Natural and Technological Disasters: Causes, Effects and Preventive Measures. Edited by S.K. Majumdar, G.S. Forbes, E.W. Miller, and R.F. Schmalz.

Chapter Thirty-Eight

WHY DO THEY MAP GNP PER CAPITA?

LAKSHMAN S. YAPA
Department of Geography
Pennsylvania State University
University Park, PA 16802

INTRODUCTION

Modern economic development is universally understood to be the solution to the problems of underdevelopment and poverty in the Third World. Progress along the path of development is commonly measured by, GNP per capita and its annual rate of growth, measures that have remained popular among academics and policy makers despite serious criticisms of their continued use (Ekins, 1986: pp. 22-40). Almost all undergraduate textbooks on human, economic and cultural geography of the world have a map of the distribution of GNP per capita, this being one of the basic geographic "facts" of our modern world (Figure 1). The map is widely used in high schools for teaching students where the poor countries are. The map is also used throughout the schools and universities of the Third World to educate their own young people concerning the "facts" of underdevelopment and the steep ascent to development. I have argued here that the map of GNP per capita offers little help to think about the problems of poor people; in fact it only helps confirm popular misconceptions about poverty and development.

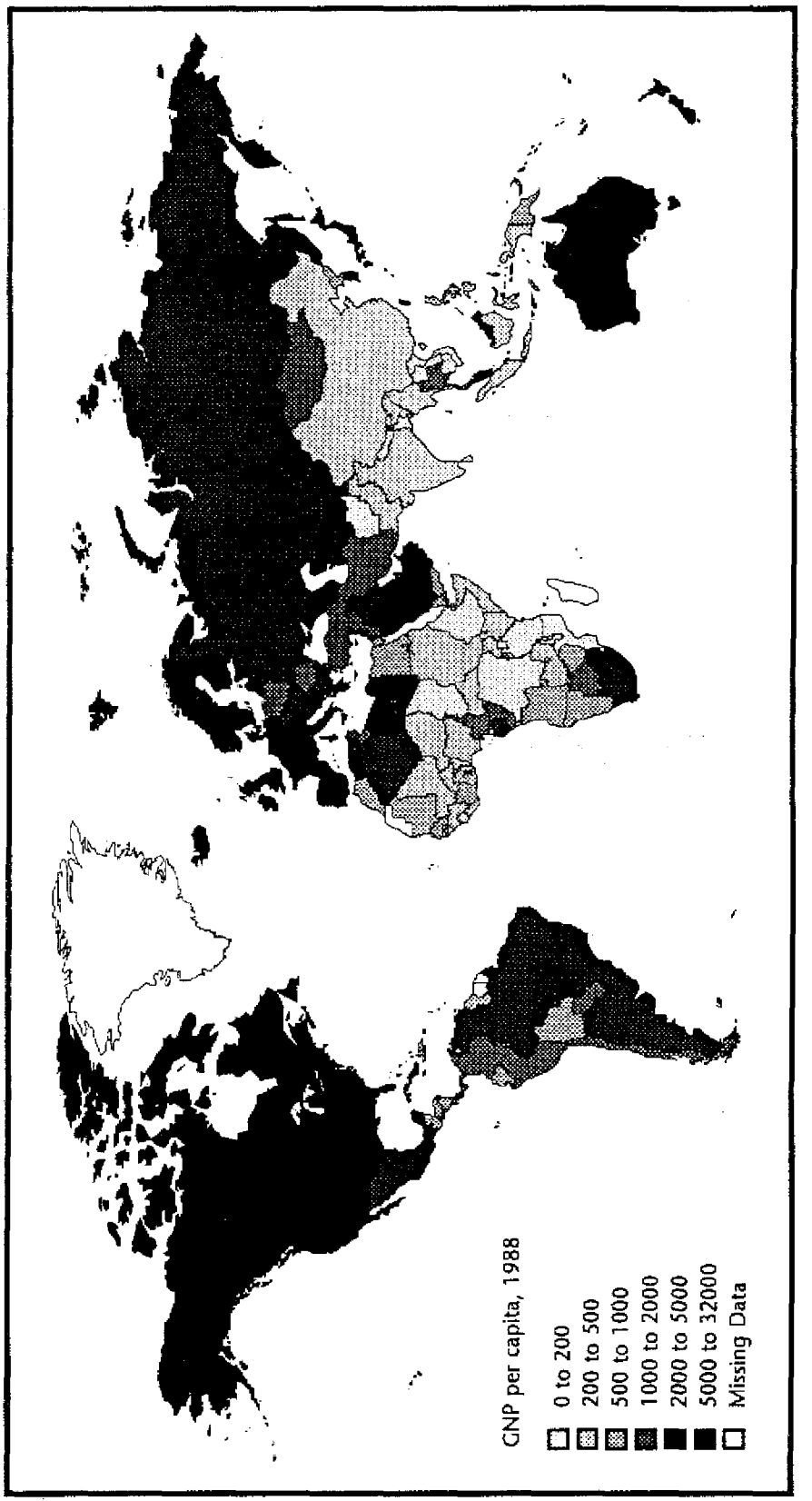

FIGURE 1. World distribution of GNP per capita.

MAP AS IDEOLOGY

The problem that I refer to does not lie in the cartography of the mapping exercise, but rather in the epistemology of development theory that lies behind the construction of such maps.[1] There is a small but growing literature that argues that poverty and malnutrition are not caused by underdevelopment; on the contrary, they reflect social consequences of the very path of modern economic development (Lappe and Collins, 1977; Timberlake, 1986; Illich, 1978; and Esteva, 1987). It is beyond the scope of the paper to develop this argument in depth; however, I wish to comment on some aspects of it using the map of GNP per capita as a point of departure.

The map of GNP per capita is a good example of Brian Harley's (1988) argument that maps represent a means by which dominant classes extend their ideology, power and influence in society, a position he has developed over several years following the leads of Foucault (1980) on the relation between knowledge and power. The following quotes from Harley (1988) refer to some of the themes I have developed in the paper.

> . . . The specific functions of maps in the exercise of power also confirm the ubiquity of these political contexts on a continuum of geographical scales. These range from global empire building, to the preservation of the nation state, to the local assertion of individual property rights. In each of these contexts the dimensions of polity and territory were fused in images which—just as surely as legal charters and patents—were part of the intellectual apparatus of power (p. 300).
>
> . . . It has not proved difficult to make a general case for the mediating role of maps in political thought and action nor to glimpse their power effects. Through both their content and mode of representation, the making of and using of maps has been pervaded by ideology (p. 300).
>
> . . . The way in which maps have become part of a wider political sign-system has been largely directed by their associations with elite or powerful groups and individuals and this has promoted an uneven dialogue through maps. The ideological arrows have tended to fly largely in one direction, from the powerful to the weaker in society (p. 300-301).
>
> . . . The practical actions undertaken with maps: warfare, boundary-making, propaganda, or the preservation of law and order, are documented throughout the history of maps. On the other hand, the undeclared processes of domination through maps are more subtle and elusive. These provide the 'hidden rules' of cartographic discourse whose contours can be traced in the subliminal geometries, the silences, and the representational hierarchies of maps (p. 303).

[1]Epistemology is a branch of philosophy that deals with the conditions of knowing. how do we know what we know and why is that we do not know what we do not know.

To summarize the main points from Harley: (1) map knowledge is a social product and is often used as an instrument in the exercise of power and domination; (2) wielders of such power are the elites and dominant classes of society who have used maps to extend their ideologies of domination; (3) the means employed for the ideological deployment of maps are subtle and they include what Harley has called "subliminal geometry", "silence by omission", and "representational hierarchies." By subliminal geometry he has meant the location on which maps are centered or the projection that is used to amplify the political impact of the image. Silence by omission refers to the exertion of influence by leaving out certain features and names. Representational hierarchy describes the use of symbols to depict an ordering of space as in the depiction of towns and villages on maps. I have argued in this paper that the map of GNP per capita is a very good example of Harley's argument concerning maps, ideology, knowledge, and power.

The primary purpose of the map of GNP per capita is to "rank order" nations of the world according to the size of their economic product. This ordering principle comes from the imposition of a very specific, narrow, socially constructed view of the world, a view that actually plays a part in the general oppression of the poor. It would be false to suggest the problem is in anyway cartographic because the ordering logic of GNP per capita does not originate in mapping, but in the theories of development. The power of the map of GNP per capita to suggest and persuade comes from the reductionist logic of development theory; however, the map reproduces the original reductionism, confirms it, extends it, and communicates it to a larger public in powerful graphic ways.

MAP OF GNP PER CAPITA

The gross national product is the total monetary value calculated at market prices of all goods and services produced in an economy over a given period, typically one year (Todaro, 1985, p. 411). Income per capita is the total GNP divided by the total population, that is the amount of GNP each person would have if GNP were divided equally. Countries with high GNP per capita are considered to be wealthy and developed, and those with low per capita incomes, underdeveloped and poor. The map of GNP per capita is an ordering of the world's countries using per capita income as the criterion for ranking (Figure 1). One purpose of the comparison is to suggest that poor nations need to expand their GNP in order to catch up with the more developed countries. It is believed that a GNP growing at 3 per cent per year is healthy, less than this is worrisome, and zero or negative growth poses a serious problem. A 3 per cent growth rate will yield a doubling of GNP every twenty-five years. The primary assumption driving this thinking is that growth is good because it leads to development, and lack of it, to poverty and hunger.

W.W. Rostow (1960), the American economic historian, formalized these ideas in his celebrated model of "the stages of economic growth." He divided the countries of the world into five groups according to their per capita income, and argued

that there were five stages in the transition from underdevelopment to development through with all countries must pass.

> It is possible to identify all societies, in their economic dimensions, as lying within one of five categories; traditional society, the pre-conditions for take-off, the take-off, the drive to maturity, and the age of high mass-consumption (p. 4).

The advanced countries of the world had during earlier periods of their history passed through the stage of take-off into self-sustaining growth, and today, the underdeveloped countries are in stages before the take-off. Rostow's stages of economic growth has been reproduced in a number of economics and geography textbooks. Though it cannot be proven I believe that the popularity of Rostow's stages of growth contributed much to popularizing the use of the GNP per capita map with its usual four or five income classes. Rostow's five stages of growth has long since been discredited (Baran and Hobsbawm, 1973); however, the idea that nations can be ranked along a measure of economic progress is very much a part of our contemporary public and intellectual views of the world, enjoying support from a wide section of the political spectrum. For example, it was the declared intent of the Chinese government to reach a per capita GNP of $1000 by the year 2000. The official environmentalist position on development can be gleaned from the U.N. World Commission on Environment and Development report, *Our Common Future*, in which they argued that the problems of poverty and underdevelopment could not be solved without a new era of growth in which the Third World countries played a stronger role.

HEGEMONY OF DEVELOPMENTALISM

Economic development as we know it today in the West is not a realistic goal for nations of the Third World. To attain US levels of per capita energy consumption, India would have to increase her commercial energy production by a factor of 35 and Black Africa by a factor of 38.[2] One fourth of the World's population, those living in the West, USSR, and Japan, consume about three-fourths of the World's resources to maintain their standards of living. It is clear that minerals, materials, and energy are simply not here for the majority of people in China, India, Indonesia, Brazil, Bangladesh,Nigeria, and Pakistan to emulate Western styles of living. The idea that there are real "limits to growth" is a very old argument (Meadows, 1972). And yet, we have not explored its implications for the feasibility of development. Why is that?

There is near universal agreement among the elites of the world on the desirability of development, with support coming from all sectors of the political spectrum. Conservatives, liberals, radicals and greens who disagree with each other on a range of basic issues, find no disagreement on the need for economic development. This

[2]Calculated from World Bank, *World Development Reprot 1988*, Table 10.

is because development is an instrument of the elite in exercising authority in society and serves important political, economic, and social functions.

Politically, the idea of development provides consensual goals and, therefore, stability to society. In India, it is not possible for the vast majority of people to ever attain the living standards of the top fifth of the consumers; but why has there not been an open discussion of this point? As elsewhere in the world, many in India believe, and are constantly socialized to believe, that they are poor because their country is underdeveloped, and that their poverty can be eradicated through development. This belief in the possibility of development serves the ideological needs of the Indian elites quite well as an important tool in the arsenal of political control. Not unlike the Hindu belief in rebirth, the idea of development encourages poor people to live in hope that life will get better, if not for them during their lifetime, then, at least, for their children or grandchildren. Development serves the purpose of social control of the masses, keeping them in line by exploiting a precious human resource, namely, hope. Of course, the means employed are more populist and humanitarian than those employed by authoritarian repressive regimes. Political parties compete with each other on the basis of whose platform is best able to deliver "development to the people," allowing the modern state in the Third World to use development as the principal means of legitimizing state power.

Economically, development is an important instrument of surplus extraction which provides a means of using public funds to enhance private accumulation. Ministers of state and their agents are permitted to raise development loans on behalf of the government and public. It is commonly alleged that a part of these funds are secretly appropriated for private use by those who negotiate the loan contracts. Other sums are appropriated "legally" through sub-contracts given to companies that are owned by loan negotiators or agents of their families. And all the while the loan remains part of the public debt. Dam construction in south Asia provides numerous examples of this practice. Since independence, multi-purpose dams have been seen as symbols of economic modernization; in fact India's first Prime Minister Nehru is supposed to have once said, "Dams are the modern temples of India." Over the years the massive dams have caused widespread social dislocation and ecological degradation, added heavily to a vast public debt, and yet, in the name of progress, the construction of new dams continues unabated. Dogra (1986) writing on the Indian experience with dams has said the following:

> The Indian experience with large dams has been disastrous. Yet that experience is consistently ignored by the government, which continues to approve new dam projects despite the lessons of the past. Why is this so? If one wishes to answer this question honestly, it is difficult to avoid the conclusion that large dams are chiefly built to satisfy the vested interests of construction companies, senior officals and politicians. Certainly they are the ones who have reaped the benefits of the large dams constructed so far: the peasants whose health and welfare the projects are supposed to enhance, have generally ended up worse off economically and demoralized socially (p. 207).

Another source of the ideological mystification surrounding development is the

nature and outlook of the post-colonial political leadership in the Third World. Nehru of India, Jinnah of Pakistan, Nkrumah of Ghana, Sukarno of Indonesia, and Bandaranaiyake of Sri Lanka were all inveterate modernizers. As Harrison (1990) has commented on this point:

> More serious than anything else, the elites they [the colonial powers] handed over power to were products of the colonial education system and were schooled in western ways. Instead of pursing indigenous models of development, almost all of them set to construct imitation western societies. So modern industry was put before agriculture, modern skyscrapers before the masses were housed, modern-sector employees had to be paid enough to enjoy imitation western consumer lifestyles while the majority languished in poverty (p. 46) . . . The aim was not only to show the old imperialists, but to impress other Third World leaders in the only way everyone would recognize: the western way (p. 50).

FAILURES OF DEVELOPMENT

The theory and practice of economic development is in a serious crisis today. After four decades of development planning, hunger and malnutrition persist among large segments of the world's poor. Over a billion people lack basic needs of nutrition, water supply, and shelter.[3] The impressive increases in food production by many countries since the late 1960's have not translated into less hunger. India, for example produces a food surplus while malnutrition persists throughout the country. In the very regions of chronic hunger environmental degradation now poses a serious threat to the conditions of production (Timberlake, 1986; Goldsmith, Hilyard, McCully, and Bunyard, 1990). Prestigious development projects begun a few years ago with much publicity are mired in debt and trouble: Green Revolutions leading to soil erosion, water pollution, loss of genetic diversity, and crop diseases; cattle ranches laying waste to the tropical forest; and tube-well irrigation that mines the groundwater and causes salinization of the soil (Glaeser, 1987; Cowell, 1990).

More than any other fact, the staggering size of the Third World debt exemplifies the depth of the crisis of development theory (George, 1988). The foreign debt of the Third World countries exceeds the figure of one thousand four hundred billion dollars (World Bank, 1988). Several Third World nations spend from one fourth to one half of their annual export earnings simply to pay the interest on their debt. Some nations are being loaned more money to pay interest in order to avoid default on previous loans. Distressingly, much of the loan capital cannot be used for productive investment because it is needed to make the interest payments on previous loans.

The crisis in development also includes the economic and political institutions that are engaged in development. Many states in the Third World are run by the military where elected bodies are weak such as in Latin America and Africa, and

[3]The estimate is quoted in Conway and Barbier (1990) on pp. 17-18.

many states are steeped in bribery, corruption, and nepotism. Even states with civilian authorities have massive military budgets that starve their economies of development and social welfare funds. Democratic movements in Eastern Europe, USSR, and China are mounting effective challenges to the once monolithic power structures in the socialist states. The programs of bilateral aid are a thinly disguised extension of foreign policy and are severely constrained by the political, economic, and strategic needs of the donor nations. Multilateral agencies like the World Bank are not in the business of eradicating poverty despite the public relations rehetoric. Their main interest has been in promoting export-led economic growth, a policy that often conflicts with the food needs of the poor and conservation of the environment. More than any other, the Third World debt crisis shows the bankruptcy of the international financial systems in their role as agents for the eradication of poverty. And what of the multinational corporations? They are undoubtedly the most dynamic instruments ever devised by mankind for the develpment of the productive resources of the earth. It is clear that they will continue to play an important role in the Third World, and an increasingly larger role in the socialist countries as well. Useful as they are we must not look to the multinationals as appropriate institutions for the eradication of mass poverty. The legitimate interests of multinationals are not compatible with the task of meeting the basic minimum needs of the poor. The breakfast cereals, processed meats, carbonated beverages, infant formula feeds, brand name drugs, robotics, and labor-saving machines are useful products but they are not the means for eradicating malnutrition nor solving problems of mass unemployment. Indeed, as Illich (1970, p. 179) has said, modern poverty is a by-product of a world marketing catering to the ideologies of an industrial middle class.[4]

DEVELOPMENT AS DESTRUCTION

The failures of development that I have stated so far are not "mistakes" or "accidents." Contrary to what we have been asked to believe development is not a part of the solution to the problem; in fact it is one of the basic causes of mass poverty.

Production is commonly defined as the creation of use values. But under certain circumstances production not only creates use values but also destroys them, a notion that I call "the two faces of production." Poverty is a relation that grows out of this twin characteristic of production. The study of the history of production has been reduced to the separate histories of technology, economics, and ecology. It is this dismemberment of the story of production into separate histories that has concealed the destructive dialectic of modern production. Indeed modern poverty is born in the womb of production, and is a direct result of its destructive dialectic. It is beyond the scope of this paper to argue this in detail.[5] In this paper

[4]Almost twenty years ago, Illich, a brilliant social critic, was one of the first to articulate the idea that modern economic development actually causes poverty. See also Illich (1978, 1973).

[5]A more detailed version of this argument appears in Yapa (1991).

I look at how the map of GNP per capita helps to perpetuate the false notion that more GNP is necessarily better than less, and that the growth of GNP will help to eradicate hunger and poverty. I have looked at two examples to illustrate the argument - the Green Revolution and the construction of large dams.

The Green Revolution was a massive campaign launched by the FAO in 1960s to increase food production. The spread of high yielding varieties (HYVs) of hybrid seeds in wheat, rice, and corn is credited for averting massive food shortages in the Third World that were predicted in the seventies (Paddock and Paddock, 1967). "Per capita food production in the developing countries has risen by 7% since the mid 1960s, with an increase of 27% in Asia. Only in Africa has there been a decline" (Conway and Barbier, 1990: p. 20). However, if we go beyond the impressive production statistics and look at the Green Revolution from a holistic view point of social, ecological, and cultural relations, it is evident that it has left in its wake a devastating trail of destruction, and an ecologically unsustainable mode of agricultural production which will aggravate problems of hunger and malnutrition in years to come.

HYVs do best in well endowed physical environments, which explains why they have not done well in Africa. HYVs require irrigation and large doses of fertilizer. In south Asia the irrigated land belongs almost exclusively to the more wealthy farmers. HYVs did not benefit the vast majority of farmers who depend on rainfed cultivation or work marginal areas. Because of the need to buy commercial inputs farmers cannot grow HYVs just for consumption, they have to grow for the market. Of course, the purchase of inputs and the sale of farm produce in the market help boost GNP but that does not necessarily mean farmers eat better. The wealthy farmers who can afford costly inputs buy out smaller peasants leading to increasing inequity in size of holdings. Ecologically, the HYVs have been an unmitigated disaster. Genetically uniform varieties of rice, wheat, and corn growth in monocultural stands are quite vulnerable to pests and pathogens. For example, severe outbreaks of brown planthoper that were reported from rice paddies in Indonesia led to the banning of the use of pesticides in some areas. Excessive use of chemical pesticides has aggravated pest problems by destroying non-target insects, particularly the natural predators. This has created a vicious treadmill of chemical agriculture: the continued use of pesticides increases pest hazards by destroying natural predators, thus necessitating the use of more pesticides. Moreover, the evolution of pesticide resistant insects has meant the use of new and more powerful pesticides. Likewise, the long use of chemical fertilizer has affected soil quality adversely, and increased soil erosion. And to counteract the consequent decline in yields farmers are forced to apply more fertilizer. This is the treadmill of chemical farming. In addition, fertilizer and pesticide run-off have contaminated ground-water and streams. Prior to the adoption of HYVs, fish living in rice paddies were an important source of protein for poor farmers in south Asia, but this is no more. The diet of poor farmers has deteriorated due to repeated monocropping of cereals, and the elimination of the polyculture of cereals, legumes, and vegetables.

HYVs have done much for integrating Third World farms with markets and agribusiness of fertilizers, pesticides, machinery, fuel, and seeds—a transforma-

tion that has been justified as necessary for eradicating hunger in the world. Critics have argued that agricultural systems designed for the eradication of hunger require very different structural and technological characteristics (Chambers, 1977). Consider the technology of hybrid seeds: the basic property of the seed to reproduce itself had always acted as a barrier to companies who wished to sell improved seeds; a major intent of modern plant breeding was to convert seed into a saleable commodity by eliminating its self-reproducing capacity. Thus "improved seed" which creates value for seed companies has eliminated the value previously derived by farmers from seeds which reproduced naturally as a free good (Kloppenberg, 1988).[6] Modern agricultural scientists have been aware of "low-input" agriculture for years from the writings of King (1973; first printing in 1911), Howard (1973; first printing in 1940) and others. Altieri (1987) and his associates have argued that indigenous techniques can produce high yields of varied crops while maintaining soil fertility and reducing farmer's reliance on expensive and destructive chemcial inputs. For example, in Mexico one hectare planted in maize, beans, and squash can produce as much food as 1.7 hectares planted to maize alone (Altieri, 1991, p. 95). Unfortunately, such techniques have received little official sponsorship and research funds (Glaeser, 1987). Hewitt de Alcantara (1973-74) has written a fascinating story about the early history of the Green Revolution in Mexico in which she describes the circumstances of decisions taken to disband an existing program of research for the improvement of rain-fed corn and beans in favor of research into the commercial cultivation of high-yielding irrigated wheat.

Based on her studies in the province of Punjab, Vandana Shiva (1991), the noted Indian environmentalist, has summarized the destructive aspects of the Green Revolution:

> The Green Revolution has been a failure. It has led to reduced genetic diversity, increased vulnerability to pests, soil erosion, water shortages, reduced soil fertility, micronutrient deficiencies, soil contamination, reduced availability of nutritious food crops for the local population, the displacement of vast numbers of small farmers from their land, rural impoverishment, and increased tensions and conflicts. The beneficiaries have been the agrochemical industry, large petrochemical companies, manufacturers of agricultural machinery, dam builders and large landowners.

The second example I have chosen to illustrate the destructive aspects of development is the construction of giant multipurpose river dams, which are popularly seen as playing a vital role in economic development because they provide cheap electricity, supply water for irrigation and reduce flood hazards. The editors of *Ecologist* have commented on the down side of dam construction in the following words:[7]

---

[6]On the political economy of agrarian research see also the essays in Levins and Lewontin (1985).

[7]This quote is taken from p. 2 of a briefing document titled, "The Social and Environmental Effects of Large Dams" included as a supplement in *The Ecologist*, Vol. 14, No. 5/6, 1984.