

THE LOCAL ENVIRONMENT OF FILIPINO SCIENTISTS*

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Much of the recent discussion about the Brain Drain has focused on the "pull" aspects of a "pull-push" relationship between Western science and scientists in the rest of the world. It is generally assumed that the pull factors are more significant in drawing scientists to the West, than are the push factors involved.

The purpose of this paper is to discuss some of the factors involved in "pushing" or encouraging scientists to leave the Philippines for scientific employment abroad.

Theoretical Orientation

The scientific environment in any country is a composite of influences and contributions from other sectors of society. While scientists like to talk about autonomy, few, in fact, are autonomous, and certainly the process of science in a country is not free from direction, and even control, from other segments of society. Fully to portray all aspects of the social webbing in

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which Philippine science is embedded would be impossible here. I shall speak of only some of the influences that government, universities, and the scientific community itself bring to bear on Philippine science.

Facts About the Study

At the outset, it should be stated that in speaking of "science" we are not talking about the humanities, law, or technological fields such as dentistry, medical technology, or nursing. However, "science" as we use it is given a broad meaning to include the physical, natural, and social sciences, but in this paper excluding all health-related fields. The data on which this paper is based are from the preliminary analysis of 100 interviews of productive scientists in 10 universities throughout the Philippines, a productive scientist being taken as a man or woman who has published at least one article beyond his thesis.

The data are of two kinds. First are ethnographic data on the institution in which the interviewed scientists are working; other information concerns the scientist himself, and includes basic demographic data, and an in-depth interview lasting from two to three hours. The object of the open-ended, pretested questionnaire used in the in-depth interviews was to get answers to the question, "what is it like to be a scientist in the Philippines today?" We were interested in how scientists viewed their world, their discipline, their society, and their future. Among other things, we asked about their work conditions, networks, research opportunities and support,

and intellectual environment. In addition to work roles, the social roles of scientists were also a concern.

The Environment for Philippine Science

From our data it appears that it is a blending of creative opportunity and structural support from institutions in the society that is instrumental in a scientist's decision to remain in the country or leave. From talking with the respondents and with many other people in the scientific community, the impression we have is that staying or leaving is not based on economic factors alone. The lack of adequate salaries is of course important. But many of the people we talked with put up with what they call "deficit living" because of their desire to do research. Compared with industry and government, the universities are thought to offer the greatest opportunities for research, a belief that is borne out by the National Science Development Board's *Report of Science Policy and Organization of Research in the Philippines* (1968).

From our interviews it appears that most scientists, while offered jobs in the States, returned because of contractual obligations and because of the desire to make some contribution to their discipline in the Philippines. Most scientists, however, conceive of research as having top priority; disenchantment comes from the inability to do research, and the consequent feeling that they cannot make any contribution to their discipline. The frustrations come from a variety of sources — from the university, the government, and the larger society itself. For many scientists, to remain in the Philippines when necessary support and opportunity are missing is to experience what has been called "brain rot," or the deterioration of skills and knowledge gained abroad.

Development of Science in the Philippines

It should be noted that the scientific community in the Philippines is not everywhere the same. Conditions in one major area of science

are not necessarily those in another. Yet those conditions, whatever they may be, will affect the scientist who works in them. For example, because the Philippines is an agricultural country, with a particular kind of colonial heritage, those trained in the agricultural and medical sciences have enjoyed a certain place in society not shared by others in the physical and social sciences. It is true that the social sciences, as an area, are now coming into their own, particularly, as they are sought out by government and industry to help in dealing with the lately realized human dimensions in national development. The physical sciences, however, have neither the support of tradition nor the perceived developmental needs of the country to encourage their growth and development. As one informant told us,

There is a scarcity of mathematicians simply because we were not in the designing part of engineering science. We were instead in the maintenance of machines brought in from abroad. This is why there are no mathematicians. Physics is worse off than math.

Factors in the Structural Environment

Academic institution

In doing the ethnography of universities included in the study it was found that each university had its own main emphasis in terms of curricula and degree offerings, and its own definition of its role in society. Some universities stressed the agricultural and technical fields; others concentrated on humanities and professional courses; a few had strong physical science offerings coupled with the social sciences. Universities view their role in society as "providing liberal education" for children of the middle class," or "educating those who couldn't afford education otherwise," or "training the elite of the country."

Such variation in emphasis and role definition means that scientists are utilized in different ways in these institutions.

If scientists are part of the main thrust of the university, they enjoy whatever prestige and

support are available. If, however, a scientist belongs to a field peripheral to the main interests of the university, he may end up teaching only service courses for the students in other, emphasized fields. His department may not be degree granting, therefore he does not have students to guide or to work with him. He most probably is also on the short end in receiving available funds for research, equipment, and supplies. The rewards and recognition of the university also go elsewhere. Hence, for a scientist out of the main stream of a university's interests, there may be little incentive, no concrete support, and even less recognition of his endeavors.

In universities in the sample the primary demand on the faculty is for teaching, then service to the university, and finally service to the larger community. In most of these universities there is no long or well-developed tradition of research. Only one or two of the institutions put research and publication on a par with other duties of the faculty, or make them important criteria for promotion. In addition, very often the most productive scholars are those selected for administrative jobs, to be department chairmen, deans, or committee heads. In a situation where the basic remuneration is not sufficient to support one's family, administrative and extra activities are taken on for the compensation they bring. This is not a universal practice, of course. In some places and for some discipline there are consulting opportunities outside the university, or working spouses may help supply for the low salaries received by their university-employed mates.

Universities also vary in the nature and degree of linkage they have to external outside sources for funding and support, and for faculty development and exchange programs. What resources an academic institution has to draw on also influences the nature and character of its growth, and the utilization of its faculty.

Government and industry

In developing countries, where the national

government is often the primary source of funds and support, the role it plays relative to science is crucial in determining the nature of the scientific milieu in that country. In the Philippines, for example, the pattern of support for research is influenced by governmental priorities in national development, or by the definition of critical issues facing the society. The concern with agriculture and agro-industrial growth and with population pressures are two ready examples that come to mind. There are others also. Priorities vary as the definition of what are problem changes.

When an area of science happens to be defined as "relevant" to national priorities, as in the case of agriculture, funds and resources begin to flow to these areas. The national government is willing to support what it determines is relevant to its own problems. What results is the development of a mutually beneficial delivery system wherein support is given in exchange for scientific knowledge that has direct applicability and utilization by government or society. In addition, government knows how to appreciate what they can understand, hence recognition and rewards flow to those scientists working in priority fields.

In the Philippines, one interesting result of governmental and industrial financial support is the heavy emphasis given to applied as compared to basic research. When the NSDB was created in 1958 it was agreed that it should receive 85 per cent of available fund from the Science Fund, while the National Research Council was to receive 5 per cent. As reported by the NSDB for the years 1958-66, nearly nine-tenths of all research and development funds were spent on applied research; basic research received only about 11 per cent of available funds during this eight-year period.

Given the scarcity of funds and the magnitude of problems facing a nation, it seems only logical for a government to support that research which has the most immediate pay-off. However, there are a number of scientists in the sample who think that basic research also has its place. It is their contention that without basic research,

Filipino science will remain dependent on basic knowledge from other countries as foundations for local research.

The Philippine Scientific Community

One of the central concerns of our comparative study was a re-definition of the concept "community," to free it from its traditional geographical setting. Moving away from an idea of community as limited to people within a certain geographical area, we tend to view community as extending across national or societal boundaries, to link like-minded people anywhere in the world. The links which bring people into networks are mutually shared interests, values, norms, and behavior. One can conceive, then, of the specialized interests of science as forming the basis for a scientific community. Of course, there are many variations by scientific discipline within the larger scientific community, but this conceptualization is a useful tool in the investigation of the organization of science both within and among nations.

Assuming that a scientific community has many of the same functions as any other community, namely, recruitment, socialization, and continued support of its members, one can use this as a model in determining to what extent scientists in the Philippines participate in or are supported by a scientific community. The relevance of this to the Brain Drain or to conditions of "brain rot" is as follows.

If scientists are in an environment that is not conducive to their functioning as scientists, and if there is no support for them from other scientists, no regular means of communication, nor recognition or rewards for their work, then a situation exists conducive to "brain rot," which if discouraging enough, can lead to Brain Drain.

From the data, it appears that the scientific community in the Philippines is a new grouping, with some of the following characteristics. First, in regard to the recruitment of scientists into science, by and large it is more by chance than by plan. That is, a great majority of the scientists

interviewed reported that they did not know of the field in which they received their advanced degrees before they went to college. Many of them also said that they entered such disciplines because "it was the only scholarship open that year," or "a professor encouraged me to go into this field."

Second, in terms of the socialization or training of scientists, we found that most Filipino scientists are trained abroad. Of the 100 scientists in the sample, only 12 had received their highest degree from institutions in the Philippines; three had received their highest degree from institutions in Asia; three from Europe, and 82 from the United States.

Third, when one considers the numbers and distribution of scientists and the existing patterns of communication in the Philippines, the situation appears to be this. There is a widespread feeling of "intellectual isolation" among scientists in our sample. The patterning of science in the Philippines is such that a number of scientists are one-of-a-kind in terms of scientific specialization or interests. This means there is no one in the country with whom to share scientific interests.

Even those scientists with others in the same field report the need for having more similarly trained people with whom to talk. As one chemist said, "It is not enough to have one other person around. You need a group, all working on different problems perhaps, but stimulating and helping one another with their ideas." Of all the institutions included in the study, only one seemed to have this critical mass of scholars that provided this much needed stimulation.

Fourth, in terms of the professionalization of the sciences, we found that a number of disciplines are without scientific societies, or professional journals. Other disciplines have societies but they are inactive; journals are often irregular in their publication; meetings are often more like social gatherings than scientific forums. This is not always the case, but many scientists, given the lack of professionalized or institutionalized support, have to rely on personal ties and

mutual friends to keep up with what is happening in science within the Philippines.

Fifth, in response to a number of questions on rewards and recognition, the majority of scientists interviewed said they received little or no recognition for the work they had done. In some cases where local journals are irregular in coming out or simply do not exist, there is little opportunity for a scientist to publish within the country, thereby making local recognition unlikely. Other scientists look almost solely outside the country for recognition and support. Without journals and professional societies, many scientists do not have a choice where to publish, or which kind of recognition they would prefer to receive. In addition, it was reported that top positions in science in the Philippines are administrative posts. Not only are salaries higher, but promotions are quicker for those in administration. As one scientist put it, "This set-up makes it hard for a guy to advance who only wants to do his work and not bother with administrative things."

As mentioned earlier, the characteristics of the scientific community vary by disciplines or fields of science. The agricultural sciences in this respect are more organized and more professionalized than are the physical or social sciences. They have more scientific meetings, more scientific societies, more journals, more research support and opportunity for research than do the other sciences in the Philippines.

Scientific Links Outside the Philippines

Some of the indicators of communication and linkage of Philippine scientists to scientists elsewhere in the world are: place of advanced training, personal communication with other scientists by letter, or exchange of scientific materials, articles, reprints, or exchange visits. In addition, being able to travel abroad to attend meetings, to go on study tours, to bring visiting professors to the Philippines, to receive essential scientific journals are all ways of maintaining links with the external scientific world.

These factors also have relevance to "brain rot" conditions, for those scientists for whom the above conditions were possible were those most satisfied with their situation in the Philippines. As one linguist put it, "As long as I can get abroad every few years in order to catch up with what's happening in my field, I don't mind being out of touch here."

To summarize briefly, two dimensions of the local scientific community were discussed in relation to "brain rot." One was the internal structure of the scientific community, and the support given locally to scientists. The other was the links of Filipino scientists to an external scientific world. It was shown how these factors may encourage a Filipino scientist to stay in the Philippines or to seek "greener pastures" elsewhere.

Relatives are important

Thus, kinship is seen to be fundamental in organizing and regulating Sulod behavior in an extremely wide range of culturally defined situations. It is the basis of territorial identity, local group alignment, and the institutional organizations. It looms large over all major Sulod community decisions. Kinship is the basic determinant of the rights and obligations that obtain between the members of the community, the exercise of social and religious privileges, and the proscription of certain types of sex union, marriage, and burial practice. By providing terms of address and reference it makes possible the classification of kinsmen into well-defined categories and the prosecution of harmonious relations with them.

As is well-known, it is difficult to evaluate any society in terms of the efficiency of its social and cultural institutions, if only because some institutions are more efficient than the others in bringing about adaptation and social integration of group life. It can be said for the Sulod, nevertheless, that kinship is an important integrative force in their society. It is the bond which serves as a framework for social, religious, and economic cooperation; as a communication device which integrates members of the group; and as an important factor for the continuity and stability of Sulod society. From F. Landa Jocano, Sulod Society (Quezon City, University of the Philippines Press, 1968), p. 283-4.