

© The United Nations University, 1979
Printed in Japan

ISBN 92-808-0054-x
ISSN 0379-5764

HSDRGPID-2/UNUP-54

**AN ISSUES PAPER — Contributed by the
Food Study Group of the GPID Project**

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This paper was prepared by the GPID Food Study Group for a Workshop on the Goals, Processes, and Indicators of Food and Nutrition Policy and Planning which was undertaken jointly by the World Hunger Programme and the Human and Social Development Programme's GPID Project and held under United Nations University auspices at the Massachusetts Institute of Technology, 26-29 March 1979.

Geneva, June 1979

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This paper is being circulated in a pre-publication form to elicit comments from readers and generate dialogue on the subject at this stage of the research.

INTRODUCTION

Why does the word "development" continue to enjoy near-universal respect and use when no development worthy of the name has taken place in the past thirty years, when the relative and absolute number of poverty-stricken and powerless people has increased, when hunger and unemployment are on the rise throughout the non-socialist world?

Since the era of "development" began, the ranks of poor and landless peasants have swelled while cities have become unliveable for all but the privileged minority. "Development" has resulted in roughly 300 million totally or partially unemployed people in the Third World (not to mention an estimated 15 million in the OECD countries). In spite of the most bountiful harvests in the world's history, "development" has led to ever more widespread malnutrition and famine. "Development" has caused an unprecedented deterioration in the status of women. The pauperization of vast sectors of Third World populations has been accompanied by violence, the routine use of repressive and brutal measures against desperate people, and the militarization of the State.

Perhaps the time has come for intellectuals paid to concern themselves with "development" to discuss the fact that they are still *discussing* poverty and want; to recognize that the goals, processes, and indicators of development are a mockery in the real world where goals are perverted, processes are those of destruction, and indicators measure only negative results.

Matters of life and death cannot be examined clinically, neutrally, and at a comfortable "scientific" distance. Development research (whatever its methodology and final form of presentation) which does not proceed from a sense of outrage and strive for meaningful change is at best irrelevant, at worst harmful to the needs and interests of the multitudes of the poor and powerless.

Because we are convinced of the necessity for a unified, or holistic, approach which does

not slice humankind into easily managed "scientific" categories, we shall seek to avoid the Cartesian trap of discussing goals, processes, and indicators as separate entities instead of recognizing that they are interdependent, so that wrong goals necessarily lead to wrong processes and vice-versa. Indicators, for the moment, can be most useful if they measure the power of vested interests which seek to maintain and to entrench the status quo.

We will, rather, attempt here to analyse the ongoing processes that are shaping reality before describing some of the tools at our disposal which might aid in altering that reality. We fully expect that many will question the analysis, doubt the viability of an alternative, or regret the absence of a detailed blueprint for replacing current practice. To them, we can only reply that present "development" strategies are clearly pathogenic and that the only initial answer one can give to the question "What is to be put in the place of disease?" is "The absence of disease."

I. THE PRESENT SITUATION: FORCES AT WORK WHICH LEAD TO HUNGER

The food problem has many dimensions, but in the context of an economy of consumption it can be visualized as a sliding scale with clinically defined over-consumption at the top and physiological starvation at the bottom, with varying degrees of qualitative and quantitative adequacy and inadequacy between them. Such gradations correspond roughly to socio-economic categories and especially to income levels.¹ The only *serious* food problem in today's world, however, is that of the hunger of millions of people who do not get enough to eat to satisfy their minimum needs. It is not principally a problem of protein intake but one of filling the stomach first. In modern times, hunger appears to be a problem peculiar to the capitalist economic system. Socialist countries such as those of Eastern Europe, Cuba, and China have numerous problems, including some food problems; but with the exception of very limited residual pockets, they have solved the problem of hunger.

(This leaves borderline cases such as that of Tanzania, where a serious food problem still exists, but we would argue that this is because such countries are insufficiently socialist rather than too much so. When elements of capitalism reappear in socialist systems, the food problem also tends to reappear. It will be important to observe whether China, which has achieved adequate food levels for all its citizens in a remarkably short period, can withstand penetration of western firms and massive purchases of western technology without resorting to export sales of cash crops and consequent increased central control over hitherto semi-autonomous, self-provisioning communes. The current shift in Chinese strategy may well lead to a market-oriented resource-use pattern and to the breakdown of a delicate nutritional balance.)

If capitalism is part of the problem, is there any chance that it can be, as it so frequently claims, part of the solution; or should we not, rather, frame the hypothesis that the spatio-temporal tendency of capitalism to expand can only aggravate the present food situation?

Hunger exists not only because of the maldistribution of food itself but because of highly skewed income distribution which precludes the purchase of adequate amounts of food. Maldistribution of income is, in turn, a function of maldistribution of wealth and of a private ownership system which imposes no upper limit on individual or corporate control of the means of production — including those of food production — nor on the amount of wealth which can be accumulated. In contrast, the lower limit, that of zero-ownership or even sub-zero-ownership (e.g., in the case of chronic indebtedness) is only too clearly defined.

Hunger is also a function of the misappropriation of human and physical resources. Capitalist entrepreneurs are not in the business of providing employment nor of satisfying the needs of society as a whole, but are guided solely by the profit motive. In capitalist economies, income distribution determines not only consumption but *consumption patterns*. In other words, the system's priorities will encourage the production of food-stuffs and other goods which yield the highest profits and which are therefore geared to satisfying the needs (or the whims) of those who can pay; such priorities will also, obviously, determine the *use patterns* of human and physical resources. A perverse resource-use pattern will correspond to a perverse income/consumption pattern in which market, i.e., monetary, demand will direct the flows of raw materials, including foods, and finished goods. The best evidence of this is that when no market for certain food-stuffs exists, or when prices fall, part of the output is wasted or destroyed.²

It is therefore altogether logical that countries in which a high percentage of the population suffers from hunger and malnutrition should be the same ones which supply traditional cash crops and luxury items (off-season fruits and vegetables, flowers, meat, seafoods, etc.) to affluent purchasers, generally in the northern hemisphere but also to members of the Third World elite. People without purchasing power are placed, ipso facto, outside the market and exert no influence whatever over what it will provide. In purely numerical terms, the calorie intake of such people may approach or coincide with clinically defined starvation levels, whereas wealthy consumers frequently enjoy regimens of 8,000-10,000 grain-equivalent calories per day (through consumption of meat and other grain-based animal products and processed foods) — *not* the 3,300 calories or so inscribed on national food balance sheets. Arguments stressing the existence of enough food in the world to furnish each of the planet's inhabitants with a daily diet of over 3,000 calories are striking but may tend to obscure the fact that no country on earth (including the richest) has yet reached the upper limit of what its population, given

sufficient income, can consume in terms of *value*, not numerical calories. Depending on market conditions, increments in world harvests will be stored or will flow towards those who can afford them; only a tiny amount may be given away to the needy.

For the same reasons, it is not sufficient to stress a policy of income redistribution for the alleviation of hunger. This is not only because income redistribution has extremely narrow limits in the framework of capitalist economic thinking (e.g., the World Bank's "redistribution with growth" theory,³ in which redistributing an increment of national income is tied to "prosperity," or rising national income, and disappears when the latter stagnates or declines). Any effective policy of hunger alleviation must also include redistribution of power over resources and a totally different pattern for their use. The present system is unlikely to concede such basic alterations without a struggle.

Even the most developed capitalist countries have, as yet, been unable to eradicate fully the presence of hunger in their midst: in 1978 the US Census Bureau estimated that nearly 24 million Americans lived below the "poverty line" and that this entailed serious consequences for their nutritional status. The food problem is not a problem of "production" — vast surpluses are stored in US granaries — nor of "distribution" but rather one of resource allocation which occurs through the market and of a perverse set of priorities which result in production for the rich, wherever they may live.

It remains to be seen whether this system will continue to provide food for the indigent in order to forestall major upheavals that could endanger its overall hegemony. Food aid plays a vital role here, as do free, or subsidized, food distribution schemes. In Sri Lanka rather limited free rice distribution was halted under pressure from capitalist interests, whereas in Egypt the subsidized food program, when threatened with curtailment by IMF regulations, was maintained because of serious civil disturbances. The palliative aspects of food distribution under capitalist conditions will depend upon the balance of forces within each national community and upon the rank and importance of particular nations in the international system (e.g., the major beneficiaries of food aid). Whatever the level of aid to the destitute, it constitutes neither a permanent nor a structural solution to the persistence of hunger.

In the past quarter century, huge transfers of capital and technology have led to the extension of perverse resource-use and resource-enjoyment patterns in the Third World, where the present and probable future food situation must be examined in the context of

expanding capitalist control. Surely one of the tasks of research is to understand more fully the nature and the extent of this control.

The tendency of western development planners and of Third World nationals trained in their methods has been to take a piecemeal approach towards hunger alleviation. Thus — instead of seeing the food problem as a function of a chain, or *system*, which begins with inputs (physical as well as intangible, e.g., research and credit), proceeds through food production per se, and continues through the storage, processing, and distribution phases before reaching the final consumer — planners have tended to focus on one or another isolated aspect of the system. We have witnessed, for example, a period of concentration on inputs in the "Green Revolution" strategy. Its limited impact on production⁴ and the patently harmful social polarization it has brought about have led to some shifts in current strategies; unfortunately, these are usually just as narrow in outlook as previous ones.

Strategies for particular countries are, furthermore, generally viewed as operating behind closed frontiers, without reference to international market forces nor to interventions by agents representing food systems external to the one of the country concerned. To hope that such strategies will succeed — whether they focus on inputs, on increased production, on reduction of post-harvest losses, or on any other segment of the food system chain — is utopian in so far as the central issue of the whole food system has not been confronted: the question of *control*.

This issue can be illustrated with examples chosen at random from any point along the food system chain; one might begin with seeds. Seeds can be selected either for maximum yield (given suitable and costly inputs) or for maximum *reliability* under stringent climatic conditions; they may lend themselves to easy self-reproduction or may deteriorate from year to year (e.g., hybrid corn); they may be geared to plants containing maximum nutritional value or, as in some developed countries, to the needs of mechanical harvesters. If *peasants* controlled current research on seeds, it is likely they would ask for, and get, such characteristics as reliability rather than maximum yield, reproductibility rather than deterioration, and maximum energy value. Because seed research and reproduction have been largely under the control of industrialized countries, such characteristics have not generally been sought. (Western-controlled seed development has also dangerously narrowed the world's food-grains genetic base.)

Control over one element of the food system implies its extension to others: again, the

choice of seeds determines not only the inputs required but also "appropriate" storage (e.g., hybrids are more delicate and will require special drying and chemical techniques as precautions against spoilage) and processing techniques (e.g., milling).

One highly significant aspect of this issue of control is that exercised by rural oligarchies over poorer peasants: in village after village a tiny local power elite holds sway over credit, marketing, access to water and other essential services, and employment (including that of family members), not to mention the use of the land itself under a variety of more or less extortionate tenancy or share-cropping arrangements. Such power has by now been widely recognized; even governments which have taken few steps to redress the balance pay lip-service to the concept of greater equality and recognize that top-heavy power structures act as a "political constraint" on food production.

A less widely acknowledged aspect is the increasing degree of control that *developed*-country food systems exert over those of the Third World. Much has already been written about the advantages industry has found in providing Green Revolution inputs, turn-key processing plants, processed foods, etc., but the expansion of markets for industrial products is only part of the picture. The orientation of Third World agriculture is itself increasingly determined by outsiders who can provide cash markets for various kinds of produce. Many crops formerly produced in the temperate zones for temperate-zone customers are now more cheaply grown in tropical countries. Traditional cash crops have been joined by luxury foods, many of them perishables.

The penetration of indigenous Third World food systems is largely, though by no means exclusively, carried out by transnational agri-business corporations. These companies generally no longer wish to exercise direct control over Third World *land*, which is now viewed more as an encumbrance than as an asset. Outside of huge ranching operations in a limited number of countries, the trend is, rather, towards divestiture of land (too likely to be nationalized or to produce an oversupply of particular crops in times of unfavourable market conditions) and towards the increasing control of *activities*. Operations entailing risk, such as farming itself, are left to the LDCs and their peasantries, while more profitable activities such as processing, marketing, and the provision of management skills are retained by foreign corporate interests.

There seems a clear risk that the current interest in post-harvest technology may provide another avenue for outside control over a further aspect of LDC food systems. Corporate

seminars have already been held on the topic, and the opportunities for profitable sales of equipment appear large. Centralized storage schemes will be particularly encouraged by corporations dealing in animal-feeds operations in order that they may be assured a steady supply of adequate raw materials. Family or village control over harvests stored will diminish as agri-business develops its interests in this area.

When industrialized countries intervene in the food systems of Third World nations, they are not merely providing separate items and techniques, nor even a "package" of techniques. With the help of their foundations, their universities, their corporations, and their banks, they are transferring a *dominant model*, which, over time, will tend to become unique as it blots out and absorbs the rich variety of peasant practices.

This model originated in the West, particularly in the United States, where prevailing conditions included plentiful land and relatively little labour for food production. It was therefore economically (although no longer ecologically) a rational response to the constraints of a well defined geographical and social situation. The goal of this model is to obtain maximum output *per person*, not *per unit of land*. The conditions which gave rise to this model are nowhere reproduced in the LDCs today (with possible exceptions in parts of the Sudan and Latin America), where, on the contrary, the provision of productive employment to rural people remains a major unmet priority. Because the dominant model contributes to the breakdown of traditional agriculture and to the dispossession of hundreds of thousands of peasants, it can only compound unemployment, while contributing very little, if anything, to increased food production.

Although the various international organizations have had different policies both synchronically and diachronically with regard to food production and distribution, they have at best treated the human and social objectives of development in a rhetorical way and have not allowed this rhetoric to interfere with their basic support for the transfer of the dominant agricultural model to the LDCs. In spite of all declarations to the contrary, they have fostered the emergence and the diffusion of high-technology, more capital-intensive farming. The adoption, in whole or in part, of the dominant model by LDC governments, encouraged by international organizations and frequently under pressure from transnational corporations or "aid" partners, has led to a series of disastrous social consequences. The gravest among these is the accelerating dissolution of self-provisioning agriculture both as a major element in peasant farming and as a subsistence base of the poorer rural strata — the prime victims of hunger.

A few of these consequences may be briefly stated:

- Relations of production and exchange, formerly oriented more directly to the maintenance of family livelihoods, become commercialized.
- Competition between peasants and entrepreneurial farms for the use of good quality land increases in direct response to higher demand for both food and export crops.
- The environment suffers as increasing numbers of families try to extract a livelihood from land that is diminishing in area available to them and is deteriorating in quality because of the over-use and improper husbandry they are obliged to practise for immediate survival.
- Agricultural "modernization" strikes women particularly hard. A single illustration: In India between 1961 and 1971 (a period corresponding to the introduction of the Green Revolution) the number of women cultivators declined from 27.6 million to 9.3 million — that is, *two-thirds* of all female farmers were eliminated in ten years — while the number of female agricultural labourers increased from 10 to 15 million.⁵
- "Food imperialism" accompanies the introduction of the dominant model. Nearly everyone is aware of the "baby-foods scandal," but the uses of foods like bread have received less attention. Foods furnish physical nourishment, but they are at the same time cultural symbols and indicators. Bread, for example, provides an easily transported meal for workers which can be consumed rapidly, without further cooking and in isolation from others.⁶ The present Chinese leaders seem now to want the introduction of western foods and "instant" rice. Economic production can be accelerated by reducing the time necessary for the preparation and the commensality associated with traditional Chinese foods.
- Although the dominant model may promote commercial pseudo-variety (*vide* US and European supermarkets), true cultural variety inherent in the production, preparation, and consumption of a broad spectrum of foods is markedly declining. This decline is accompanied by the deterioration of nutritional levels (refined foods replace whole grains, sugar consumption increases). Commercial promotion and advertising of western processed foods downgrades not only local diets *per se* but also the symbolic value of traditional foods, which are perceived, by comparison, as culturally inferior.

Such promotion may even motivate a switch to cash-cropping for income to purchase western status foods (e.g., soft drinks). Members of the Third World elite take the lead in such consumption and are then imitated by their less privileged compatriots, and not only as a result of multinational manipulation and advertising.

- Food aid plays a vital role in the introduction of new dietary habits.⁷ The foreign model will be biased towards foreign solutions for local problems. Whereas nutritionists in Mysore State had developed suitable high-protein foods from local raw materials, their formula was rejected in favour of corn-soya-milk blend from the US PL 480 Food Aid Program.
- Countries whose "export-led" agricultural strategies cause them to emphasize the supply of foreign markets and to forsake their peasantries attempting to produce food for local consumption, grow increasingly dependent upon massive cereal imports, tying them both economically and politically to privileged suppliers, more often than not the United States.
- Outside interventions and transfers of technology tend to reproduce the high-capital, low-labour-intensive characteristics of industrialized countries' food systems. This necessarily increases the *cost* of food, which must remunerate invested capital (e.g., centralized storage adds an estimated 20 per cent to the cost of grain sold in LDCs, according to an FAO expert). This, of course, places food beyond the reach of poor consumers and contributes to eliminating peasants who cannot compete in a wholly mercantilized food system.

However deleterious these consequences of the introduction of the dominant model (and the above list is, of course, far from complete), we wish to stress that the most serious among them is the marked decline of self-provisioning agriculture, along with the decline in traditional exchange systems, *rites de passage*, etc. — also as a consequence of internal monetization.

The drama of this process of decay lies in the fact that the "umbilical" attachment of people to the land at the level of the family or kingroup is, with all its insecurities and natural hazards, the food system that has maintained mankind during most of its history. In the market-oriented developing countries, trends are encouraged that inevitably confirm or accelerate the decline of self-provisioning before other forms of economic activity are able to offer alternative means of livelihood to the displaced peasantry. As a consequence,

marginalisation and proletarianisation are proceeding inevitably in Asia, Africa and Latin America, though at differing speeds and in different ways.

The full significance of this transformation is not entirely comprehended, but it seems to imply deterioration in the nourishment of the already poor as they are obliged to purchase food in unfavorable conditions from the market; massive migration to urban centers and a much higher level of conflict, disorder and repression. The removal of productive assets from women through new forms of division of labor in agricultural production may often result in a serious reduction of food provided to rural families.⁸

The actual producers of food — the overwhelmingly rural majorities of the Third World — are being progressively divested of their control over what they shall produce, by what methods, and the resulting harvest. Imitation of the western high-technology model and continued subservience to the needs of outside food systems cannot be expected to eliminate hunger — only to make it worse.

This is because, paradoxically, industrialized countries' food systems are not aimed first and foremost at feeding people — this is at best a by-product — but at generating a profitable return on investment.

It is now our task to examine what work scientists, food technologists, nutritionists, and other intellectuals might undertake if they hope to help stem the advance of the dominant model and thus to play a role in the alleviation of hunger.

II. SCIENCE, SCIENTISTS, AND THE HUNGER PROBLEM

The relationship between "science" and "development" is not a transparent one. A close and critical examination of this relationship may be itself a contribution to development and, ultimately, to science as well. Most western scientists would see the following statements as unproblematic:

- a. Science is/should be "value-free," "objective."
- b. The task of science is to discover *laws*.
- c. These laws should be as general as possible.
- d. The scientist (at least in his professional capacity) is a competent expert, tolerant, open-minded, and politically neutral.

The label "value-free" may hide a host of hidden values and assumptions of which the researcher may be unaware (although they may be obvious to others and surface in dialogue or confrontation). Scientific laws are conceived as reflecting a basically *unchanging* empirical reality. And in the notion of working towards "general" laws, there is a clear norm of universalism. Behind laws lie *paradigms*, or generally accepted fundamental beliefs about phenomena, describing their nature but also defining the kinds of new investigations that can be undertaken *without challenging the basic hypotheses*.

The preceding set of propositions might be contrasted with a concept of science which would not hide values and assumptions but try to make them explicit and subject to challenge and exploration. Such a science would be concerned not only with *seeking* invariances but also with *breaking* them; it would seek fewer universals and more insights relevant to the particularities of specific points in space and time. (Catastrophe theory is concerned with just such questions and is beginning to provide the mathematical structures for a science far more attuned to the qualitative and the discontinuous than to the quantifiable and the regular. It also stresses the irreversibility of certain phenomena and the impossibility of predicting them.)

The fundamental debate about western science in general, and the positivist orientation in particular, has clear relevance for the discussion of any specific science, especially when the historical and socio-economic origins of these branches of knowledge are examined.

Most science is goal-oriented, and geared either to production or to social control. Science began to serve the now-dominant economic system around the seventeenth century, but since the nineteenth century this relationship has become more explicit. The maritime character of the British Empire was not without influence on the development of meteorology and naval astronomy; nor was the rational exploitation of colonial possessions unrelated to the establishment of agronomy, minerology, and tropical medicine as separate branches of knowledge.⁹ It is not surprising that the earliest agricultural research focused on cash crops to the exclusion of African or Asian food crops.¹⁰ Nutrition studies, as first undertaken in Europe, were designed to determine the minimum standards necessary for assuring the reproduction of the industrial labour force (particularly miners).

Present-day scientists may agree with Mao Zedong that science is the crystallization of knowledge developed through humankind's struggle for production, but it is also their duty to ask, "Production for whom?" If science is to become relevant to the real needs of the Third World and to have any favourable impact on human and social development, it must undertake a fundamental re-examination of its goals and its methods.

Nutrition and food technology are not immune from the dangers of irrelevance, or, if they serve wrong goals, from doing positive injury. In the narrow sense, nutrition and food science may be concerned with the composition of food in terms of energy and nutrients and, by extension, with the technology of storing, processing, and preserving food. Such preoccupations may, however, lead to the standardization of diets and to depriving people of their freedom of choice. It may also deprive people of control over traditional patterns of food production and give control over food to a privileged class with the means to manipulate standardization and quality control for profit and power motives. Interference in these patterns may place more and more foods beyond the reach of the poor and hungry people who need them most. Such observations are in no way intended to cast doubt upon the sincerity of nutritionists and other food scientists nor upon their desire to contribute to alleviation of hunger, but they do plead for a broader understanding of how nutrition *can* be used for purposes of social control — by bureaucracies: nutrition can provide standards for administration of commodities

- and of human beings in terms of calorie content and need, thereby laying the foundations for a segmented and class-oriented approach to social reality;
- by corporations: nutrition studies can provide standards for assessing possible demand, thereby converting nutrition research into a branch of market research.

The risk of perverting the fundamental goals of nutrition research is heightened when researchers do not consider *who the actor is* who will implement the findings from nutrition research — i.e., *whom* the research is ultimately intended to serve. To the extent that findings take the form of general laws or principles, they can easily be converted into standards for classifying and administering human beings centrally, and into standards for industrialized mass-production of foodstuffs. At the worst, a world nutrition science leading to universal "correct" diets administered by transnational bureaucracies and provided for by global corporations would be the logical outcome of such research and fully compatible with the growing hegemony of the dominant model discussed in section I. Those who engage in research conducive to such ends should be challenged to specify whether they want such consequences and, if not, what, in their research, would preclude them.

If nutrition and other food research (including social science research) is to avoid harming the very people it seeks to help, then a far more holistic approach than hitherto practised is called for. People eat food for a number of reasons, only a few of which have measurable "scientific" meanings. The preparation of food is a creative act. Food is consumed for satisfaction of appetite and hunger, for ritual purposes, for pleasure and enjoyment, for enhancing feelings of cohesion and togetherness in the family, kin, or other social group. At times it can produce sharp divisions as well. Where is the nutritionist who can account scientifically for the American black community's "soul food?"

Human beings are not ambulatory "needs packages" implying the necessity for a corresponding set of "needs-satisfiers" — in the present case a "package" of calories and proteins in response to food-need. If nutritionists regard the problem as being merely that of a rapprochement between needs on one hand and satisfiers on the other, they will have missed entirely the human dimension. People have needs besides physical ones. Although it may be difficult to classify such needs scientifically, still they can be broadly characterized as needs for *security*, *identity*, and *freedom*. It is not because people are poor that scientists have the right to assign them first- and second-class needs.

The wrong kind of nutrition research may reduce *security* by making countries less self-sufficient; it may reduce *identity* by making people dependent upon the food insights of others instead of developing their own, or by encouraging reliance on processed foods produced elsewhere; it may cut down on *freedom* by reducing the range of food choices available. This range has, of course, always been excessively narrow for the poor, but it appears now to be shrinking for humankind as a whole.

We do not wish to overlook to minimize the life-enhancing contributions of nutrition research (e.g., in singling out specific deficiencies which have been corrected thanks to it), but we do wish to stress the dangers of misuse of this work. To the degree that research heightens the capacity of the rich and powerful to maintain and increase social control, it has been as much a cause of poverty as any other factor. Research has been largely a matter of a flow of information from the poor to the rich, to the advantage of the latter, and it is time to call a halt to this kind of work.

We have amply highlighted the dangers of too narrow a definition of the food problem (e.g., when limited to the provision of specific nutrients to acutely suffering groups) which diverts attention from the basic structural causes and leans towards "solutions" of a purely technocratic, administrative nature. There is also, of course, the danger of too broad a definition, presenting such a complex image of reality that all sense of proportion is lost and feelings of hopelessness and impotence set in. What, in operational terms, should determine the content of a holistic approach?

An example of the kind of work we would like to encourage will be found in the project on Food Systems and Society being undertaken by UNRISD (see note 8). This project refuses, in particular, the now widespread concept of "basic needs," which it replaces with the key words "livelihood" and "participation," thereby stressing the social and cultural as well as physical elements that make up an individual's or a community's life — as well as the importance of *their* definition (not the developer's) of what constitutes a good life. As with the GPID project, the effort is to arrive at a development "problématique" allowing a large number of variables and viewpoints to be looked at simultaneously. Both GPID and UNRISD are more concerned with *linkages* than with *elements* of systems, and hope for fruitful interaction between economists, sociologists, political scientists, agronomists, historians, nutritionists, ecologists, geographers, etc. Doubtless some form of practical co-operation should be sought between United Nations bodies which are concerned with hunger alleviation and which are equally convinced of

the need for an approach variously called unified, holistic, systemic, trans-disciplinary, etc.

There are other guidelines for research which might be usefully stated:

First, we must keep a clear sense of priorities. The misery of the hungry and starving is the absolute priority, but within a perspective broad enough to allow us to deal with over-consumption as well — the more so because the latter is dialectically related to hunger. Strategies for the South cannot succeed without some changes in the North, just as strategies for rural development without changes in the towns and cities are doomed to failure.

We must be willing to abandon the old "development" paradigm and have the courage to tread some relatively uncharted ground. Beneath the "growth model" that dominated development thinking for so many fruitless years lay the assumption that there was a unique stock of knowledge (science and technology), that this was the exclusive preserve of the industrialized countries, and that it needed to be transferred along with capital if Third World nations were ever to "bridge the gap." But a concept of *human* development cannot mean "western" or "elitist": does anyone really believe that insight is so asymmetrically distributed that billions of men and women deeply engaged in food production, preparation, distribution, and consumption know nothing at all, whereas a few selected researchers — nutritionists, social scientists, agronomists, etc. — know everything? When the matter is thus stated, most would agree that huge stocks of knowledge must exist beyond the confines of "official" science and technology, but that they have gone largely uncollected, untapped, and unmobilized. There may be, in fact, four separate stocks of knowledge, two of which are as yet largely uncreated:

- a. western, positivist, mechanistic science and technology;
- b. traditional, empirical, operational stocks of knowledge stored by peasants, closely adapted to survival within the constraints of a wide variety of environments;
- c. knowledge which may come from interaction between *a* and *c* — if only self-satisfied "experts" can be persuaded to listen and learn; if only peasants, so long disdained, can be persuaded they have something to teach;
- d. knowledge which may come from the significant demand in many *developed* countries for a simpler, more humane life-style.

New nature/human/technology "mixes" are needed, including many that have not been

imagined yet, but which might be part of that "third science" stemming from a real dialogue between North and South, peasants and experts. This would imply sharing decision-making power as well as knowledge; as mass consciousness increased, the elite would find their power diminishing.

Critiques of the kind of research which treats people as objects are growing more frequent; what a different kind of "dialogical" or "participatory" research could be is generally less well understood. There may thus be some initial merit in pointing to pitfalls which research has not always avoided in the past and to the issues that must be faced squarely if we hope to slough off the old paradigm.

Social scientists' (and nutritionists') methodologies were developed during the late nineteenth and early twentieth centuries in an urban, industrial, masculine, western context. They are thus more apt to be good at defining — and answering — questions posed by urban, industrial, masculine, western societies. Research has not only treated people like objects; it has suffered from environment-blindness, sex-blindness, and age-blindness. Nutritional science, for example, knows relatively little about traditional mixes and sequences of foods making maximum use of the environment. When it does take an interest in such matters, it is often to discover that western inroads are destroying dietary practices with a sound scientific basis (e.g., food combinations ensuring optimum balance of amino acids). The invisibility of women in most development planning has been stressed here and can only be corrected when women themselves take an active part in the planning process. Something is known about infants and children under five (unfortunately, mortality statistics form a large part of this knowledge), but almost no work has been done on old people. Third World people may have lower average life expectancies, but they also age more quickly. In fragile food systems, children and old people suffer disproportionately — just as they are the first to be eliminated (along with women) from productive work when control shifts from local communities to outside forces. (Both children and elders play a large productive role in traditional peasant societies.)

Food scientists and agronomists have much to learn from peasant cultivation and storage techniques. Agronomists, in particular, would benefit from recognizing that, if peasant science is "empirical," so is their own, and that very little is really known about the natural processes peasants have known how to exploit for generations. Western agronomy, with its heavy reliance on hybrids, chemicals, and monoculture, has reduced

genetic variety and increased the incidence of disease. Polycultural techniques should be returned to a place of honour. As to storage, it should be noted that in the Sahel, now considered a disaster area, before colonialism intervened, it was not socially acceptable to eat grain that had spent *less than three years* in the granary. This speaks volumes both about peasant foresight and about efficacious storage methods.

People have their own way of stocking information, but these are rarely the ways that figure on social scientists' questionnaires. If peasants are asked, for example, how large a yield they produced, or how much they spent on cloth last year, or even how large their plot of ground is, they may have difficulty answering, but this does not mean that they are stupid. Their measurement and information system merely uses other criteria — e.g., the "quantity price," or amount that can be bought with one unit of currency at different times of the year; or the "commodity basket" of purchases that are approximately the same every week or month; or the number of months they and their families were able to live off their own harvests without having recourse to purchased food. If a nutritionist surveys the same village one month before and one month after harvest, he/she will obtain entirely different results.¹¹

People who have rarely been hungry themselves (the surveyors) can perhaps not be expected to realize immediately that *annual* data about food intake would appear strange indeed to peasants and their families whose problem is survival tomorrow, next week, and next month, especially during the lean season. Nutritionists could, however, very usefully look at *fluctuations*, rather than at *averages* for various socio-economic groups. This would, of course, mean that surveys would have to last longer and that nutritionists would have to adopt the "people's methodology" in order to learn something worth knowing.

Because outside intervention has greatly distorted LDC food systems, there has been a well-meaning effort on the part of some food scientists to counteract the depletion of locally produced foodstuffs or to complement them by using "waste" materials. One should, however, guard against the kind of "dietary imperialism" promoted by technologists who devise foods expressly for "the poor." The most recent examples are the "single-cell proteins" (SCP) in the form of algae, yeasts, etc. These are all excellent protein sources, but they also suffer from an unpalatable taste unless processed; this may lead directly to the presence of an industrial mediator. While these food sources could theoretically be grown "synthetically" on pure nutrient sources, the costs would be

prohibitive, and for this reason waste substrates are preferred. Such food from waste is assumed to be acceptable for the starving (and indeed they may have at times chosen such alternatives themselves) but not for anyone in the developed world (where SCP is considered fit only for animal feed). A possibly sadistic resolution of this contradiction would be to oblige food technologists to live for a week/month on the substance they propose to the poor.

We do not wish to engage in debate on the now fashionable problem of "appropriate technology," except to point out that the relevant question is, as usual, "Appropriate to whom? " No technology *of itself* will alter social relations, and many technologies, even when small-scale, have the effect of reinforcing the power of the rich (e.g., biogas converters or bamboo tube wells in India almost always belong to the larger landholders). We might do well to reflect that in India, many (mostly unsuccessful) attempts have been made to install collective biogas converters, whereas in "collectivized" China, approximately 20 million families are using *individual* units. What the "appropriate land-tenure structure" is which can absorb the modern sophisticated technology is a better question than how underdeveloped agriculture can absorb the so-called appropriate technology.

III. ALTERNATIVES

The state of the world and of our several arts has obliged us, in this paper, to concentrate on the goals, processes, and indicators which we perceive as harmful or irrelevant and which we hope to avoid in the future, whereas we have only begun to sketch what some alternatives might be. We would now like to explore more deeply, though briefly, some of the latter.

The goal of development is social change. Development in broad, human terms can only be achieved in a democratic framework where participation is also a goal and a shift in decision-making power is part of the process.

This development process is incompatible with research methodologies which envisage only the collection of data by an "objective, impartial" researcher using a pre-designed survey questionnaire. A new methodology (above and beyond the techniques and contents suggested above) requires a commitment on the researcher's part actively to foster social change in the desirable direction. The researcher must no longer stand aside but must feel a sense of identity with the situation and, perhaps most difficult, must accept being changed by the research process — as, of course, the *researched* will also change if there has been a true interaction. Although the research process may begin with perception, it moves on to action, then to reflection and conceptualization, leading to further action, etc. — i.e., praxis. This "participatory" or "dialogic" research emphasizes the holistic approach — e.g., for food and nutrition problems, the researcher would enter into a dialogue with the people about life in the village or community as a whole, because food, nutrition, health, etc. are not viewed separately but as parts of life. The people's identification of the problem, their assessment of the obstacles to solving it, and their proposals for doing so in spite of the obstacles would form the total process leading to meaningful action. Interaction between the "expert" and the people should upgrade traditional knowledge as well as create new knowledge to be integrated into community practice.

We have attempted to make clear the concept of a food system, and to suggest that there are large systems or cycles — spanning countries, continents, or the whole globe — which are gaining in importance, while small food cycles — self-provisioning on a family, community, or regional level — are declining. This is perhaps an inexorable and irreversible movement; we cannot say. We believe, however, that it is the duty of the researcher and the development planner to protect, strengthen, and enhance the smaller cycles in all possible ways and to resist the encroachments of the large ones which are leading to increased hunger in the world.

We do not suggest, in a romantic way, that modern production techniques should be rejected as such or that self-provisioning agriculture must be maintained or restored as a necessary basis for food systems and rural livelihood. What is suggested, however, is that the transition to higher levels of technology, increased capitalisation and further economies of scale can only be achieved by means of firm and carefully prepared policies and programmes with the active participation of the different social groups concerned, and that much of the knowledge essential to the adequate preparation and execution of such policies is not available. In addition, the political will for such programmes and policies can hardly be expected to appear spontaneously in social structures that provide poor peasant groups with little power or influence. The worst danger is the precipitate uprooting and marginalisation of rural majorities and nomadic fringe groups before alternative sources of livelihood are available to them.¹²

Ideally, people should be in a position to make a *choice* as to the kind of food/agricultural system they prefer and to carry it out based on *their own design*, but we are very far away from that goal. The Food Study Group is aware that all its recommendations run counter to currently observable trends: more centralized state bureaucracies, growing power of transnational corporate capitalism, etc. Greater popular control over food-producing resources and food itself seems, however, the only viable long-term strategy against hunger. Useful research will foster this strategy and not only will try to help the now-powerless to formulate what they want and need, but will also attempt to provide them with useful information about the power structures that work against them so that they may frame more realistic strategies.

It is obvious that these strategies, like those of any real human and social development, will involve political conflict; this cannot be avoided. We are not, however, engaged in waiting for the revolution, which has little more to recommend it than waiting for the afterlife. We do believe that with the co-operation of men and women of good will everywhere — North or South, intellectuals or peasants — it is possible to build up countervailing powers, to work for slow revolution, to discover available political spaces

(and to create new ones) within which it is possible to struggle against the economic and class interests which have no scruples about eliminating millions of people.

The peasantry as a class is the oldest in existence. It has shown remarkable powers of survival — powers which have puzzled and confused most administrators and theorists. In fact . . . the essential character of the peasantry . . . despite all the important differences of climate, religion, economic and social history . . . actually derives from its being a class of survivors. It is often said that the majority of people in the world today are still peasants. Yet this fact masks a more significant one. For the first time ever, it is possible that the class of survivors may not survive.¹³

We see it as the task of intellectuals to recognize our debt to this class of survivors, our common interest not only that they endure but that they prosper. We must be prepared to move forward with them; to do so, we must be prepared to abandon our comfortable hypotheses, our scientific certainties, our favourite wisdoms — including, perhaps, those set forth in this paper.

NOTES

1. Although not on a one-to-one basis: in the US, the rich are generally slender while the poor may be obese.
2. For numerous examples, see Ray A. Goldberg, *Agribusiness Management for Developing Countries — Latin America* (Cambridge, Mass., USA: Ballinger, 1974).
3. H.B. Chenery et al., *Redistribution with Growth* (Oxford University Press, 1974).
4. See Andrew Pearse, "Technology and Peasant Production: Reflections on a Global Study," *Development and Change*, 8 (1977); and same author, *Seeds of Plenty, Seeds of Want* (United Nations Research Institute for Social Development [UNRISD], forthcoming 1979).
5. "Report on Resurvey of Economic Questions — Some Results," *Census of India 1971, Miscellaneous Studies*, Paper 1 of 1974 (New Delhi), Table 8, cited in a confidential World Bank memorandum. Women fare worse than men in many other areas as well: the same report shows that the number of women workers in occupations other than farming *declined* by more than 17 million whereas the total female population *increased* by more than 51 million. As the Indian Council of Social Science Research put it in *Critical Issues in the Status of Women* (1977), "There is (1) an extensive mortality among women and female children (2) a glaring disparity between men and women in their access to health and medical services (3) a persistent decline in the sex ratio (the proportion of women in the population) (4) an increasing gap between men and women in literacy, education and training and (5) an accelerated decline in women's employment since 1951," as we have just seen.
6. Naturally, the adoption of bread is also advantageous to the principal western suppliers of wheat. In this connection, the *Trip Report* concerning a five-week visit by four representatives of the US Great Plains Wheat Association to nine African countries in 1977 is illuminating. The visitors met with anyone who might be or become even remotely connected with wheat use (from government ministers to millers to pastry-shop keepers) and concluded, "On the basis of *sustained and increasing levels of food aid* and concessional [US government] financing for wheat purchases, and through . . . *extensive market development* programs in . . . Africa, the import of wheat to these markets should increase significantly over the next five years" (our emphasis).
7. Cf. the Great Plains Wheat Association *Trip Report*; and Senator George McGovern (1964): "Japanese school children who learned to like American milk and bread in US-sponsored school lunch programs have since helped to make Japan our best dollar purchaser for farm products."
8. Drawn from the United Nations Research Institute for Social Development project proposal *Food Systems and Society*, with whose analysis the GPID Food Study Group is in full agreement. The group wishes to draw particular attention to this study: UNRISD/78:C.14/Rev. 1. (Quotes from p. 21.)
9. See M. Anis Alam, "Science and Imperialism," *Race and Class*, vol. 19, no. 3 (Winter 1978), who also points out that "the title 'science' has been exclusively reserved for that knowledge and those skills which can be systematized and incorporated into the academic culture of the ruling capitalist class."

10. Pierre Spitz, "Notes sur l'Histoire des Transferts de Techniques dans le Domaine de la Production Végétale," OECD Seminar on Science, Technology and Development in a Changing World, April 1975 (DSTI/SPR/75.45).
11. Details of a seasonal methodology are given in Pierre Spitz, "Drought, Stocks and Social Classes" (UNRISD, 1979).
12. UNRISD, *Food Systems and Society*, p. 21.
13. John Berger, "Towards Understanding Peasant Experience," *Race and Class*, vol. 19, no. 4 (Spring 1978).