

ABSTRACT

Food security, self-sufficiency and democracy

Paolo Palazzi

Self-sufficiency is both not necessary nor sufficient for food security, but many economists and countries still present self-sufficiency as a important and sometimes decisive weapon against hunger in the underdeveloped countries.

The generally cited reasons are connected with two phenomena:

- 1) Many of the economies that have become increasingly externally dependent for food have experienced worsening problems of food security and hunger. That is, growing dependency has not been automatically accompanied by sufficient increase of their international purchasing power.
- 2) The possibility of utilizing the increasing global integration of the market in foodstuffs implies acquisition of purchasing power, which depends on the equilibria and the laws of the international division of labor, and the poorest countries have no leverage in this regard.

To our mind, a third consideration should be added, namely the relation between the political power structure in the countries of the Third World and the attainment of food security.

The only way to assure food security for everyone will be to provide for self-sufficiency at those levels of social aggregation where a high degree of participation prevails, or where, in other words, group security is likely to mean individual food security as well. Unless the power structure of a social aggregation is theoretically and technically capable of providing food security for all members in conditions of self-sufficiency, moving on to systems of security other than self-sufficiency is unuseful.

This observation has led many advocates of self-sufficiency to go back on the lowest, most elementary units: families, villages, local districts.

This approach to food security is suggestive but in the contemporary world, even among the developing countries, the level of aggregation at which food self-sufficiency is practicable very often extends beyond regional and national borders.

It follows that the real possibility of food security depends increasingly on the institution of a political system of democracy and participation, from the grass-roots up through all levels of aggregation to international relation.

In a world in which the national food problem is increasingly international, and whose solution, in economics, implies study of the international division of labor and world trade before one can focus on problems of national production and distribution, on the contrary, from the political point of view, hunger and food security need to be treated as a problem of the national and local political structure, social organization, democracy and participation.

Food Security, Self Sufficiency and Democracy*

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The theme of food security is certainly one of the most commonly treated in the literature on economic development. Economists, demographers, anthropologists, nutritionists, ecologists, agronomists, and other specialists, from their various standpoints, have all taken an interest. The "green revolution" alone was the object of over 2,000 published essays and articles between 1960 and 1984 (Karim, 1986), while Dréze and Sen's 1989 monograph on world hunger cited 1,500 references in its 77-page bibliography. In such circumstances, obviously, almost everything has already been said, all conceivable theses have been demonstrated and rebutted. An original contribution is now possible only through costly and laborious field work and key studies; and even these often conclude that the problem of food security is global, that partial solutions are very unlikely to be feasible, returning us to the general problem just mentioned.

What follows, accordingly, is intended simply as a further general reflection, whose usefulness, as I conceive it, is to deal systematically with a set of concepts and theoretical positions concerning food security in the light of the frequently concomitant issue of self-sufficiency.

The relationship between food security and food self-sufficiency will be approached by successive approximations, depending on the field of reference. To begin with, let us examine the relationship for the world as a whole. At this level, needless to say, self-sufficiency is a necessary condition for food security. After a discussion of global self-sufficiency in food, I will analyze the problems and the conditions in which self-sufficiency can result in *de facto* food security.

World food security and self-sufficiency

In theory, the definitions of food self-sufficiency and food security are simple enough¹. Self-sufficiency is the capacity of a system to produce, independently and without need for external inputs, the quantity of food needed for the physical and social sustenance of all the people belonging to the system². Food security is the system's ability to supply that amount to all its members, by whatever means. These definitions may be understood statically, as capacity at a given point in time; more properly, they should be conceived dynamically, with reference to more or less protracted periods. The World Bank (1986) speaks of "all the people at all times".

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¹ Actually, there are more than 200 different definitions of food security alone (Smith, 1992; Maxwell, 1996), but for the most part the differences are marginal not structural, and are linked to the context of analysis.

² With respect to food security and nutrition, the standard of reference is usually an "active and healthy life" (e.g., World Bank 1988). I prefer the more general term of physical and social élite, which brings out the not

At the global level, the concepts of food security and of self-sufficiency overlap, both statically and dynamically. In a closed system such as our planet, self-sufficiency is the necessary condition for global food security: where there exists the structural possibility of self-sufficiency, there also exists the possibility of food security.

The possibility of food security can be formulated in a simple equation expressing the relation between the potential demand and the potential supply of food. The possibility of food security exists if:

$$F \leq P$$

in which F represents the food needs of the population (potential demand) and P is productive capacity (potential supply). Let us now define the two terms of the relation more carefully.

a) Food needs

The need for food is given by

$$F = LK$$

where L is the population to feed and K is the average daily per capita caloric intake needed for social survival³.

Measuring L and K is not entirely straightforward. One problem is the dynamics of the relation. In fact, calculating the growth of a population over time depends in part on the forecast of food availability; at the same time, the population trend itself, acting through changes in the age structure, helps determine necessary caloric intake. In analytical terms, therefore, we have a vicious circle, in which population growth depends on the availability of food, which depends on the average caloric need, which in turn depends on population trends. The way out is to calculate the food demand function, F_p , with reference to the dynamics of a theoretic population, L_p , whose size and structure does not depend on the availability of food. That is, we refer to the demographic dynamics of a hypothetical society in which the quantity and quality of food available does not constitute a constraint. This means determining potential demand for food, which in today's real world can be presumed not to differ greatly from effective demand but whose logic of determination is different.

purely "animal" nature of human survival needs. On this, see also Oshaug (1986), Dréze (1989) and Schiff (1990).

³ Where K depends mainly on the structure of the population (age and activity).

Determining the potential amount of food that has to be supplied, K , is a two-step process. First, one establishes the intake needed for the physical and social survival of an average individual. Second, one finds the demographic and social characteristics of the population concerned, which influence that average quantity. This means first establishing average food needs for every homogeneous group within the population (homogeneous being referred to food needs for survival, on the basis of such factors as age, sex, geographical location and type of work performed) and then adapting it to the particular structure and dynamics of the population⁴.

The equation for potential food demand at a given time can thus be rewritten as follows:

$$F_t = \sum_{i=1}^n L_{ti} K_{ti}$$

in which:

F = potential demand for food

L = number of individuals

K = average individual food need

i = a group of individuals with a given food need

t = time

n = number of food-need groups that make up the population.

b) Food supply

The food supply we are interested in is defined as potential output, or productive capacity (potential supply). This may be expressed as a proper production function:

$$P_t = f(T_t, RR_t, RNR_t, RL_t, E_t, IM)$$

in which supply at time t depends on:

T = the existing technology, measured as average productivity per worker;

RR = renewable resources (work capacity and readily renewable raw materials);

RNR = non-renewable resources (or those whose renewal is excessively slow compared to the rate of depletion);

RL = Limited resources (essentially, arable land);

E = the ecological situation;

IM = the possibility of importing from outside the system either food itself or the input required for its production. For the world population, of course, this is precluded.

The static calculation or short-term forecast of the values of this function is complicated but not impossible. Forecasting the dynamics of potential food supply over the long run is much more difficult. This is because there is an inverse correlation between predictive capability and the length of the interval covered. One way of

⁴ The debate on food needs among nutritionists is quite a complex one, in fact, and has changed very substantially over time. The questions are first, the technical debate delineated by the acronyms PCM (protein plus calories) and PEM (protein plus energy) (see Foster 1992) and, second, social and cultural differences in food (Payne 1990).

proceeding is to define as irrelevant any period so long that the related predicted events cannot significantly affect the behavior of governments and the major actors involved in food production policies. If forecasting efforts can be limited to shorter periods, they may be more reliable and relevant.

Actually, even in this case there is feedback between predictability and the long-run definition; for the greater, more refined and more reliable one's predictive capacity is, the likelier it is that predictions can affect the actors' conduct. Hence, relevant predictions tend to cover a longer period.

Concisely, we can define the short and medium term as the time for which predictions of food production capacity are reliable enough to affect the society's behavior.

Obviously, long-run forecasts can also be made, but their scientific treatment is difficult and controversial, while their practical importance depends more frequently on a kind of mass suggestion, sometimes a mere fad and almost never of real significance for behavior, than on rational factors, public or private, that may be reflected in the policy decisions and the actions of those who can actually affect the determinants of the food production function and its structure.

The problem of food at the world level

At first, essentially two hypotheses emerge from comparison of the possible future evolution of the main aggregates on a planetary basis (potential food demand and supply), expressly bearing on the question of self-sufficiency: what we may call the "doomsday scenario" on the one hand and "optimistic developmentalism" on the other.

1) The doomsday scenario

This is the pessimistic thesis that at some point the potential supply of food will come to be *permanently* less than the potential demand. This is the hypothesis of those who rehearse, in modern forms, the Malthusian script. Some place greater emphasis on the limits to non-renewable resources and the state of the environment, others on the dubious ability of technology to keep pace with growing demand or decreasing resource availability.

To illustrate, let us set out the list of reasons given by Ehrlich (1993) why a volume of production sufficient to ensure food security for a growing population in the future is impossible:

- 1) the diminution of arable land and the difficulty of finding more;
- 2) the limited availability of water for irrigation;
- 3) soil erosion and deterioration;
- 4) the physical limit to productivity per acre;
- 5) limits to fertilizer use;
- 6) problems of pest control;
- 7) decrease in biodiversity;
- 8) increasing ultraviolet radiation;

- 9) air pollution and acid rain;
- 10) climatic change and rising sea level;
- 11) decrease in free inputs from the ecosystem⁵.

On these hypotheses, obviously, potential output tends to constitute the upper limit to demand. That is, potential demand will necessarily, independently and automatically tend to adapt to the cap on potential supply. Unless there is an active policy of demand reduction, this adjustment can only be traumatic and violent. The results will be unpredictable, and one cannot rule out the danger that the eventual equilibrium might be achieved at levels of potential demand and supply insufficient for modern social organization.

Naturally, this prediction of a growing imbalance between potential food needs and supply is accompanied by economic and population policy suggestions for the gradual and less painful adjustment of demand to the trend in potential supply. The ideal equilibrium is one in which demand and potential output are self-fuelling, i.e. potential demand can be met by a supply production function no longer subject to a limit constituted by use of non-renewable resources. This is to say that the pace of utilization of such resources is slowed sharply enough to bring it near the capacity for natural or technological renewal, while the use of limited renewable resources becomes constant and the economy, in practice, stationary⁶

Depending on the author's analytical or ideological approach, the active policies most heavily recommended will stress either the limitation of population growth or quantitative and qualitative elements in the composition of demand and the structure of the production function.

The problem with this literature is twofold, embracing both the reliability of the predictions and that of the proposed solutions. Too often, the predictions are little more than extrapolations of past developments. And as they refer to occurrences set several decades in the future, their credibility is dubious at best, as regards both productive capacity and demand growth.

The solutions suggested fall into two categories: those simply calling for a decrease in the rate of population growth (one that would be, de facto, coercive) and those calling for structural modifications in the conduct of political and economic institutions and individuals incorporating the catastrophic predictions and seeking to prevent or delay their realization.

⁵ There is a vast literature aligned with this position, and apart from variations in the severity of the catastrophe envisaged the analysis is quite uniform, taking up not just the problem of world food resources but of all productive activity in general (see, for example, Gowdy, 1994; Kennedy, 1993; Simon, 1981; Daly, 1989).

⁶ For this approach, see Daly (1974, 1977).

Both sets of proposals, *quite independently of an assessment of their scientific validity*, have so far shown little ability to elicit large-scale or lasting involvement on the part of institutions and individuals: the first group because, despite their apparent simplicity, they pose complex problems of implementation and efficacy; and the second owing to their indeterminacy and their cost in terms of material welfare⁷.

For present purposes, these positions can be classed as long-term forecasts, hence not particularly relevant to the analysis of food security. Their unquestioned relevance to a theoretical, scientific discussion with repercussions on a wide variety of fields, such as economics, ecology, politics, ethics, and so on, naturally remains intact.

2) *Optimistic developmentalism*

The second thesis is that the growth of potential supply will be structurally greater than that of potential demand. This is certainly the majority view within the literature,⁸ and its acceptance forms the point of departure for our analysis of food security.

The prevailing view, then, posits the possibility of global self-sufficiency of food resources. However, in this situation, three problems may arise.

i) The first arises when the capacity of potential supply to meet demand fluctuates over time, which means that while it is true that on average supply will equal or exceed demand, this is not the case at all times:

$$\sum_{t=1}^T F_t \leq \sum_{t=1}^T P_t \text{ but } F_t > P_t \text{ for some } t.$$

ii) Second, there is the possible discrepancy between potential productive capacity and actual output. Effective production may be so far below the potential that it cannot meet food needs:

$$F \leq P \text{ but } P^* < P \text{ and } F > P^* \text{ where } P^* \text{ stand for actual production.}$$

iii) Finally, there is the problem of distribution: even if actual aggregate supply is at all times larger than potential demand, there is no guarantee that the needs of every individual group or member "i" of the population will be satisfied:

$$F_t \leq P^* \text{ but } F_i > P_i \text{ for some } i.$$

⁷ Undeniably there has been an increase in sensitivity to these issues, which has affected, if only marginally, some largely cultural aspects of the behaviour of a small number of people. But in our view acceptance of these hypotheses at the world policy level is still distant, and perhaps impossible.

⁸ See Pinstrup (1995), Griffin (1987, 1994), Gunning (1994), Mellor (1988), Foster (1992), Lapp, (1977), World Bank (1986), Dréze (1991).

The first problem is theoretically easy to analyze and solve. It is known as temporary food insecurity and is generally analyzed with respect to single countries or regions but can be readily adapted to the world situation. It is a matter of arranging a structure of stocks of foodstuffs and their distribution, with the proviso that the cost of preservation and distribution, which as a rule is very high (Parikh, 1994), must form an integral part of the food production function⁹. Of course, what is simple in theory may prove extremely complicated in practice, given the political, economic and administrative impediments.

Unlike the first, our second problem is highly complex in theory. To analyze the relation between potential and effective production, one would have to construct a global aggregate food production function, which in turn requires analysis of an enormous range of variables (market forms, production techniques, cost structure, price determination, world trade rules, and so on) that can affect supply. In practice, empirical observation has led to acceptance of the thesis that food supply is highly elastic to variations in demand, and the assertion of the World Bank (1986) that "The world has food in abundance" (p.1) is accepted by most of the literature as referring to effective output and to its growth over time, taking it for granted that potential supply and its growth are a good deal higher still.

The third problem is the one most typically relevant to the specific discussion of food security. Once we leave the terrain of planetary analysis, where we analyze the food security of the Earth's population as a whole, to introduce the concept of two or more different actors, the existence of security at any given level does not ensure security at lower levels. The number of levels that may be considered ranges from two (say, developed and underdeveloped countries) all the way up to the number of individuals in the reference population ("all the people").

This problem can be summed up in a simple proposition: the existence of food security for a volume of demand whose growth does not depend on the availability of food itself does not ensure food security for population groups smaller than the total world population. In other words, food security at the planetary level cannot guarantee food security for the developed and the underdeveloped countries; and at the grassroots, even if every family group enjoys food security, this does not necessarily mean that the same applies for every family member.

Even in theory -- perhaps above all in theory -- there is no possibility of constructing a working model of the production function incorporating an automatic ability to ensure satisfaction of the potential demand of all the individual actors involved. More precisely, the only mode of production that can automatically assure the food security of every individual is one in which each member of society is self-sufficient in food production.

We thus have two extreme cases in which in practice food security and self-sufficiency coincide: one considering the world as a whole and one considering the single individual. In between, the relation between food security and self-sufficiency is indeterminate.

⁹ The literature on food storage in global regions and individual countries is vast and interrelated with that on aid or subsidy mechanisms. For recent literature see Bigman (1985), Sahn (1989), McLaren (1990), Parikh (1994), among others. For a critique of this approach, see Lele (1984).

One conceivable analytical approach is to break the problem down into successive stages of approximation. The first stage could subdivide the world population into geographical groups and construct a production function incorporating the capacity to satisfy on average, these areas, and then deal with the mechanism of production and redistribution between areas that ensures the food security of each.

Taking a simple two-country example, we have the possibility of food security for the two areas if:

$$F_a + F_b \leq P_a + P_b$$

where F and P are potential food and demand and productive capacity and the subscripts a and b stand for the two countries.

It is further assumed that

$$F_a + F_b \leq P^*_a + P^*_b$$

where P* is effective production of food.

On these hypotheses, three situations can be envisaged.

1) Actual individual self-sufficiency

$$F_a \leq P_a \text{ and } F_b \leq P_b$$

and

$$F_a \leq P^*_a \text{ and } F_b \leq P^*_b$$

This is the trivial case of both potential and actual self-sufficiency in each of the two countries; both countries enjoy food security.

2) Possible but not actual individual self-sufficiency

$$F_a \leq P_a \text{ and } F_b \leq P_b$$

but

$$F_b > P^*_b$$

In this case country (b), though having the potential, does not have actual self-sufficiency in food; the necessary condition for it to achieve food security is that:

$$P^*_a - F_a \geq F_b - P^*_b$$

Country (a) must produce a food surplus large enough to potentially cover the deficit of country (b), or country (b) must increase their actual food production.

3) Self-sufficiency unattainable

$$F_a \leq P_a \text{ and } F_b > P_b$$

In this case country (b) lacks the possibility to produce enough food for its population; it is thus not in a position to assure food security independently. Again, we have food security only if:

a)

$$F_a - P^*_a \geq F_b - P_b$$

when

$$P^* = P_b$$

b)

$$F_a - P^*_a \geq F_b - P^*_b$$

if

$$P^*_b < P_b$$

In the first case country (a), with excess capacity, will have to produce a surplus large enough to compensate for the potential food deficit in country (b). In the second case, it is the actual deficit that must be offset, and this may be larger than the potential deficit

Save in the trivial case of possible and actual self-sufficiency, in all these scenarios the possibility of food security depends on the production of a surplus by one of the two countries. This condition is necessary but not sufficient, however, in that there must also be a process of food transfer from the surplus to the deficit country. Determining the conditions for food security for two countries in a non-trivial situation thus requires the construction of a production function in the potential surplus country in which the surplus is produced and in which the sole purpose of this overproduction is its transfer to the deficit country¹⁰.

Food transfer

A food production function that embodies the necessity of production greater than domestic demand in order to transfer the surplus to other countries can be posited on the basis of two hypotheses:

1) The market solution, with international trade of food for other goods (economic interest).

2) The political solution, to ensure equilibrium (political interest).

¹⁰ For our present purposes, overproduction for other reasons is not relevant.

1) *The market and international trade*

If the transfer of food is to occur through mechanisms of pure, direct economic benefit, then one must analyze the mechanisms that set international trade in motion. In this case the question of food security loses its specificity and must be integrated with all the other factors involved in economic relations between different geographical areas.

Continuing at the general analytical level, a country's economic interest in producing a food surplus that will offset another's deficit can be divided into three types depending on the cause of the deficit:

- a) effective production of foodstuffs less than domestic demand due to specialization;
- b) effective production less than domestic demand not due to specialization;
- c) productive capacity less than domestic demand.

a) The first of our three cases of underproduction of food is the simplest, and requires little explanation. This is the case of international specialization, the food deficit emerging ex-post owing to the displacement of resources to other sectors, in which the country enjoys a comparative advantage. The production functions of both countries incorporate the benefits of the trade of food for non-food goods, and food security is assured by market conditions. If preferences and market conditions change, it is always theoretically possible to return to the trivial situation of individual food self-sufficiency.

b) Effective production unable to meet demand not due to specialization corresponds to a situation in which the deficit country, for domestic or international causes, is unable to produce enough food to ensure food security, even though it has the potential to do so. Here, there are two possibilities.

i) The productive incapacity is limited to the foodstuffs sector, meaning that the country has the possibility of specializing in products attractive to the other country in exchange for food. This would bring us back to a situation of international specialization, although in this case trade would be triggered not simply by comparative advantages for both countries but could be dynamically spurred by the survival needs of one of the two.

ii) The incapacity to produce foodstuffs is accompanied by an incapacity to produce other exportable goods. In this case no "market solution" is possible, and the only option for food security is that of a political transfer.

c) Capacity less than potential demand. This means a geographical area that is *structurally* incapable of achieving food security through self-sufficiency. In such a situation, if the country can generate a surplus in other sectors of goods to trade with the food surplus country (clearly, such a country will have a powerful incentive to specialize in internationally tradable goods), we return to the first situation; otherwise, food security cannot be attained through strictly economic mechanisms and a political solution is inevitable.

2) The political solution

In two of the cases considered above, the political solution represents the only way of ensuring food security for the deficit country. "Political solution" may be taken to mean unilateral food transfers, either directly or indirectly, via the transfer of other resources, from the surplus to the deficit country without direct economic compensation.

This is clearly the case of foreign aid. There has been intense discussion of cases and motivations of aid to the developing countries, and food aid in particular, but no conclusive assessment of the short- and long-term impact on food security¹¹. Whatever the position, there is no doubt that if there are conditions in which the sole means of offering food security is the political solution, it is indubitable that the only instruments at the disposal of such a solution are direct and indirect aid¹².

How can the political motive be included in the food supply function of the potential surplus country? The answer lies in an analysis of the adjustment process of what we may call the ex-post food security equilibrium of the deficit country. Given that, ex post, the demand and effective supply of foodstuffs tend to balance, a country unable to act on supply has two alternatives to aid: the passive course of forced adjustment through population decrease owing to increased mortality and malnutrition; and the use of non-economic instruments to secure food resources (military aggressions, mass emigration, etc.).

In the first of these alternatives, a major role could be played by the inclusion in the surplus countries' supply function of humanitarian or solidaristic motives, in view among other things of the fact that it is not easy to predict when and at what level ex- post equilibrium can be achieved via increased mortality. In the second alternative, consideration of the costs of the adoption of an aggressive, destabilizing policy by the deficit country could induce the surplus country to factor positive externalities into its production function (calculated as the inverse of the negative externalities of destabilization), counterbalancing the costs of food aid.

Policies for food security

By policies for food security, we mean measures that actors within a society can take, individually or collectively, to assure their own or their group's food security. Here, "actors" are defined as the groups for whom overall food security is not guaranteed; they vary with the level of aggregation of the analysis. One may speak of the underdeveloped

¹¹ In favour of food aid see, among others, Islam (1986), Hay (1988), Singer (1987), Molla (1990), Fletcher(1992); against, Lane (1980) and Clay (1991).

¹² In many countries, such as Italy, the term "aid" is rejected in favour of "cooperation", but irrespective of the political, economic and ethical motivations, cooperation too implies an unrequited transfer of resources, human or material, that would not have taken place in a "market" situation; hence, it falls into our category of aid.

countries as a group, of particular geographical areas, of countries, villages, social groups, even families and individuals.

This implies studying the causes of any lack of security and identifying suitable policy measures for eliminating them. Much has been written on the possible causes and remedial measures for food insecurity. The causes can be grouped into three classes of phenomenon (Islam, 1986):

- 1) variability of food availability over time;
- 2) material unavailability of sufficient foodstuffs;
- 3) insufficient purchasing power.

The countermeasures proposed in the literature are divided by Adelman (1990) into eight categories:

- 1) buffer stocks to stabilize farm prices;
- 2) food stocks to cope with drops in supply;
- 3) international insurance coverage against drops in a country's international purchasing power;
- 4) food aid;
- 5) subsidies to farm production or to consumers;
- 6) self-sufficiency;
- 7) development of farm productivity;
- 8) increased income of the poor.

All these measures have their pros and cons; virtually all have been implemented, analyzed, criticized, revised and repropounded. It is not difficult to conceive simple, economical mechanisms of food aid that can easily assure food security. The recently proposed self-targeting mechanism (Griffin, 1991, Chapter 4, and 1994, p. 89), for example, could automatically solve the security problem by means of a rationing system with certain features:

- i) it must be permanent, not contingent;
- ii) it must be available to all interested parties, not pre-selected groups;
- iii) the selling price of the rationed food must be decided politically (possibly even free distribution);
- iv) every individual must be in a position, with his income, to purchase enough food on the rationed market to make up for any food deficit on the free market and thus achieve subsistence;
- v) the rationed food must be of inferior quality and must have negative elasticity with respect to income, so that the share of rationed food in the total diet is decreasing and, *de facto*, marginal to subsistence needs¹³.

At the other extreme, we have such positions as those of Chambers (1987), Csàki (1989), Erlich (1993) and Salih (1994), who argue that the answer is to change relations between the rich countries and the Third World and/or to transform our concept of economic development.

¹³ Griffin conceives his rationing plan at the national level and designed for individuals, but it could perfectly well be applied at the global level and addressed to single countries.

In between we find many other domestic and international economic policy measures, embracing all possible areas of intervention¹⁴. Our interest here is in why, among the instruments for assuring food security for countries and regions in permanent difficulty, *the emphasis continues, and perhaps even increasingly, to be placed on policies for self-sufficiency or at least on increased self-production*¹⁵.

Self-sufficiency as a tool for food security

We have seen that self-sufficiency and security are coincident notions only when the object of study is the world as a whole; when two or more separate agents are posited, the two concepts cease to be equivalent.

The generally cited reasons why self-sufficiency in food is still broadly considered as an important and sometimes decisive weapon against hunger in the underdeveloped countries are connected with two phenomena.

1) Many of the economies that have become increasingly externally dependent for food have experienced worsening problems of food security and hunger. That is, growing dependency has not been automatically accompanied by sufficient increase of their international purchasing power (Dréze, 1989).

2) The possibility of utilizing the increasing global integration of the market in foodstuffs implies acquisition of purchasing power, which depends on the equilibria and the laws of the international division of labor, and the poorest countries have no leverage in this regard (Erlach, 1993; Salih, 1994).

To our mind, a third should be added, namely *the relation between the political power structure in the countries of the Third World and the attainment of food security*.

Before developing this theme, I shall return briefly to the concept of food security itself. The fact is that when one goes below the planetary level of analysis and discards the assumption that all agents share the same concept of food security, discussion of food security policies becomes much more difficult than it would appear, even in theoretical terms.

Generally speaking, food security can be considered every human being's primary objective. A social organization is an aggregation of individuals but it certainly cannot be taken for granted that aggregating individual actions automatically makes food security for each the primary objective of the organization. In other words, the sum of individuals' basic objectives of food security does not necessarily mean that aggregate security is defined as food security for every group member.

There are essentially two reasons for this discrepancy: individual preferences and the social power structure.

¹⁴ For a review of the measures proposed to solve the problem of food security, see, among others, Foster (1992).

¹⁵ For a recent selection of contributions on how to achieve self-sufficiency, see Ruppel (1991).

1) Individual preferences

The structure of individual preferences can be simplified and summarized by analysis of the temporal dimension of food security. This may range from the purely static ("day to day") to much more extensive periods, even considerably beyond the life expectancy of the individual.

This differentiated preference structure entails a sharp differentiation of individual choices and conduct, with overall results that are hard to predict or rationalize without the mediation of a social organization and a higher decision-making power. However, mediation unavoidably has the shortcoming that it cannot guarantee the full satisfaction of every individual; thus for some individuals it may not ensure food security.

2) Social organization and decision-making power

In all societies, individuals and groups can and usually do have differential ability to impose their preferences. The power structure within a society generally depends greatly on these differing abilities. And the power structure certainly has a decisive weight in decisions on food security in any society.

In choices concerning resource utilization and growth paths, conflicts over the assertion of each party's preferences inevitably arise. In some cases these conflicts may affect the food security of individuals and groups within a society, subject to the same collective decision-making power. In other words, the objective of food security for all members of the society may clash with different objectives pursued by some individuals or groups. The mechanism whereby decision-making power is formed thus becomes decisive to understanding which policies, if any, will prevail in the realm of food security.

This argument applies at all levels of social aggregation, from family to village, from nation state to geopolitical region, to the entire planet. The point is that study of food security, and above all policy debate, cannot neglect the structure of power within the reference society. An understanding of the workings of the family hierarchy is just as important to food security policy as R&D work on new fertilizers or crop varieties.

It is often taken for granted that food security for all is automatically adopted as an objective by social institutions at all levels. This may not be so, and as we shall see it powerfully affects policy choices and the likelihood of success.

Food security, self-sufficiency, power and democracy

The body of work on the impact of the power structure in Third World countries on food security is substantial. The topics dealt with include gender discrimination (Gittinger, 1990; Koopman, 1991; Kennedy, 1992; Dasgupta, 1993), the international power structure (Musuroke, 1990; Bigman, 1993; Salih, 1994), the relative power of small and larger farmers (Schmidt, 1995; Alamgir, 1991; Pinstруп, 1991), and political relations between the peasant and the urban population (Streeten, 1986; Chambers, 1987; Guyer, 1987; Malaska, 1989; Epstein, 1982). However, the proposed economic policy

solutions rarely address the problem of how relative power should be modified in order to transcend the political and social structures that are one of the main impediments to food security for all members of a particular social aggregation (family, geographical area, country, etc.) even when overall food self-sufficiency is technically possible¹⁶

Here one can hardly avoid going back to the work of Sen (1981), and especially his monograph co-authored with Dréze (1989). The conclusive consideration of the importance of the people's active participation, either cooperative or adversarial, to tackling and solving the problem of hunger certainly warrants endorsement. "Participation", as used by Sen and Dréze, goes far beyond the concept of political democracy, which while probably necessary is certainly not sufficient to trigger active popular participation. It is common knowledge that in the countries of the Third World, where the dominant power structure at national, local and family level is almost always anything but democratic, political and decision-making relations are most assuredly not participatory¹⁷.

In an actual situation like our present one, in many cases the only food security measures that stand any chance of success require change, and often radical change, in the operation of political structures. It is obvious that changes in political structures and power involve paths and mechanisms that can hardly be included or even contemplated as part of economic and social policy measures¹⁸.

These considerations, I believe, are what underpin the retention of the goal of self-sufficiency as a significant and often primary instrument of food security. In a system in which food security and policies for attaining it pass through a power structure whose operating criteria do not call for the free and active participation of the population, the success of the policies is dubious from the outset¹⁹.

Hence the only way to assure food security for everyone will be to provide for self-sufficiency at those levels of social aggregation where a high degree of participation prevails. or where, in other words. group security is likely to mean individual food security as well.

Eliminating the analytical trivial and utterly unrealistic hypothesis of individual self-sufficiency, even at the most elementary level of aggregation, i.e. the family, there

¹⁶ Oshaug (1994) discusses the introduction of food security as an obligation of governments and an integral component of fundamental human rights; but it is not clear what institutions might be capable of incorporating such an obligation into their operating rules.

¹⁷ Maxwell (1996) cites three major shifts in the approach to food security questions: a) from the global and national to the family and individual; b) from the food-first to the life-first outlook; c) from objective to subjective indicators (p.156). Maxwell calls this change in perspective "post-modern", and the economic policies that derive from it are actually even more heavily dependent on active participation and the democratisation of social structures.

¹⁸ Lately, to be sure, aid and support from international organizations to structural adjustment policies have been accompanied by severe economic and political conditions. But quite aside from one's judgement on the direction taken by these pressures, it is hard to reconcile this kind of semi-compulsory, top-down political democratization with the idea of participation.

¹⁹ Measurements of societies' degree of freedom have been developed (Gastil, 1986; UNDP, 1991), but attempts to establish statistical correlations between democracy and economic performance have produced inconclusive results (Barraclough, 1991). Some analysts have inverted the correlation between democracy and food security, sustaining that the latter depends on a policy of severe repression and conditioning of the rural population (Seavoy, 1989). At least in this explicit form, though, such positions are isolated.

may be cases in which self-sufficiency does not produce food security if not accompanied by a participatory family power structure. It may be useless, and it is certainly not enough, to set objectives of food security or self-sufficiency at the national or regional level if the family structure is not such as to provide food security for individual members even in a situation of family self-sufficiency.

Unless the power structure of a social aggregation is theoretically and technically capable of providing food security for all members in conditions of self-sufficiency can the possibility of moving on to systems of security other than self-sufficiency cannot even be entertained.

The real problem is that if the goal of self-sufficiency in food is to be technically attainable, severely restrictive economic and occupational conditions must be satisfied that are unlikely to be found at the lowest levels of aggregation. Today, even in the most backward countries, the productive and occupational structure will not allow for the theoretical possibility of self-sufficiency, in the most optimistic scenario, below the regional or national level.

It follows that the achievement of food self-sufficiency at the lowest possible technical-economic level is likely to clash with a political structure that does not ensure security for all individuals. A banal example would be a region in which self-sufficiency could be easily attained from the technical and economic standpoint but in which, owing to a centralized power structure, it is preferred to use part of food output in trade for unnecessary goods at the expense of food security for a part of the population. The higher the level of aggregation indispensable to self-sufficiency in technical and economic terms, the greater the likelihood that self-sufficiency will not ensure security for all individuals. This observation has led many advocates of self-sufficiency to focus chiefly on the lowest, most elementary units: families, villages, local districts²⁰. A further justification for this method is that very often it is particular social groups and small areas that suffer hunger, malnutrition and food insecurity.

This approach to food security is suggestive, to be sure, but it tends to neglect that the insecurity of these low-level groups may well stem from the possibility or the necessity of ensuring the food security of larger and in any case politically and socially more powerful strata of the population. The latter have no possibility, technically and economically, of achieving self-sufficiency, and indeed they view its achievement by other population groups with suspicion, as a threat. This is the classic case of relation between city and countryside, or between urban workers and farmers.

Accordingly, the goal of self-sufficiency in food must be set in perspective. It must be prescribed only for socially excluded population groups and strata, not tied into the dominant economy, and for which self-sufficiency guarantees food security on the one hand while, on the other, it is not and is not perceived to be a threat to the power structure.

This brings us back to the theme of political structure and participation. In the contemporary world, even among the developing countries the level of aggregation at which food self-sufficiency is practicable very often extends beyond national borders. It

²⁰ This ample literature can be largely classified under what Maxwell (1996) calls the “post-modern” approach. See, for instance: Chambers (1987), Lappé, (1977), Bigman (1993), Musuroke (1990), Lele (1984), Molla (1990), Griffin (1987).

follows that the real possibility of food security depends increasingly on the institution of a political system of democracy and participation, from the grass-roots up through all levels of aggregation to international relations. In a world in which the national food problem is increasingly international (McMichael, 1994, p. 15), and whose solution, in economics, accordingly implies study of the international division of labor and world trade before one can focus on problems of national production and distribution, the question must be from the political point of view inverted. Hunger and food security need to be treated as a problem of the national and local political structure of the underdeveloped countries in order to open up the possibility of tackling the question of democratization of the international political structure.

References

- Adelman, I., & Berck, P. (1990). *Food Security Policy in a Stochastic World*. *Journal of Development Economics*, 34 (1-2), 25-55.
- Alamgir, M., & Arora, P. (1991). *Providing food security for all*. (Vol.1). New York: New York University Press for the International Fund for Agricultural Development.
- Barraclough, S. L. (1991). *An end to hunger? The social origins of food strategies: A report prepared for the United Nations Research Institute for Social Development and for the South Commission based on UNRISD research on food systems and society*. London: Zed Books.
- Bigman, L. (1985). *Food policies and food security under instability: Modelling and analysis*. Lexington: Lexington Books.
- Bigman, L. (1993). *History and hunger in West Africa: Food production and entitlement in Guinea-Bissau and Cape Verde*. (Vol. 159). Westport, Conn. and London: Greenwood Press.
- Chambers, R. (1987). Normal professionalism, new paradigms and development. In E. Clay & J. Show (Eds.), *Poverty. development and food*, London: Macmillan
- Clay, E. (1991). Food Aid, Development, and Food Security. In C. P. Timmer (Ed.), *Agriculture and the state: Growth. employment and poverty in developing countries*. 202-36, Ithaca and London: Cornell University Press.
- Csàki, C., & Rabàr, F. (1989). Current and prospective problems of hunger and malnutrition: Beyond the reach of the invisible hand. In J. W. Helmuth & S. R. Johnson (Eds.), *1988 World food conference proceedings*. 141 -155.
- Daly, H. E. (1974). The economics of steady state. *American Economic Review*, 64(2), 15-21.
- Daly, H. E. (1977). *Steady-state economics*. San Francisco: W. H. Freeman and Co. Publishers.

- Daly, H. E., & Cobb, J. B. J. (1989). *For the common good*. Boston: Beacon Press.
- Dasgupta, P. (1993). *An inquiry into well-being and destitution*. Oxford: Clarendon Press.
- Dréze, J., & Sen, A. (Eds.). (1990). *The political economy of hunger*. (Vol. I, II, III). Oxford: Oxford U.P.
- Ehrlich, P. R., Ehrlich, A. H., & Daily, G. C. (1993). Food Security, Population, and Environment. *Population and Development Review*, 19(1), 1-32
- Epstein, T. S. (1982). Introduction. In T. S. Epstein (Ed.), *Urban food markets and Third world rural development*, London: Croom Helm.
- Fletcher, L. B. (Ed.). (1992). *World food in the 1990s: Production, trade and aid*. Boulder and Oxford: Westview Press.
- Foster, P. (1992). *The world food problem*. Boulder: Lynne Rienner.
- Gastil. (1986). *Freedom in the world: Political right and civil liberties 1985*. New York: Greenwood.
- Gittinger, J. P. (1990). *Household food security and the role of women*. Washington: World Bank Discussion Paper n. 96.
- Gowdy, J. M. (1994). The Social Context of Natural Capital: The Social Limits to Sustainable Development. *International Journal of Social Economics*, 21(8), 43-55.
- Griffin, K. B. (1987). World hunger and the world economy. In W. L. Hollist & L. F. Tullis (Eds.), *Pursuing food security*. 17-36, Boulder: Lynne Rienner Publishers.
- Gunning, J. W., Kox, H., Tims, W., & de Wit, Y. (Eds.). (1994). *Trade, aid and development: Essays in honour of Hans Linnemann*. London: Macmillan Press.
- Guyer, J. I. (Ed.). (1987). *Feeding African cities*. Manchester: Manchester U.P.
- Hay, R. W., & Rukuni, M. (1988). SADCC Food Security Strategies Evolution and Role. *World Development*, 16(9), 1013-24.
- Islam, N. (1986). World Food Security: National and International Measures for Stabilization of Supplies. In S. e. Lall & F. e. Stewart (Eds.), *Theory and reality in development. Essays in honour of Paul Streeten*. 192-216, New York: St. Martin's Press.
- Karim, M. B. (1986). *The Green Revolution: An international bibliography*. (Vol. 2). New York and London: Greenwood Press.
- Kennedy, E. (1992). Household food security and child nutrition: The interaction of income and gender of household head. *World development*, 8(20), 1077-85.
- Kennedy, P. (1993). *Preparing for the 21st century*. New York: Random House.

Koopman, J. (1991). The hidden roots of the African food problem: Looking within the rural household. In N. Folbre, B. Bergman, B. Agarwal, & M. Floro (Eds.), *Issues in contemporary economics*, (Vol. 4,). 148-69, 100, London: Macmillan Academic.

Lane, S. (1980). The contribution of food aid to nutrition. *American Journal of Agricultural Economics*, 62(5), 984-987.

Lappé, F. M., Collins, J., & Fowler, C. (1977). *Food first*. Boston: Houghton Mifflin Co.

Lele, U., & Candler, W. (1984). Food Security in Developing Countries: National Issues. In C. K. Eicher & J. M. Staatz (Eds.), *Agricultural Development in the Third World*. 207-21, Baltimore and London: Johns Hopkins University Press.

Malaska, P., & Psychas, P. (1989). Famines as a human folly: Urban bias and rural neglect in Sub-Saharan Africa. In A. Lemma & P. Malaska (Eds.), *Africa beyond famine*, London: Tycooly Publishing.

Maxwell, S. (1996). Food-security: a post-modern perspective. *Food Policy*. 21(2), 155-170.

McLaren, J. (1990). Balance of Payments Volatility and Food Security: The "Portfolio" Approach Applied to Ghana and Tanzania. *Eastern Africa Economic Review*, 6(2). 95-109.

Mellor, J. W. (1988). Global Food Balances and Food Security. *World Development*, 16(9), 997-1011.

Molla, G. (1990). *Politics of food aid: case of Bangladesh*. Dhaka: Academic Publisher.

Musuroke, I. K. S. (1990). Capitalist penetration and underdevelopment of African peasant agriculture: Swaziland, Southern Rhodesia, Nyasaland. In ACARTSOD Monograph series (Ed.), *Understanding Africa's food problems: Social policy perspectives*, London: Hans Zell.

Oshaug, A. (1986). The composite concept of food security. In W. B. Eide, G. Holmboe-Ottesen, A. Oshaug, M. Wandel, D. Perera, & S. Tilakaratna (Eds.), *Introducing national considerations into rural development programmes with focus on agriculture: A theoretical contribution*, Oslo: Institute for Nutrition research Report n. 2, University of Oslo.

Oshaug, A., Eide, A., & Eide, W. B. (1994). Human rights: a normative basis for food and nutrition-relevant policies. *Food Policy*. 19(6), 491-516.

Parikh, K. S. (1994). Food security for a large and poor country. In J. W. Gunning, H. Kox, W. Tims, & Y. de Wit (Eds.), *Trade, aid and development: Essays in honour of Hans Linnemann*. 120-134, London: Macmillan Press.

Payne, P. (1990). Measuring malnutrition. *IDS Bulletin*, 21(3).

Pinstrup Andersen, P. (1991). Government Policy, Food Security and Nutrition in Sub-Saharan Africa. In P. Dasgupta (Ed.), *Issues in contemporary economics*. 121-47, London: Macmillan.

Pinstrup Andersen, P., & Pandya Lorch, R. (1995). The Supply Side of Global Food Security. *Economies et Sociétés*. 29(3-4), 17-36.

Ruppel, F.-J., & Kellogg, E.-D. (Eds.). (1991). *National and regional self sufficiency goals: Implications for international agriculture*. Boulder and London: Lynne Rienner.

Sahn, D. E. (Ed.). (1989). *Seasonal variability in Third World agriculture: The consequences for food security*. Baltimore and London: John Hopkins U.P.

Salih, M. A. M. (Ed.). (1994). *Inducing food insecurity: Perspectives on food policies in eastern and southern Africa*. (Vol. 30). Uppsala: Scandinavian Institute of African Studies.

Schiff, M., & Valdés, A. (1990). Nutrition: Alternative definitions and policy implications. *Economic Development and Cultural Change*, 38(2), 281-292.

Schmidt, W., & Pelaez, V. (1995). Sécurité alimentaire au Brésil: Les thèses de l'agribusiness remises en cause par les ONG. *Economies et Sociétés*. 29(3-4), 203-220.

Seavoy, R. E. (1989). *Famine in East Africa. Food production and food policies*. New York: Greenwood.

Sen, A. (1981). *Poverty and famine*. Oxford: Clarendon.

Simon, J. L. (1981). *The ultimate resource*. Princeton: Princeton U.P.

Singer, H., Wood, J., & Jennings, T. (1987). *Food Aid: The challenge and the opportunity*. Oxford: Oxford U.P.

Smith, M., J., P., & Maxwell, S. (1992). Household food security, concepts and definitions: An annotated bibliography. *Development Bibliography*, (8).

Streeten, P. (1986). *What price food? Agricultural price policies in developing countries*. New York: St. Martin's Press.

UNDP. (1991). *Human development report 1991*. New York: Oxford U.P.

World Bank. (1986). *Poverty and hunger: Issues and options for food security in developing countries*. Washington, D.C.: World Bank.

World Bank. (1988). *The challenge of hunger in Africa*. Washington, D.C.: World Bank.