

SCIENTIFIC DEVELOPMENT AND ECONOMIC DEVELOPMENT (II)*

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The substitution of «scientific thought» for «non-scientific thought» is the most fundamental and far-reaching revolution that has occurred in human society. The revolutionary advances of the past three centuries have been a direct result of the development of scientific thought and methods leading to political freedom, industrial growth and increased human welfare. Modern civilization and its industrial, socio-economic and cultural aspects are the outcome of new methods of thought. In fact, scientific method is the very essence of modern civilization. The present-day division of countries into developed and under-developed hinges upon the degree to which scientific thought, processes, and methods are applied.

The above represents the gist of the theme developed in the first part of my article published in the previous issue of this magazine. There I defined scientific development as the society's capacity to utilize scientific method in thought and research, that is to say, the degree of penetration of scientific method in the minds of thinkers and research workers and the extent of its utilization among individuals within the society. I shall now endeavour to elaborate the theme further.

Scientific method is the essence of modern civilization. The application of modern machinery and appliances for human welfare is a feature of this modern civilization. Mere consumption of the products and services made possible by the technological progress of industrial societies, and sheer imitation of their way of living, do not turn an under-developed country into a developed one.

In under-developed countries there have been governments, statesmen, even planners, who have not fully appreciated this fact. They have adopted

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and still continue to pursue economic, monetary and fiscal policies based on the encouragement of «irrational consumption». The granting of permits for the import of unnecessary and luxury goods, rendering of undue facilities for such imports, providing long-term credits for consumption purposes, allocating enormous public funds for the erection of high-cost buildings and expensive decorative features, utilizing the latest and most luxurious imported construction materials—all these are devices used by these governments to raise consumption expenditure. Little do these governments realize the extent of harm that such policies do in the guise of progressivism by erecting fresh barriers to rational economic development. A society adopting such consumption habits will have little savings with which to maintain and raise the level of scientific knowledge so necessary for industrial growth and will continue to fall behind. The means used by dominant economies which, in their efforts to find markets for their products, promote unnecessary needs and encourage irrational consumption habits tending to act as effective barriers to economic growth in the underdeveloped countries, will be discussed and illustrated elsewhere. It is enough here to discover what constitutes under-development; why it is that a city like Tehran, for example, which boasts the possession of all the outward signs of modern civic life, should be considered as the capital city of an under-developed country.

To answer this question it is only necessary to imagine for a moment the disruption of supplies and the severance of communications with centres of scientific knowledge in the industrial world to witness the stoppage of all utility, transportation, sanitary and communication services, the depletion of the shops of all their wares, and complete reversion to living conditions of 500 years back. A visit to any village within a short distance of Tehran, where life goes on placidly under conditions of thousands of years ago, shows that our so-called advancement is but a thin veneer covering our real backwardness.

The more well-to-do section of the population, enjoying as it does a higher standard of living, is in a very insecure position; for it knows that this is only a temporary state of affairs and that it can enjoy the fruits only so long as the natural resources it commands maintain their value and are not rendered worthless through rapid obsolescence and advancing technology, and only to the extent deemed appropriate by the exploiting agencies in the advanced industrial countries. The mere setting up of administrative

machinery charged with the exploitation of natural resources with the aid of imported equipment and foreign hired technicians does not assure economic independence ; for such organizations must still rely rather heavily on non-indigenous scientific and technological skill.

Underdeveloped countries to-day suffer from three perennial difficulties: imbalance of payments, unbalanced budgets and acute class difference. The root cause of all three may be found in the irrational passion of social groups for attaining high Western living conditions without achieving the necessary scientific and industrial growth that must go with it. This struggle for the appropriation of an ever-increasing share of the national income leads to a continual diminution of the share of the low-income groups and widens the class gap. A study of the living conditions of the Iranian peasant population reveals that their standard of living relative to that of the urban population has deteriorated considerably during the past 50 years.

The example set by the government of ostentatious spending has been followed by government officials (and their wives), with the result that irrational spending habits have necessitated the payment of higher salaries to civil and military officials and so has led to increased public expenditure beyond current levels of productivity . Public revenue, however, has not risen commensurately to enable the payment of such additional increases . Thus the gap between the high cost of living of government officials and the low level of possible salaries as a result of low productivity is a cause of corruption and administrative inefficiency .

It is generally conceded by the enlightened groups in underdeveloped countries that industrialization, as represented by the setting up of steel mills, automobile and aircraft manufacturing plants, etc. , is a necessary condition of modern civilization and that the provision of capital would ensure that an underdeveloped country would be launched on an industrial course. But the setting up of such heavy industries, even the training of technicians for their operation and maintenance, which provide the necessary infrastructure for industrialization, do not constitute sufficient conditions. Such a programme, by itself, can hardly convert an underdeveloped economy into an advanced one, for without scientific and technological foundations such high-cost equipment (to the acquisition of which several years of a country's savings may have had to be applied) can be turned obsolete and uneconomic within a very short time. Modern civilization

must be built upon the capacity for generation of scientific products. The products of advanced economies are of three types:

1. Consumption products— consumable goods.
2. Production products — machinery and means of production.
3. Scientific products—scientific discoveries and technological innovations.

Unless a society reaches the third stage of generating scientific products which it can exchange for similar products it cannot claim to be advanced. The utilization of modern appliances, even the establishment of factories using imported know-how, machinery and equipment, is not enough — the criterion is the capacity for generation of scientific products. This is the essence of scientific development which is so closely linked with economic development.

«Scientific products» need not necessarily be connected with nuclear physics or astronautics. Any of the more mundane fields of knowledge such as agriculture, pest control, irrigation methods, animal husbandry, etc, can be excellent breeding grounds for scientific research. Once a society has shown its capacity for the study and investigation of its problems in a scientific manner it can be considered «advanced» even though it may not enjoy a high standard of living and may lack the latest gadgets and domestic appliances. In the words of the Swedish prime minister who recently visited Tehran University, no country can remain a recipient of ideas for ever—sooner or later it must make its own contributions.

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