $19.00 surface mail or $21.00 airmail, from the Dag Hammarskjold Foundation, Ovre Slottsgaten 2, S-752 20 Uppsala, Sweden.

Here can be found some interesting thinking on new development goals and strategies for the rest of this century, in a collection of 10 articles by well-known writers.

"Another Development would be need-oriented (geared to meeting human needs, both material and non-material) ... endogenous (stemming from the heart of each society, its values) ... self-reliant ... ecologically sound ... based on structural transformations (in social relations, in economic activities, and in the power structure, so as to realize the conditions of self-management and participation in decision making by all those affected by it, from the rural or urban community to the world as a whole) .... These five points are organically linked .... For development is seen as a whole, as an integral cultural process .... Another Development means liberation."

Part One begins with the concept of Another Development, and examines the positions of peasants and women, alienation in industrial societies, and emerging simpler alternative life styles in those societies. In Part Two, national case studies

and proposed strategies include: a look at growth and poverty in Brazil, the history of achievements and backsliding following the Mexican Revolution, an alternative framework for rural development in India, a strategy for Another Development in Chile (requiring major political change and based on the lessons of the early '70s), and a discussion of structural transformation in Tunisia.

"The New International Economic Order ... makes full sense only if it supports another development .... If it lacks a development content, it is bound to result simply in strengthening the regional or national subcenters of power and exploitation."

"Resources to meet human needs are available. The question is that of their distribution and utilization .... The organization of those who are the principal victims of the current state of affairs is the key to any improvement. Whether governments are enlightened or not, there is no substitute for the people's own, truly democratic organization if there is to be a need-oriented, endogenous, self-reliant, ecologically-minded development."

Technologies for Basic Needs, MF 03-78, book, 158 pages, by Hans Singer, International Labour Office, 1977, out of print.

This book was inspired by discussions held al the World Employment Conference in Geneva in 1976. It is largely concerned with top-down national planning for "appropriate technology,' covering national policy, programs and institutions that might be able to contribute. The suggestions made are mostly aimed at the large-scale and small-scale industrial sector. While mention is made of the informal and rural small farm sectors, the assumption seems to be that technology will be created for the people in these sectors without their real participation. The author sees no potential conflict of interest between government-determined priorities and those that might most benefit the largest number of poor people. He is relatively uncritical of the possible role of multinational corporations in developing A.T., impressed by the strong research and development capabilities of these institutions. He claims that beneficial effects such as reduction in transfer payments for technology and the spread of the results of MNC-financed technology research among indigenous producers would be forthcoming—without seeing that such actions are simply not in the interests of the multinational corporations.

There are, however, a few points made that would have relevance in rural grassroots development strategies. Some of them are:

"The experience of countries which have tried to implement a basic needs strategy (e.g., China, Cuba, Tanzania) suggests that the improvement of simple village technologies is the only feasible approach to the gradual modernization of the rural economy."

There is "growing evidence ... that formal technical training plays a smaller part than was previously assumed and that experience and on-the-job training are the main vehicles for implanting new skills"

"A major reason for the disappointing contribution of R and D institutions to the creation of appropriate new technology is the lack of contact" with real problems and actual experience. The R and D institution itself is a modern import from the rich countries, "and disregards past experience ... (when) the bulk of technological innovation arose directly from within the production plant" or workshop in response to needs and opportunities perceived there.

"Decentralization has obvious advantages, to help to eliminate the communications gap .... This is particularly so in the context of a basic needs strategy,

when local needs and the nature of local poverty problems may differ greatly in different regions of a country, when the use of appropriate technology involves the participation of innumerable small production units, and in the context of rural development generally (when the obvious need for community involvement and grassroots identification of problems has led to many variations of decentralized administration)."