

No, science is a universal mode of perfecting the natural powers of man. Whatever there is of natural power, if it has received such training and discipline so that the growth of such powers has advanced and the use of such powers is made precise, efficient and economical, then we can safely say such natural powers have received the benefits of scientific training.

One need not reiterate the potential greatness of our people. We are a race

quick to learn and ingenious at certain levels. We have a warm and even an abundantly roseate sensibility. We have rich imaginative powers, but all in potentiality. If the Filipino people must come to a realization of their powers, they must institutionalize science in their culture—and this can be done primarily and initially in our schools. This indeed is the only way of going about this problem scientifically.

Demographic and Cultural Aspects of Economic Development

FRANK LORIMER

University of the Philippines

Culture, reproduction, health and economics are intimately related. A fundamental change in any of these factors tends to bring about changes in the others. As yet no nation has ever achieved a clear "take-off" in economic development under demographic, cultural and political conditions similar to those in the Philippines today. The difficulties to be overcome in achieving a sustained increase in the general level of living in this country are formidable and they are

not always taken squarely into account in current planning.

Compare the demographic situation in the Philippines today with that in Western Europe or Japan during the critical early phases of their economic development, Sweden is selected in treating the situation in Europe because its advance was relatively late and effected without imperial advantages. The demographic contrast can be summarized on three indices:

Year	Sweden	Japan	Phils.
	1850	1920	1960
<i>Total Fertility</i> (number of children born alive per woman living through the childbearing years)	5.0	5.3	6.7
<i>Growth rate</i> (percentage increase of the population per year)	1.0-1.2	1.0-1.5	3.2
<i>Dependency ratio</i> (persons under 15 plus those 65 and over per 100 persons 15-64 years)	60	68	97

I venture to think that the principal reason for the average Filipino's lack of a conceptualizing mind is that the average Filipino, even a college graduate, has not been *trained* sufficiently to deal with ideas as ideas. He has not been sufficiently taught and helped to acquire mental or intellectual discipline. Again why is this so?

Prescinding from the reality of poor teachers and poor school facilities, I shall mention only, for now, a few causes that relate thinking to learning.

First, I think the *processes* of learning have not been *interiorized* by the learner. Thinking of course is greatly dependent on learning.

Second, I don't think student are made to appreciate the nature and growth of the different aspects of their own intellectual development. Students have no vivid sense of how their reasoning powers are sharpened, how their memory is disciplined, and how their imagination is utilized and enriched. Not many Filipinos are sufficiently aware of the operations of these faculties: of intellectual reasoning, memory, imagination. Thus they have not developed a keenness in cultivating, preserving and utilizing their intellectual powers.

Third, the ordinary student and the average Filipino have not been made self-consciously aware of the different levels of thinking behavior and degrees of knowledge. Few Filipinos might be found who can self-consciously appreciate the discriminating powers of their mind in distinguishing sense knowledge, conceptual knowledge, intuitive knowledge and knowledge by faith.

All this of course boils down to one point: *order in knowledge*.

Modern man can ill afford a chaotic mind. The explosion of knowledge and the unmitigated barrage of releases from mass media communications in themselves are enough to make even an intelligent man flounder.

Order in knowledge is of primary importance. And order is possible only thru an acceptance of the fact that man can manipulate his powers and use his categorizing and conceptual powers in accordance with his vision of reality and his theory of knowledge and learning. The great imperative is that a person should be intellectually self-manipulating. Without these imperatives of equipment he cannot order his sense data, interpret, and synthesize them into a coherent and intelligible matter. The discipline of order we should impose on our faculties is scientific, necessarily. Our natural powers seek their perfect expression not only in theology, philosophy or aesthetics. They also seek perfection of their natural powers thru the scientific discipline. Rigour, objectivity and precision should become natural attributes of the mind.

Some people have said that science and the scientific method is a Western, imported phenomenon in the Philippines. I don't think this is true. Long before the Spaniards came, we knew how to build boats and produce gunpowder. Surely scientific principles were involved in such work. People worked out these things using their minds and hands. They may not have known they were working these out scientifically. The word "science" was probably unknown to them. But they knew what they were doing. They were using common sense and logic: they were being scientific.

Pre-industrial Europeans (in the eighteenth century), reduced their family obligations, even when death rates were higher than in the Philippines today, by a practice that required considerable fortitude—namely postponement of marriage until on the average brides were 25 years or over and grooms 28 or over when first married. Population growth in Western Europe almost never rose above one per cent per year prior to 1850, or above 1.5 per cent thereafter. Population increase in Japan during the late Tokugawa era was severely checked by frequent resort to abortion and infanticide. The motivations for restraints on marriage and fertility both in early modern Europe and in Japan were obviously economic. This is evidenced by the dramatic change in behavior among Europeans who settled in the new world of open spaces and expanding opportunity. Their total fertility shot up from about 5 to about 7.5 children per woman, and then gradually declined throughout the nineteenth century, especially in the older established communities.

The interesting suggestion arises that the restraint of fertility prior to the introduction of modern techniques of family limitation, and popular response to new techniques as they become available, is indicative of the relative intensity of economic motives in various cultures. In other words, strong motivation toward the restraint of fertility is symptomatic of *cultural milieus* that also generate strong motivations for intensity of economic effort, savings, a reputation of creditability in financial affairs, an economic enterprise—traits which, whether or not they are otherwise commendable, are conducive to economic progress. Differences in economic development between North America and the countries between the Rio Grande and the Rio Plata may be due in part to such differences in cultural heritage.

According to a recent set of population projection prepared by the Population projections prepared by the Population Philippines, the population of this country will be about 45 million in 1980, 69 per cent above its present size, if there is no change in fertility. With a general decline in fertility, beginning in 1965 and greatly intensified after ten years, the increase from 1960 to 1980 would still be 55 per cent. The size of the labor force in 1980 would, of course, not be affected by changes in fertility—because those over 15 years at that time have already been born. Even the proportion of children would decline from 47 per cent to 42 per cent. The difference between the trends on these two hypotheses would widen sharply during the next twenty years. With constant fertility and declining mortality the population would again increase by about 120 per cent to 116 million at the end of the century. With declining fertility the comparable increase would be only 60 per cent to 75 million at that time. The ratio of children and aged persons to those 15 to 65 years old would rise to over 100 on the first hypothesis. On the second hypothesis, it would decline to 81 per cent in 1980 and 56 per cent at the end of the century. Such a reduction in the ratio of dependents (mostly children) to persons in the working ages would greatly enhance the prospect for saving investment, and progress in education. In any case, an increase from 1960 to 1980 of about 70 per cent in the number of those at work or seeking work in this country is fairly inevitable—barring chaotic conflict or catastrophe. How will they find the opportunities for productive employment?

Part of the increasing labor force can be absorbed by the expansion of manufacturing enterprises, but not so large a part as is sometimes supposed. The proportion of all economically active

males at work or having a job in "manufacturing" (including household crafts) has fluctuated around a fairly constant level at 7 per cent, according to the Philippine Statistical Survey of Households. (The figure was 7.0 per cent in October 1956, 7.2 per cent in October 1962.) The proportion of males engaged in agriculture has remained equally constant at about 70 per cent (68.6 per cent in October 1956, 69.3 per cent in October 1962.) The figures for female workers show similar trends but are less reliable. There was an increase from 1956 to 1960 of 21 per cent in the payrolls of manufacturing establishments with five or more employees; but this increase in establishment activity was offset, as regards employment, by a decline in home industries. Employment in manufacturing establishments with 10 or more workers in this country is still very low. The number so employed in 1961 according to the Economic Census of the Philippines was only 2.7 per cent of the national labor force. Even with an increase of 4 to 8 per cent per year during the next 20 years (to 1981) employment in manufacturing establishments with 10 or more workers would still absorb only 4 to 10 percent of the labor force. The proportion of active males engaged in agriculture might then be reduced from about 70 per cent to 60 per cent, but a majority of all male workers would still, almost certainly, be dependent on agriculture. Unless they can be truly productive with earnings sufficient to meet their needs, and to inspire confidence in the future, and to sustain the purchasing power of the nation, the volume of unem-

ployment and under-employment will be swollen, with disastrous consequences to the whole economy and to the nation's social and political structure. Achievement along this line will require increased efficiency in agriculture and the investment of a large share of the nation's income in the advancement of agriculture and the welfare of the farm population. This, in turn, will be dependent on changes in popular attitude and in political policies.

There is now increasing recognition among scholars that *culture* may be the most critical factor in the economic and social development of a nation. It is an essential component of economic enterprise, savings and investment, progress in agriculture, honest and progressive government, health practices in the home, and the regulation of births. For this reason, progress in any of these sectors is likely to be associated with and to stimulate progress along other lines. Some aspects of Filipino culture today are favorable to economic and social progress, notably a high respect for women and a strong emphasis on education. Other deep, and in many ways admirable, aspects of Filipino culture are inimical to the economic and social development of the nation. The most important task of the leaders in education and social movements in this country is to stimulate and develop actions and attitudes that are consistent with, and conducive to, a technically advanced society—such as individual initiative, critical thinking, planned parenthood, and loyalty to rational ideals and principles.