PERSONAL VIEW

A Role for Basic Research?

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Anybody who carries out scientific research in a less developed country, will very quickly have to face the "what for" question. Scientists in developed countries face it as well, but they certainly face it from a different vantage point.

Scientific research is part of the culture of developed countries and fits in place with the social and economic structure of these countries. It is also in the main stream of their tradition and culture. In a developed country, Basic Scientific Research is an integral part of a civilisation continuum and overlaps with development, industry, education, government policy, philosophical thinking and tradition. This is indeed the hallmark of a technically advanced society.

A Western scientist does not have to continually justify his basic research, the system has already done this for him. He may have to justify the quantity of effort or money he spends on a particular aspect but need not question the basic wisdom of it all.

In an underdeveloped country, on the other hand, the various components of the "scientific continuum" are isolated from each other and connected to the Western system independently of each other. The lack of connection is also evident within each component. Individual scientists in the same discipline (and also individual industries in the same field) are mostly unaware of each other. A discovery made by a basic scientist does not affect the work of another in the same field unless it is passed through a Western journal. Every scientist is individually and directly plugged into the Western system or not connected to anything at all. Few are those who were able to break away from the system in which they were trained and these have completely failed to develop an alternative operating system.

A scientist in an underdeveloped country who makes a discovery can, as a rule, only benefit his society by it if it is accepted first in the Western society, transformed into technology in a Western setting and sold back to his society as a "turn-key project". As almost all advances in technology occur in small steps, each of which is the result of one or more scientific discoveries and as the fraction of science contributed by an underdeveloped country to the world reservoir of science is very small, the contribution of a scientific discovery in an underdeveloped country to that country is too small to be felt.

This of course poses the question which irritates most basic scientists in theThird World"why should our poor society support your research? Can we afford it? What use is it? Should we concentrate on applied research?" If you face an average basic scientist with this argument he will react violently and will accuse you of being illiterate, unappreciative or stupid; all of which is besides the point. His violent reaction is probably stemming from his guilt and frustration.

There is obviously a need to either justify basic research in a less developed country or to stop the wastage a poor country can ill-afford. In an attempt to do the first, I propose that the reasons for doing basic research in the Third World are (in order of importance):

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1. To keep the researcher up-to-date and therefore to maintain his quality as a teacher (and most are teachers).
2. To allow for graduate education (M.S., Ph.D. fellowships etc.); without basic research this function is impossible.
3. To maintain the scientist as a listening post, aware of the discussions taking place in the world and able to use the information to predict future trends, especially trends which can affect his society.

If these priorities are accepted, then we shall have to modify our science administration to direct the basic scientists toward playing roles, serving these priorities.

For example, items 1 and 3 above will require us to try to encourage width rather than depth, item 2 requires us to give the high priority to research which involves graduate training, i.e. encourage our research workers to take on graduate students and not research assistants or technicians no matter how more efficient the latter are. Item 3 requires that our basic scientists should be much more involved in advisory work to decision makers and in popularising science, etc.

The roles I have defined above are only examples but whatever roles we want to assign to the basic scientist, we should modify our system of support, recognition and rewards to encourage these roles. We have until now copied the systems from the advanced countries where the roles are defined with different priorities. A scientist who carries out all three priorities I have defined in an underdeveloped country still remains completely unrecognised and unrewarded. May be that is why our basic scientists never seem to know where they are going. It is desirable to support the research of a scientist who publishes regularly in an international journal and to reward him by promotion and prizes. But the bill for this should not be paid by a society which derives no benefit from these publications except, some questionable prestige value in certain limited circles.

It is also essential to allow a scientist to pursue the research of his choice the way he pleases. But it is equally essential to set up a system of rewards which prods that scientist to produce what best serves the society which is paying for his upkeep. We can import our equipment, our reagents, our scientists even our ideas but it is important for every society to designate its goals and design the system which helps to achieve them.

It is the duty of the scientific community in an underdeveloped country (especially the senior scientists) to work out roles which are beneficial and acceptable to their society, propose these roles, get them adopted and then work out the means for playing these roles. But are they up to the task?