D-lab

Fall 2003

Reading Assignment 1
Due: 8 September, 2003

Write a one-page reaction piece to the following reading. What did you find interesting? What insights did you gain? Do you agree or disagree with the author? Did you gain any new perspectives?

Intermediate Technology

Excerpts from
Small is Beautiful: Economics as if People Mattered
E.F. Schumacher, 1973

In many places in the world today the poor are getting poorer while the rich are getting richer, and the established processes of foreign aid and development planning appear to be unable to overcome this tendency. In fact, they often seem to promote it, for it is always easier to help those who can help themselves than to help the helpless. Nearly all the so-called developing countries have a modern sector where the patterns of living and working are similar to those of the developed countries. But they also have a non-modern sector, accounting for the vast majority of the total population, where the patterns of living and working are not only profoundly unsatisfactory but also in a process of accelerating decay.

I am concerned here exclusively with the problem of helping the people in the non-modern sector. This does not imply the suggestion that constructive work in the modern sector should be discontinued, and there can be no doubt that it will continue in any case. But it does imply the conviction that all successes in the modern sector are likely to be illusory unless there is also a healthy growth—or at least a healthy condition of stability—among the very great numbers of people today whose life is characterized not only by dire poverty but also by hopelessness.

The Condition of the Poor

What is the typical condition of the poor in most of the so-called developing countries? Their work opportunities are so restricted that they cannot work their way out of misery. They are underemployed or totally unemployed, and when they do find

occasional work their productivity is exceedingly low. Some of them have land, but often too little. Many have no land and no prospect of ever getting any. There is no hope for them in the rural areas and hence they drift into the big cities. But there is no work for them in the big cities either and, of course, no housing. All the same, they flock into the cities because the chances of finding some work appear to be greater there than in the villages, where they are nil.

The open and disguised unemployment in the rural areas is often thought to be due entirely to population growth, and no doubt this is an important contributory factor, But those who hold this view still have to explain why additional people cannot do additional work. It is said that they cannot work because they lack "capital." But what is "capital"? It is the product of human work. The lack of capital can explain a low level of productivity, but it cannot explain a lack of work opportunities.

The fact remains, however, that great numbers of people do not work or work only intermittently, and that they are therefore poor and helpless and often desperate enough to leave the village to search for some kind of existence in the big city. Rural unemployment produces mass migration into cities, leading to a rate of urban growth which would tax the resources of even the richest societies. Rural unemployment becomes urban unemployment.

Help to Those Who Need It Most

The problem may therefore be stated quite simply thus: what can be done to bring health to economic life outside the big cities, in the small towns and villages which still contain-- in most cases-- eighty to ninety percent of the total population? As long as the development effort is concentrated mainly on the big cities, where it is easiest to establish new industries, to staff them with managers and men, and to find finance and markets to keep them going, the competition from these industries will further disrupt and destroy non-agricultural production in the rest of the country, will cause additional unemployment outside, and will further accelerate the migration of destitute people into towns that cannot absorb them. The "process of mutual poisoning" will not be halted.

It is necessary, therefore, that at least an important part of the development effort should by-pass the big cities and be directly concerned with the creation of an "agro-industrial structure" in the rural and small-town areas. In this connection it is necessary to emphasize that the primary need is workplaces, literally millions of workplaces. No one, of

course, would suggest that output-per-person is unimportant; but the primary consideration cannot be to maximize output per worker; it must be to maximize work opportunities for the unemployed and under-employed. For a poor man the chance to work is the greatest of all need, and even poorly paid and relatively unproductive work is better than idleness. "Coverage must come before perfection," to use the words of Mr. Gabriel Ardant (*International Labour Review, 1963)*.

> It is important that there should be enough work for all because that is the only way to eliminate anti-productive reflexes and create a new state of mind—that of a country where labor has become precious and must be put to the best possible use.

In other words, the economic calculus which measures success in terms of output or income, without consideration of the numbers of jobs, is quite inappropriate in the conditions here under consideration, for it implies a static approach to the problem of development. The dynamic approach pays heed to the needs and reactions of people: their first need is to start work of some kind that brings some reward, however small; it is only when they experience that their time and labor is of value that they can become interested in making it more valuable. It is therefore more important that everybody should produce something than that a few people should each produce a great deal, and this remains true even if in some exceptional cases the total output under the former arrangement should be smaller than it would be under the latter arrangement. It will not remain smaller, because this is a dynamic situation capable of generating growth.

An unemployed man is a desperate man and he is practically forced into migration. This is another justification for the assertion that the provision of work opportunities is the primary need and should be the primary objective of economic planning. Without it, the drift of people into the large cities cannot be mitigated, let alone halted.

The Nature of the Task

The task, then, is to bring into existence millions of new workplaces in the rural areas and small towns. That modern industry, as it has arisen in the developed countries, cannot possibly fulfill this task should be perfectly obvious. It has arisen in societies which are rich in capital and short of labor and therefore cannot possible be appropriate for societies short

of capital and rich in labor... The real task may be formulated in four propositions

> *First*, that workplaces have to be created in the areas where the people are living now, and not primarily in metropolitan areas into which they tend to migrate.
> *Second*, that these workplaces must be, on average, cheap enough so that they can be created in large numbers without calling for an unattainable level of capital formation and imports.
> *Third*, that the production methods employed must be relatively simple, so that the demands for high skills are minimized, not only in the production process itself but also in matters of organization, raw material supply, financial, marketing, and so forth.
> *Fourth,* that production should be mainly from local materials and mainly for local use.

These four requirements can be met only if there is a "regional" approach to development and, second, if there is a conscious effort to develop and apply what might be called an "intermediate technology."

Definition of Intermediate Technology

If we define the level of technology in terms of "equipment cost per workplace", we can call the indigenous technology of a typical developing country—symbolically speaking—a $1-technology, while that of the developed countries could be called a $1,000-technology. The gap between these technologies is so enormous that a transition from one to the other id simply impossible. In fact current attempt of the developing countries to infiltrate the $1,000-technology into their economies inevitably kills off the $1-technology at an alarming rate, destroying the traditional workplaces much faster than modern workplaces can be created, and thus leaves the poor in a more desperate and helpless position than ever before. If effective help is to be brought to those who need it most, a technology is required which would range in some intermediate position between the $1-technology and the $1,000-technology. Let us call it—again symbolically speaking—a $100-technology.

Such and intermediate technology would be immensely more productive than the indigenous technology (which is often in a condition of decay), but it would also be immensely cheaper that the sophisticated, highly capital-intensive technology of modern industry. At such a level of capitalization, very large numbers of workplaces could be created within a fairly short time; and the creation of such workplaces would be "within reach" for the

more enterprising minority within the district, not only in financial terms but also in terms of their education, aptitude, organizing skill, and so forth.

This last point may perhaps be elucidated as follows: The average annual income per worker and the average capital per workplace in the developed countries appear at present to stand in a relationship of roughly 1:1. This implies, in general terms, that it takes one man-year to create one workplace, or that a man would have to save one month's earnings a year for twelve years to be able to own a workplace. If the relationship were 1:10, it would require ten man-years to create one workplace, and a man would have to save a month's earnings for 120 years before he could make himself owner of a workplace. This, of course is an impossibility, and it follows that the $1,000-technology transplanted into a district which is stuck on the level of a $1-technology simply cannot spread by any process of normal growth. It cannot have a positive "demonstration effect"; on the contrary, as can be seen observed all over the world, its "demonstration effect" is wholly negative. The people, to whom the $1,000-technology is inaccessible, simply "give up" and often cease doing even those things which they had done previously.

The intermediate technology would also fit much more smoothly into the relatively unsophisticated environment in which it is to be utilized. The equipment would be fairly simple and therefore understandable, suitable for maintenance and repair on the spot. Simple equipment is normally far less dependent on raw materials of great purity or exact specifications and much more adaptable to market fluctuations than highly sophisticated equipment. Workers are more easily trained; supervision, control and organization are simpler; and there is far less vulnerability to unforeseen difficulties.

That the applicability of intermediate technology is extremely wide, even if not universal, will be obvious to anyone who takes the trouble to look for its actual applications today. Examples can be found in every developing country and, indeed, in the advanced countries as well. What, then, is missing? It is simply that the brave and able practitioners of intermediate technology do not know of one another, do not support one another and cannot be of assistance to those who want to follow a similar road but do not know how to get started. They exist, as it were, outside the mainstream of official and popular interest. "The catalog issued by the European and American exporter of machinery is still the prime source of technical assistance" and the institutional arrangements for dispensing aid are generally such that there is an insurmountable bias in

favor of large-scale projects on the level of the most modern technologies.

If we could turn official and popular interest away from the grandiose projects and to the real needs of the poor, the battle could be won. A study of intermediate technologies as they exist today already would disclose that there is enough knowledge and experience to set everybody to work, and where there are gaps, new design studies could be made very quickly...

In summary, we can conclude:

1. The "dual economy" in the developing countries will remain for the foreseeable future. The modern sector will not be able to absorb the whole.
2. If the non-modern sector is not made the object of special development efforts, it will continue to disintegrate; this disintegration will continue to manifest itself in mass unemployment and mass migration into metropolitan areas; and this will poison economic life in the modern sector as well.
3. The poor can be helped to help themselves, but only by making available to them a technology that recognizes the economic boundaries and limitations of poverty-- an intermediate technology.
4. Action programs on a national and supranational basis are needed to develop intermediate technologies suitable for the promotion of full employment in developing countries.