

# HOW PRE-INDUSTRIAL SOCIETIES COPE WITH POPULATION GROWTH

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## Introduction

What I propose to do today is to present you with an outline anatomy of the present world food crisis, and then proceed to review the mechanisms available to us for coping with it, placing particular emphasis on those present in the very countries that are experiencing the crisis.

The thrust of my argument will be that, in large part one can hold the developed countries responsible for the present difficulties the Third World (the under-developed countries) is experiencing. Further, the solutions proposed by the former are suggested to be often highly unrealistic and are only likely in the long-run to aggravate the problems. In contrast, given certain specific (and admittedly exacting) conditions, it is proposed that the Third World can go a long way to generating its own solutions; solutions that are based on customary values and mechanisms for regulating the relationship of population to resources.

## The Nature of the Crisis

We are presently being inundated with reports and statistics regarding a looming world food crisis. But amidst it all what are the pertinent facts?

While world food production continues to maintain a long-term annual rate of increase of c. 3% that is therefore somewhat superior to the rate of global population increase (>2%) this is largely on account of substantial increases in production that have occurred in the developed countries. In the under-developed countries generally food production is failing to keep pace with population increase, while in some cases it is even declining absolutely (notably the countries of the Sahel e.g. Mauritania, Niger, Senegal, Upper Volta). The gravity of the problem has hitherto been minimized by effecting

large-scale food transfers between the developed and under-developed countries in the event of crises - drawing on the grain reserves of the U.S.A., Canada and Australia. These reserves are however now largely depleted, hence rendering critical what is already a grave situation where it has been estimated that 10-20 million people die every year directly or indirectly from lack of food.

Further to this crisis of diminishing food reserves per capita, two other problems have recently manifested themselves--of a global energy crisis that is being translated into a fertilizer crisis (because many are oil-based) and of widespread climatic deterioration (global cooling, decreased atmospheric vapour, etc.) that has manifested itself most vividly in the recent Sahel droughts.

If anything this situation is likely to deteriorate in the near future, as indicated by this year's grain harvest estimates for North America as well as rising energy and materials costs, and predictions regarding world climatic trends.

#### The Immediate Reasons for the Crisis and Hence Proposed Solutions

There is little difficulty in isolating an over-riding, immediate explanation for the crisis--of population growth--that places pressure on limited food resources, demands increasing supplies of energy both to produce and distribute the resources, and places increasing strain on the ecosystem, all of which in turn can serve to accelerate current climatic changes (through the massive injection of man-made heat into the atmosphere, as well as through over-grazing and deforestation).

Ready solutions are likewise forthcoming--curbing population growth through massive birth control schemes such as those initiated in India where large-scale 'vasectomy fairs' travel through the countryside, or mastering drought and increasing food production through such grandiose schemes as, for instance, President Hamani Diori's (Niger) proposed "Marshall Plan--for Africa" where he suggests drilling 2500 wells to an average depth of 900 feet across the country, at an estimated cost of \$230 million.



## The Real Reasons--Population Redistribution and "Development"

Workable or not (and I shall later suggest their unworkability) both 'solutions' see the problem as arising out of 'natural' phenomena that are nevertheless amenable to human intervention. Closer investigation of what is going on in the Third World however indicates the problems and therefore the fundamental reasons for the crisis to be far more complex.

Much more critical than overall growth of population is its redistribution. The world's population is being urbanized very rapidly. In 1800 only 1.7% lived in localities of 100,000+ persons, in the early 1960's the figure was 20%, and by 2000 it will be an estimated 75%. Further the rate of urban growth in under-developed countries tends to be higher than that in developed--Lagos is four times that of Los Angeles for instance. Such a development is critical in the Third World since it dictates a radical shift from subsistence modes of production to ones in which larger and larger surpluses must be created to support an expanding non-agricultural population. In addition complex marketing systems must be created in order that the surplus gets to the urban consumer. This is no easy matter in countries where, traditionally, systems of exchange were frequently based on the principle of reciprocity and were restricted to kin, and where mass transportation systems were non-existent.

That stresses result is not surprising. What is surprising is the fact that they are actively stimulated by the developed nations. Cities are viewed as centres of the modernized sector of a Third World economy, dynamic growth poles that stimulate development through the surrounding areas, and also environments that stimulate the propensity of their inhabitants to consume--which consumption will in turn aid the industrialization programme. In such circumstances the rate of urbanization typically runs ahead of the capacity of a nation to support an urbanizing sector.

At the same time production in the agricultural sector itself is endangered. Agricultural development is directed almost exclusively towards the production of commercial crops, that is commodities that have a commercial value in the developed nations. These include both food (coffee, cocoa, sugar cane, etc.) and industrial (sisal, oil palm, pyrethrum, etc.) crops. Notably few have any direct value to the producers. They are only useful for the revenue they generate from the sales of these commodities to the developed countries. The need for cash is

considerable (taxes, changed agricultural technology, new patterns of consumption) but the terms of exchange are frequently highly unfavourable. The results? The production of commercial crops frequently enters into direct competition (for land and labour) with the production of subsistence crops--to the detriment of the latter ... and the nutritional status of the population deteriorates accordingly. The same argument applies to those who sell their labour as plantation workers--energy costs are very high in relation to wages, and the purchasing power of wages is very low since most of the foodstuffs available in the market place are imported (the mechanisms for marketing locally-produced foodstuffs often being very poorly developed). Thus, over the past decade food imports of developing countries have been increasing at a rate exceeding that of their population growth, the trend claiming at the same time a growing share of their total import capacity.

Thus the whole thrust of development is to strengthen the links between developed and under-developed nations, as well as to impose Western models of development through urbanization and industrialization. And wedded to this is the legacy of another era of metropolitan-satellite relations, where the dominant ethic was one of social rather than economic welfare--a preoccupation with health and nutrition within a Christian (charitable) framework, and education and religion within a civilizing one. Little thought was given to the capacity of the economic system to support this particular type of intervention. Famine relief (involving massive food transfers) is frequently a simple continuation of this philosophy.

#### Proposed Solutions to the Food Problem

But to return to my initial observation. Everyone is in agreement that there is a food problem. But what kinds of agricultural solutions are envisaged by the developed nations? Generally speaking, the concern is to increase the level of production through the transfer of Western technology. Consider what is described as the "Green Revolution". Greatly increased yields are envisaged through a combination of high-quality varieties of grain, greatly increased use of fertilizers, and more complex forms of irrigation/tillage. In sum, traditional modes of production are swept aside as being 'primitive', inefficient, irrational and so forth. At the same time the increased efficiency that is envisaged serves to release a pool of surplus labour which



can be redirected to the industrial sector of the economy in order to stimulate the development process.

The irony of all this is that neither does the "Green Revolution" approach appear to work (it reinforces dependence on the developed nations on increasingly unfavourable terms,\* it disregards the local reality, and is ecologically very vulnerable - consider the Groundnut Scheme, the irrigation of the Sind, the Aswan Dam, etc.) nor does it do justice to customary modes of production.

In this context the film "Rice" comes readily to mind. Prepared in 1964 to publicize the work of the International Rice Research Institute in the Philippines - the initiator of one of the Green Revolutions - it starts by panning across the remarkable engineered landscape of the Ifugao in Luzon, and dismisses their system of padi-rice cultivation as one that is changeless (governed by tradition, ritual and the crudest of technologies), and that produces "just enough" to meet the daily needs of the local population and no more. Traditional conservatism (negative) is set against modern innovation (positive), and yet the system so readily dismissed as one capable of adequately supporting population densities in excess of 2000 per square mile while maintaining a stable social order and ecosystem. Some areas have been under cultivation for one if not several thousand years! This is only one of many such intensive systems of production found in the Third World, all of them characterized by a remarkable degree of ecological sophistication and capable of supporting high population densities, and yet requiring very simple technologies to maintain them. All have, in addition, stood the test of time.

Perhaps, given the poverty of our own solutions to deal with the food and population problem, we should look to the accumulated experience of the peasantry of the underdeveloped nations. Therein certainly lay the wisdom of Mao Tse-Tung in China.

#### Agricultural Systems and Societies

What does the study of their agricultural systems tell us? The two basic opponents are population and resources. The Malthusian revival tells us that population tends to increase geometrically and resource production arithmetically. The history of mankind is centred, in an adaptive sense, around the interplay of these two forces. The primitive and peasant societies

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\*It involves new, high-technology forms of farming that are directly threatened by current soaring prices and shortages of fertilizer and energy.

of the now under-developed countries were as subject to them as ourselves. Historically they had two options, either to control population density or increase agricultural production. Both were utilized.

### Population Control

While high mortality rates due to poor medical knowledge were everywhere the case, they were rarely sufficient to eliminate population growth. Warfare certainly played a part - inspired by competition for land and resources. But efforts - frequently very effective - were also made to influence birth rates. All did not begin with techniques of surgical intervention or contraceptive devices. Rather there were frequently very effective social mechanisms - determining the age of marriage, influencing birth intervals, etc. For instance, New Guinea highlands societies generally condemn intercourse between husband and wife while a child is being breast-fed. And breast-feeding normally lasts for 4 or 5 years. In effect, we are speaking of post-partum sexual abstinence periods of the order of 4 to 6 years, and this in societies where extra-marital sexual intercourse is strongly prohibited!

For such mechanisms to be effective they were of course dependent on the values and social order of a society remaining intact, which conditions no longer apply.

Together the various constraints ensured population growth rates never exceeded 1% per annum, a figure that is very low by modern standards but which nevertheless meant that pressure on resources was a common recurrence.

### Agricultural Intensification

Population pressure was also managed through intensifying agricultural production. Figure 1 outlines the form and circumstances of this process. Essentially fallow cycles are progressively shortened, there is a shift from mixed cultivation to monoculture, and also a shift from a system where fertility is restored naturally by means of a long fallow (the 'closed nutrient cycle') to one in which it is maintained by increasing human (and other) energy inputs, in tillage, mulching, irrigation, etc.

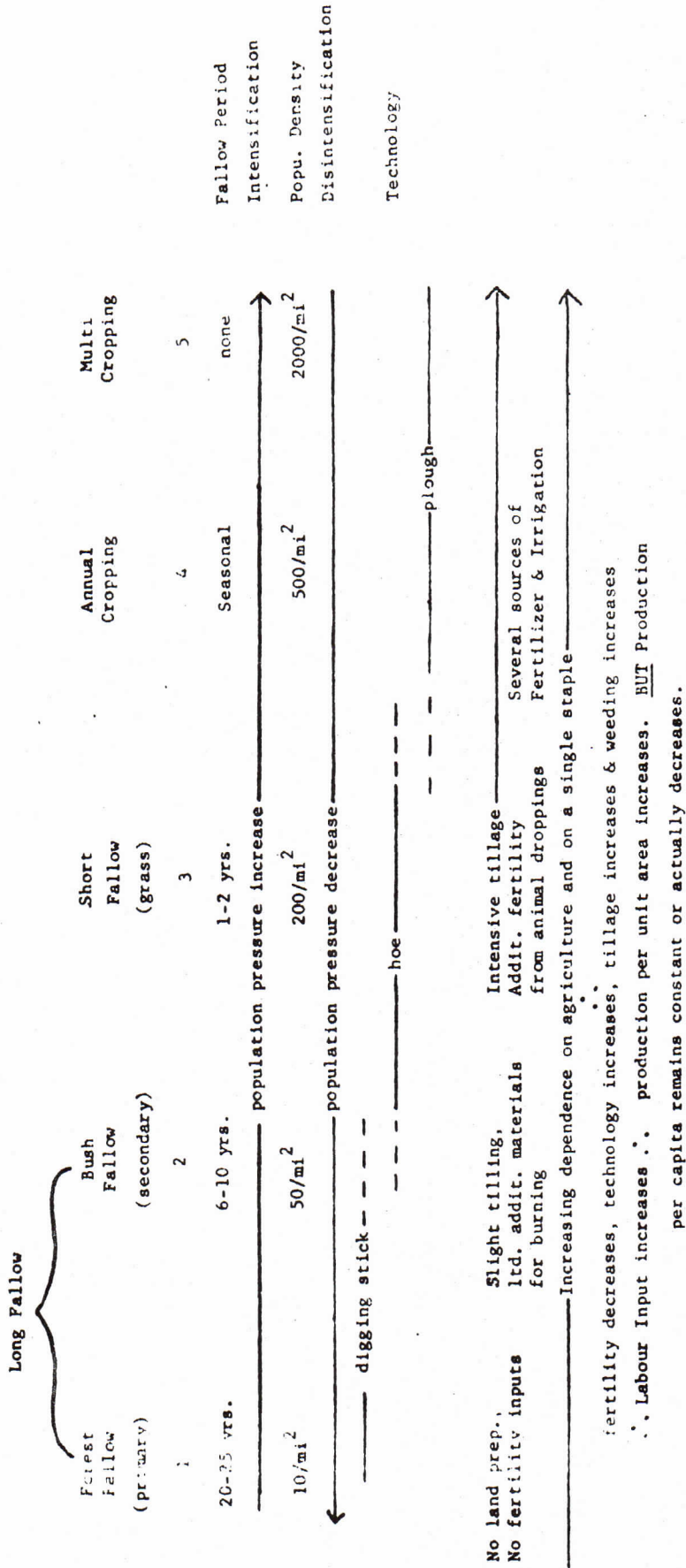
The process is I think obvious to us, for all industrial (and therefore agriculturally-based) societies have gone through it; it is the historic transition from



Figure 1

THE STAGES AND CIRCUMSTANCES OF  
AGRICULTURAL INTENSIFICATION

(after Boserup, 1965)



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shifting cultivation with no pronounced staple to annual and multi-cropping of rice or other cereals. What is interesting about it in preindustrial societies (the present under-developed nations) is that it generally only occurs in response to population pressure. People will only do it if they have to - in order to support higher density populations. The reason is simple - the process involves a shift from land to labour as a principal factor in production, and with intensification returns to labour tend to decrease. The most efficient systems are the most extensive (because "nature" does most of the work) - perhaps 1000 hours per family per annum are needed to manage them compared with about 5 times the figure for the most intensive systems. Nobody in their right mind would intensify in such circumstances, for diet tends to deteriorate too. As one hunter and gatherer in the Kalahari desert said in answer to the incomprehension of a visiting anthropologist, "Why become a farmer when there are so many mongongo nuts in the world?" He only had to work 2 or 3 days a week to be adequately fed on a very diverse diet.

These systems of production are of course principally subsistence-oriented. The household consumes most of what it produces, and surpluses are produced only to minimize risks from crop losses. Beyond that there is little reason to produce more since levels of production are largely nutritionally and not culturally determined. In these respects such systems differ markedly from those of our own society, whose goals are the maximisation of profits and where increased production is seen as an end in itself operating independently of demographic variables.

Finally, another of the basic features of pre-industrial societies is that their production systems are designed to make maximal use of available labour - a social goal, the accommodation of the entire labour force in the system of production, and therefore the assurance of maximum social stability, prevails over an economic goal, maximum efficiency, which dictates shedding of surplus ("under-employed") labour.

### Conclusions

The effectiveness of customary responses to population growth cannot be denied. Ecologically, sociologically and nutritionally they are sound. The intensification process of course can only occur at a certain 'cost' - the 'quality of life' tends to deteriorate in the sense that the producers must work progressively harder in order to make ends meet, while at the same time the quality of their diet tends to deteriorate in terms of palatability (variety) at least. However such a loss is minor compared with modern problems.



The question is, however, to what extent is a traditional capacity to deal with population pressure relevant to the contemporary context? Here two major difficulties are encountered, one demographic and the other developmental. Present population growth rates in the under-developed countries are far in excess of those they have customarily had to cope with. Even the 1.7% per annum proposed at the recent U.N. conference at Bucarest is. They scarcely give the population time to intensify before experiencing massive environmental deterioration. And yet the modern media of instruction could presumably be utilized to transmit the necessary agricultural information and thus accelerate the adjustment process. Here again, I think we have a great deal to learn from the Chinese with their constant dialogue between peasant and urbanite, and the respect for the former that follows from it.

More serious is the whole strategy of development which tends to preclude local responses - the isolation of these societies is systematically undermined, generating both cultural and economic dependence. The model proposed by the developed nations is accepted, and in order to implement this model increasing dependence on those same nations is generated in order to obtain capital, technology and know-how at most unfavourable terms.

At the same time the under-developed nations are experiencing urbanisation of a large segment of the population in a context where neither the peasant producer nor the managers of the agricultural economy are geared to feeding it.

### ...And a Suggested Solution

Absurd as it may seem to you, an effective, long-term, solution to the food and population problems of the Third World may well lie in reducing rather than in intensifying their links with the developed nations, and in rejecting Western models of development based on massive industrialisation and urbanisation. To act in such a way demands of course a great deal of courage in challenging the objectives of the developed nations (who after all are heavily committed to intensifying trade relations in order to obtain the resources on which they are dependent) and the aspirations of the under-developed nations own elite whose goal is a life style similar to our own.

Such a recourse is not, however, without precedent. Mahatma Gandhi's goal was the revival of "village India". He opposed mechanisation and urbanisation wherever abundant

labour was available. He stressed the moral superiority of self-employment and of frugality and he ascribed great symbolic importance to the spinning wheel (charka). And he promoted the ethic of swadeshi: "The spirit in us which restricts us to the use and service of our immediate surroundings to the exclusion of the more remote." More recently Julius Nyerere in Tanzania, with his concept of African socialism (ujanaa), has directed his country's efforts towards similar objectives. Finally the commune in China is conceived in analogous terms - of local or regional autonomy.

On the basis of what I have said today I would suggest that the approaches proposed by Gandhi, Mao and Nyerere are the only sure way to establishing a balance between population and resources - one where desires are limited such that they don't assume the absurd proportions of the developed nations, and resources are more equally distributed. In turn the rate of population growth might also decline through the reinstating of appropriate indigenous social controls.

This was indeed in part the message of the underdeveloped nations at the recent World Population Conference. But for us, in the developed nations, to accept it obliges our admitting that, while the problem may well be "out there", the solution to it is more than likely right here, and it lies not in aid, technology transfer, trade and charity, but in our cutting back our demands on those nations (by imposing thresholds to our own demands for resources) and ceasing to impose upon them our models of development. Such certainly are the implications of the following observation made by a Solomon Islander from the Western Pacific Ocean:

One day, long, long ago, a man was fishing on the reef, and he saw something out to sea. It appeared to be an island, but it moved. He ran to the beach shouting 'An island is coming here', and quickly the people gathered on the beach to watch a sailing ship approach and anchor off the reef. The inhabitants of this island came ashore, and our island-world ceased to be. The world exploded, and our island became a remote outpost ... the last place in a country which has few centres and much remoteness (Luana, 1969, 15).

Are we prepared to so radically change our behaviour?



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