Institute of Development Studies

Understanding and Preventing Famine and Famine Mortality

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Summary

Famine prevention is possible but requires, among other things, a better theoretical basis, building on comparative, interdisciplinary and historical research. Key aspects of that task concern, first, the relationship between starvation, disease and death. The historical record suggests that large scale famine mortality if often a direct consequence not so much of starvation as of disease, triggered by a collapse of everyday coping. (The evidence for this in Africa is not clear however.) A second theme is the complexity of famine causes and responses. Entitlement erosion is a key process, but so are production declines and asset management. Reduced consumption, rather than disposing of assets vital for recovery, is a well-documented and important reaction. Local collective coping, especially through redistribution of food, is a third theme. Such customary safety nets provided a minimum of food security to vulnerable households. In this perspective, the central famine process should be seen as economic and social breakdown and the collapse of organised coping, becoming in turn the trigger to increased vulnerability to disease. As a result mainly of the extension of the market and of state power, and the growth of population, collective coping strategies have become increasingly unviable. In the 'Indian' model, they have been successfully replaced in part by government-sponsored anti-famine policies and safety nets. In the 'African' model this has not happened: customary collective coping, often severely undermined, remains in places an important resort of vulnerable households and groups, and government has been unable to provide a viable alternative. Some implications of this for anti-famine policies are briefly discussed.

Article

1 Introduction

Famine is a preventable tragedy. Unlike poverty or chronic food insecurity, insecurity, famine could probably be eliminated rapidly by a quite simple set of policies. Such policies might be politically feasible. So the abolition of famine is a realistic goal, perhaps by the end of this decade.

There are several reasons why this politically un-controversial goal will probably not be achieved in practice. One is the continuing insufficiency of good theory about the causes of famine, of good

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empirical and comparative research, and of good experiments, especially in Africa, with anti-famine policies. This article, and much of this *IDS Bulletin*, is concerned with how these deficiencies could be remedied. The point of departure is the extensive work on entitlement analysis (Sen 1981; Dreze and Sen 1989) done in the last 15 years, which has enormously advanced our understanding of famine. Although it is now fashionable to be critical of entitlement analysis (and some of the criticisms are, in my opinion, justified), entitlement analysis has been the first successful attempt to come up with an inclusive theory of famine and a set of far-reaching policy conclusions. Entitlement analysis provides a foundation on which to build (Gasper 1993).

At the outset it is worth asking why, apart from entitlement, there is a lack of good theory. One reason is perhaps the apparently obvious nature of famine, and the anguish is causes, which together tend to mask the complexity of actual famine processes. Famine seems simple – food is lacking, starvation follows, people die – and theorising may seem a gratuitous insult to the starving. As a result, simple reductionist views are common: 'famine x was due to potato blight… rinderpest… drought… political errors… civil war…' The articles in this *IDS Bulletin* dispute the view that famine is the result of a simple process.

Famine research has also been parochial. Famine analysts have usually stuck to a single country or continent (the lack of comparative analysis between south Asia and Africa has been widely remarked on), within a single discipline (a strong economics literature, some good geography, anthropology, demography and epidemiology, but little interdisciplinarity), and within a single time period (the recent past). And yet there is enormous potential for comparative research between places and across disciplines; in particular, contemporary researchers should be using the material that historians have provided on Greek and Roman famines, on those of the European Middle Ages (for which some categories of data are qualitatively superior to those available for African famines of the 1970s and 1980s), and are now starting to provide on the great twentieth century famines (especially in the Ukraine and Soviet Central Asia in the 1920s and 1930s, and in China at the Great Leap Forward in 1959–60).

This *IDS Bulletin* attempt to open up the debate in some of these directions, by summarising recent research which broadens our understanding of famine, and points to potential new policy options. Most of the papers were given first in a seminar series held at the Institute of Development Studies in the spring term 1992.

This introduction has three parts. In Section 2 I say something about the relationship between starvation and the large scale mortality characteristic of some, but not all, famines; in Section 3, I briefly consider the key proximate causes of famine; in Section 4, I look in greater detail at local level

collective action, in particular at the 'moral economy'. There is then a brief section devoted to the linkages between proximate causes and famine mortality, which concludes that the link between food crisis and famine mortality is not a direct one through starvation, but most often an indirect one through economic and social disorder. Some policy areas are outlined at the end.

2 Starvation, disease and death

The role of disease in famine mortality has been explored by historians and demographers. The conclusions do not support the view that famine mortality is largely a question of normal mortality patterns, magnified by the prism of starvation, which was Amartya Sen's conclusion about mortality in the 1943 Bengal famine (Sen 1981). The role played by epidemic disease in famine mortality in the past may have lessons for contemporary famines. India, with a particularly well developed vital registration system, has been the theatre of some outstanding research in this respect.

Entitlement theory has to some extent marginalised nutrition and health in famine analysis, implying that people do not go hungry until they no longer have the ability to command enough food, and that this then leads to starvation, closely followed by death. However the historical record suggests that in many cases the breakdown of everyday social and economic organisation and coping, leading to mass migration and social disorder, is the trigger for the outbreak of mass communicable disease, and that famine mortality is often cased by this rather that by hunger itself. Thus the relationship between nutrition and disease is essential to an understanding of famine.

In their epic *Population History of England 1541–1871*, Wrigley and Schofield established that variations in the death rate over long sweeps of English history were more closely related to epidemic disease that to food production, food prices or wages.

> short-run fluctuations in the death rate appear to have been very largely determined by variations in factors unrelated to harvest plenty or failure, amongst which those determining the prevalence of lethal micro-organisms, though multifarious and for the most part unobservable, may have been the most significant.
>
> (Wrigley and Schofield 1989: 354)

This conclusion is echoed by Livi-Bacci who argues, in a study of European demographic history, that mortality was largely determined by epidemiological cycles, not malnutrition or starvation, and further that there is little evidence for a close link in the historical record between starvation and increased susceptibility to disease. After considering data from extreme twentieth century European cases

including the Dutch ‘hunger winter’ of 1944–5 and the Warsaw ghetto, he draws a conclusion important to our concerns about contemporary famine:

> In communities, then, hunger and starvation are linked to increased mortality not only, nor even primarily, because of lower resistance, but also, and in far greater measure, because of the increased ‘transmissibility’ of infections resulting from upsets in the social order, overcrowding and a worsening of hygienic and environmental conditions. In those cases where social organization, though sorely tried, nonetheless survives, increased mortality is imputable above all to the ‘direct and final’ consequences of starvation rather than to epidemic attacks.
>
> (Livi-Bacci 1991: 46–7)

He adds that the latter case is relatively unusual.

Recent work gives support to this interpretation. In his article in this volume, Dyson shows that famine mortality in Central Provinces in India in the 1890s and in Bengal and Bangladesh in the 1940s and 1970s shares important characteristics (see also Dyson 1991). A failure of the monsoon triggers a rise in basic food prices and fear of food shortages. The first demographic reaction is a reduction in conceptions, probably both for biological and behavioural reasons. The death rate often does not rise at first; when it does, cholera is often to blame, resulting from migration and overcrowding. The main mortality peak comes later, at the return of the rains, and is due mainly to greatly increased malaria. Dyson argues that there is an element of contingency between famine and large scale mortality. Most of the famines considered did involve increased mortality, but disease, especially malaria, was essential for their to be a major mortality peak, and until the epidemic broke out death rates remained low, sometimes even lower than normal. There is little evidence from these cases that starvation itself elevated death rates above normal. If the rains returned in ways unconducive to malaria transmission, it was possible to have a famine with only modest increases in deaths. Dyson also finds that male deaths increased more than those of women in the famines analysed, and suggests reasons why this might be so.

Elizabeth Whitcombe (forthcoming) has reconstructed both the environmental conditions of three typical famine years in the nineteenth century in Madras and Punjab, and the clinical and pathological history of the famines. A similar picture to Dyson’s appears, with malaria playing the key role in major mortality peaks, after an early but not particularly significant increase in deaths from cholera, smallpox, diarrhoea and dysentery resulting from the confusion, over-crowding and unhygienic conditions of the relief camps.

In his article in this volume, Seaman looks at the mortality data for recent African famines. The figures are much less good than those for the Indian famines. In Africa some of the same forces are at work: population movements triggered by the threat of food shortage create new hazards for the migrants, including exposure to new diseases, which may be exacerbated by the declining quantity and quality of food. In the camps, mortality can be very high, mainly as a result of measles, respiratory infections, diarrhoea and malaria, and in many cases the disease risk is compounded by malnutrition. There is little data on undisplaced populations suffering major food shortages, which would provide comparative data about the dangers of displacement as compared to food shortage itself. He cites de Waal's work in the 1984 Darfur famine, which in some ways seems to have conformed more closely to the Indian model, with a decline in conceptions, higher male than female mortality, and with malaria occupying a major role among causes of death. In the long run, although wary of drawing conclusions from poor data, Seaman estimates that African famine mortality may not be particularly significant in relation to other causes of death over long periods. But there are large variations from famine to famine, and it is difficult to generalise.

There seems to be strong evidence from the Indian case for the determining role of disease in creating large-scale famine mortality; the picture from Africa is much less clear. In view of the important potential anti-famine policy implications of this relationship, the respective contribution of starvation and disease to famine mortality is an important research theme.

3 Proximate causes of famine

Just as it sidelined the role of disease in famine mortality, the original statements of entitlement analysis emphasised entitlement erosion or failure as the main, and in many cases unique, cause of famine, thus underplaying other causes, especially food availability and the role of local coping strategies. If we are to understand famine, it is important to re-establish some of the complexity of famine causes.

3.1 Proximate factors

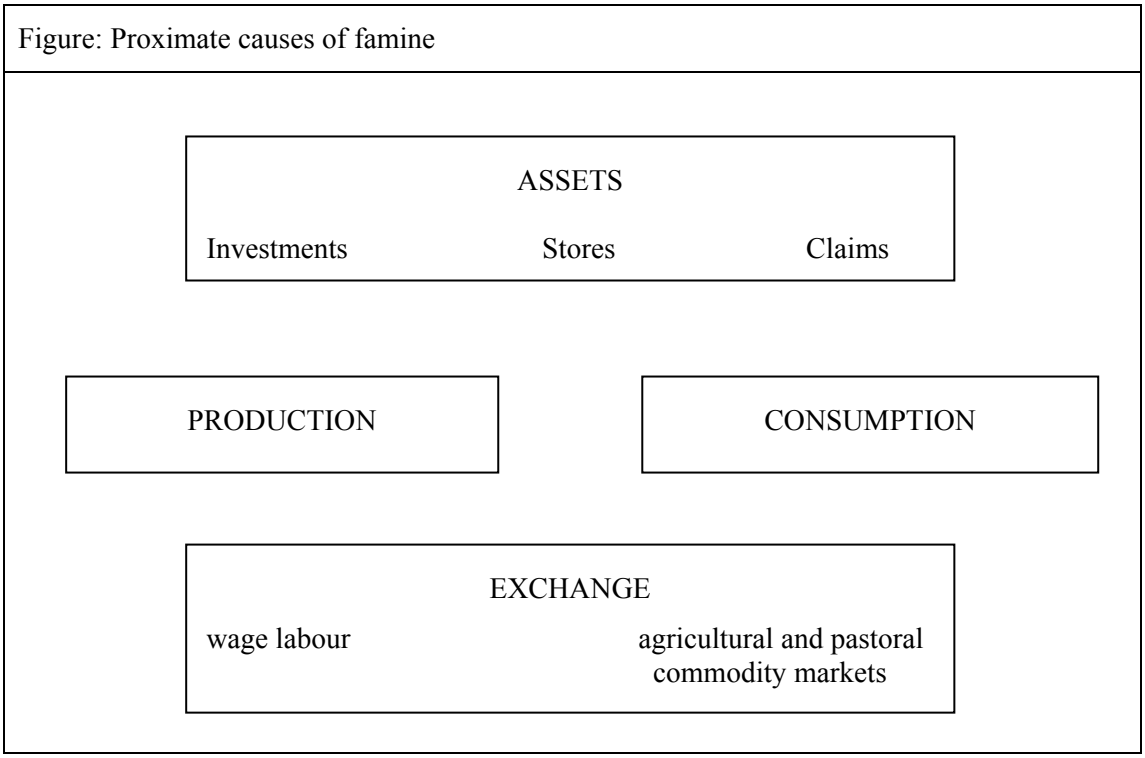
In an earlier IDS *IDS Bulletin* article, Swift (1989) defined vulnerability as the risk of three types of failure: in production, in entitlements (redefined more narrowly as exchange relationships), and in household access to assets (investments, stores and legitimate claims on help from other people or organisations including government). These three types of failure, which together or separately can precipitate a failure in consumption, are defined as the 'proximate causes' of famine; and all other causes, whatever their spatial or temporal scale, produce an effect through their influence on production, exchange and access to assets and claims. This is shown schematically in Figure 1. This

framework, which can be applied at the level of an individual household, a small community, or an economic region, can be used to organise three types of analysis:

- the types of change and their magnitude *within each proximate factor*, leading vulnerable households and communities to the famine threshold;
- the interaction *between proximate causes*;
- the *responses* households or communities make to vulnerability and famine threat.

Such a 'proximate factor analysis' should establish the relative importance of each proximate factor in generating a catastrophic consumption shortfall, their interactions, and the individual and combined thresholds in proximate factors which trigger new types of behavioural response. If the disease hypothesis is correct, in many cases these behavioural responses, rather than food shortage or entitlement failure itself, will have a determining impact on the level of mortality.

Figure: Proximate causes of famine



Responses to the threat of famine take place in each proximate factor. Production, exchange and consumption responses are analysed briefly in this section; because their importance has generally been underestimated, assets and claims are discussed at greater length in the following section.

3.2 Production and exchange responses

Production responses to the threat of food shortage, and the way production failures contribute to vulnerability have often been analysed, and will not be discussed in detail here. But it is important to mention them here because of the way the original statements of the entitlement approach play down the role of food shortage in the genesis of famine, in favour of failures of entitlements.

Although it was important to establish, as Sen and Dreze have done in several publications, that famines can and have taken place in the absence of any decline in food availability, this point can be laboured too heavily. Many authors have shown how declining overall food availability can both directly and indirectly trigger famine. One obvious indirect causal chain is where poor harvests due to drought lead to declining wage labour opportunities and hence both to declining entitlements of wage labourers and also to rising food prices. The 1920s famine in the Ukraine and the 1959 famine in China were both made dramatic in part by policies which reduce food availability; this contributed to and magnified the entitlement failure of certain categories of the population.

A theory of famine should incorporate food availability decline as a central plank, especially in the way food availability decline interacts with entitlement erosions, and with the effectiveness of collective redistribution strategies. Alayn Adams and Stephen Devereux, in their articles in this volume, both start their accounts of food insecure years in their study villages with the importance of drought-induced crop failures, and the way the consequences of these reverberate through the system.

On another level, Joachim von Braun, Tesfaye Teklu and Patrick Webb, in their article in this volume, stress the importance of the macro- and micro-economic policies which have failed to generate sustained productivity increases in African agriculture; without such policies, and without a substantial increase in agricultural production, food insecurity will remain a constant possibility in Africa. Successful intervention in production technologies has been, as discussed later in this article, one of the planks of Indian successes in containing famine.

3.3 Reducing consumption: 'choosing to go hungry'

Sen acknowledges (1981: 50) that people's actual food consumption may fall below their entitlement for reasons such as ignorance, fixed food habits or apathy. Based on Jodha's (1975) important work on Indian famines, he recognises also that people may choose to go without food rather than sell their productive assets, but dismisses the subject by saying that this can be accommodated within the entitlement approach by using a very long-run formulation and considering future entitlements. This is true, but inadequate. It does not do justice to the empirical evidence of considerable efforts by rural people to conserve assets by going hungry. A more satisfactory theory of famine should be able to

incorporate such behaviour, especially since there are important trade-offs between conserving assets and the increased risks associated with extreme undernutrition and starvation.

Responses in the consumption category in Figure 1 have been little understood until recently, but work be de Waal (1989) in Sudan, and by Stephen Devereux in north east Ghana, have opened up an important area of analysis. Devereux, in his article in this volume, shows that maintaining normal levels of consumption is not the only objective of poor households faced by declining incomes and food shortages. Rationing consumption is an important option, and households make careful and repeated calculations about the long-term costs and consequences of all possible actions. These calculations include not just the immediate market value of an asset in terms of the food it can be used to obtain, but also the future stream of financial returns, social utility and other benefits over time which it will yield. In sequencing responses to food shortages, there are two critical trade-offs: the first between possible reductions in consumption and the value of assets which must otherwise be disposed of to maintain consumption, and the second between an asset's current entitlement value, and its impact on future entitlements on the other. Devereux's case history shows how complex household responses to food insecurity can be illuminated by this sort of analysis.

Reductions in consumption do not only take the form of reduced food intake through smaller portions or reductions in the number of meals. Consumption adjustments can also be made by reducing the number of consumers. Many variations on this are reported in the literature: migrants 'eating away from home' during the hungry seasons, marrying off daughters early, giving up children for adoption or, in extreme cases, 'sale', and also, in extreme cases, abandoning old people or other vulnerable individuals.

4 Local collective coping

The assets and claims box in Figure 1 is shorthand for a range of responses by households and groups which in precapitalist economies constituted the main collective response to risk of food and livelihood insecurity. Such responses are varied, and have historically been widespread. They include household and community level storage of food and other resources from good years for use in bad years, and a variety of redistributed processes. Household access to assets or to valid claims to assistance has been neglected in most recent economics literature about famine, although it is a potentially key determinant of the ability of households and communities to survive a major famine threat.

As a result of recent research, household asset holdings are now recognised to be an essential component of coping strategies. Consumption assets, such as grain stores ore jewellery, are used to

buffer household consumption in prolonged periods of unfavourable production or markets; production assets, such as livestock, land or farm machinery, can be exchanged for food in extreme situations, but are generally jealously protected, even at the cost of significantly increased risk of starvation.

Much less attention has been paid to customary safety nets, and to analysis at the level of villagers, lineages or other small groups on the role and potential of small-scale collective action. Some recent research has begun to put new emphasis on the importance of local collective action and local economic, social and political networks. Jean-Philippe Platteau (1991) has reviewed the performance of traditional systems of social security in Third World village societies, and concluded that they have been important but have now often been eroded due to the joint impact of market penetration, population growth and the rise of a modern state system; this is not a universal tendency however, and in some cases traditional social security systems have been strengthened. In sub-Saharan Africa in particular, but also in Asia, many such 'horizontal' support mechanisms are still important.

4.1 Redistribution

Such customary support mechanisms include a major set of collective responses to the threat of food insecurity, managed by kin groups, customary political formations, villages and other smaller or larger groups. Because of the potential importance of such responses, and the slight way they have been dealt with in the literature, they are considered here in greater detail than the other issues.

Essentially such responses are systems of redistribution of food or other key assets. They may be analysed as systems of *horizontal redistribution*, between partners of approximately equivalent structural position, and systems of *vertical redistribution*, between partners at different levels in a social or economic hierarchy.

4.1.1 Horizontal redistribution

Horizontal redistribution takes place between individuals, households or small groups of nearly equal standing within the framework of lineage groups, villages, pastoral camps or larger acephalous political groupings. A useful way to analyse this is provided by Sahlin's (1968) discussion of reciprocity, which is in turn partly based on Marcel Mauss's (reprinted 1970) work on exchange and gifts.

Sahlins distinguishes three categories of reciprocity in customary economic exchanges:

- *generalised reciprocity*: apparently altruistic transactions without any expectation of a return – typically gifts, hospitality, generosity;

- *balanced reciprocity*: direct exchanges in which there is an expectation of a return, without much delay, of something of equivalent value – typically direct barter;
- *negative reciprocity*: exchanges in which there is an attempt to get something for nothing or for very little; participants confront each other as opposed interests each trying to maximise utility at the others' expense.

Sahlins identifies this range of behaviour from altruistic giving (generalised reciprocity) to have bargaining (negative reciprocity) as corresponding closely to kinship distance, combined in a small degree with closeness of residence: kin living close together are more altruistic to each other than the same kin living far apart. Although Sahlins may have overly emphasised the role of kinship distance as compared to geographic distance (neighbourliness and friendship), his schema is a good starting point for understanding the determinants of horizontal redistribution. He marshals a large range of ethnographic data to show that generalised reciprocity is the norm between close kin, especially those in close geographic proximity, and that this shades off through balanced reciprocity within wider lineage systems, villages or larger customary formations, to hard bargaining or negative reciprocity in the case of distant strangers.

A classic statement of generalised reciprocity in the context of food shortage and starvation is that by Evans-Pritchard on Nuer pastoralists in southern Sudan (based on fieldwork done in the 1930s):

> in general it may be said that no one in a Nuer village starves unless all are starving. The food supply of a community is ultimately at the disposal of all its members within whose corporate life each family has security to pursue its particular interests and to satisfy its most elementary needs.
>
> (Evans-Pritchard 1951:132)

This sort of generalised, horizontal, reciprocity was probably extremely widespread within precolonial communities in Africa and Asia, and formed the first line of household food security strategy. However all such systems of reciprocity have clear limits to what they can achieve (Torry 1987). When resources run out, sharing is no longer a solution. In these circumstances, the practice of generalised reciprocity contracts progressively, so that groups of people (first other villagers or tribe or clan members, then distant kin, then close kin) are progressively excluded. This contraction usually stops at the boundaries of the household, although in extreme cases it may go beyond, so that individuals cease to share food with other household members.

This process of contraction of reciprocity is well documented by Raymond Firth, describing a famine in the late 1950s in Tikopia in Polynesia: under the stress of famine, sharing of food (normally

widespread) contracted until it was reserved for household members and very close kin; in some cases where there was a little more food, closely related families pooled food and cooked and ate together (Firth 1959: 83–4).

One shortcoming of Sahlins's schema, which emphasises geographic proximity along with kinship proximity in the creation of strong bonds of generalised reciprocity, results from geographically covariate risk. Since climatic risk, as well as some other types, tends to be geographically concentrated – droughts are often localised – there is a large advantage in having partners in generalised reciprocal exchanges who are geographically spread, not concentrated. In fact, relationships of generalised reciprocity often include people who habitually live some distance away; a good example is the widespread practice of 'stock friendships' among east African pastoralists. A further problem with Sahlins's formulation is the identification of altruism as a key component of generalised reciprocity; as is discussed below, this is not a necessary assumption about reciprocal food sharing.

4.1.2 Vertical redistribution

A very different type of redistributive system is not normally thought of as reciprocity at all, although it shares some important features with it: this is the vertical redistribution which takes place usually within hierarchic economic and political systems, where elites or rulers extract resources from dependants or low status or junior people in the system through taxes, levies or other forms of contribution including labour service, and in certain circumstances redistribute these resources to dependants or low status people in need.

An early statement of such a system in contained in the classic India book of statecraft, *The Arthashastra*, written between 300 BC and 150 AD (Kautilya 1992: 130). In the event of a famine, the state should:

- distribute to the public, on concessional terms, seeds and food from the royal stores;
- share out royal food stocks;
- commandeer private stocks of food for public distribution;
- set up food-for-work public works programmes 'such as building forts or irrigation works'.

The Mughal state in India similarly opened state granaries to the poor in times of famine, as did the Ming and other dynasties in China. In sixteenth century Mali in west Africa, the Songhay dynasty successfully kept famine in check by building up state granaries in years of good harvests, and opening them to the poor in bad years (Cissoko 1968). In nineteenth century Nigeria, the Sokoto caliphate in Hausaland built up central granaries for relief purposes through a tithe on grain production; elites personally redistributed grain to poor dependents in crisis situations, and other anti-

famine institutions were supported within a powerful and very hierarchic political system (Watts 1983). Many similar African examples could be cited for the nineteenth and early twentieth century.

There is a large literature about these forms of vertical redistribution. The best entry point is the concept of the 'moral economy' introduced by James Scott (1976) using a term coined by E.P. Thompson to explain food riots in medieval England. Following Scott, several researchers have argued that: (i) the historical record strongly suggests that rural (and other) households protect themselves against risk of food shortage through a variety of practices which in particular historical contexts have often included agreements with patrons, landlords or the state; such agreements permit vertical accumulation of grain in good years, together with redistribution downwards in bad years, or alternatively set up forms of crop-sharing which provide a subsistence guarantee to poor households in bad years; (ii) such social arrangements are not egalitarian; they are often deeply exploitative much of the time, and they carry high costs and disincentives to poor farmers; (iii) such arrangements were at their most useful in dealing with smallish disasters; they tended not to be able to cope with major famines when there was simply no food to distribute.

One well-known example was the *jajmani* attached labour system described from south India by Epstein (1970) and others. *Jajmani* labourers, often Untouchables, were assured of a minimum subsistence income in the event of a bad harvest. In good years, the patron had an assured labour supply, which enabled him to produce an important surplus; the attached labourer would be not able to produce nearly as much since he had to work on his patron's fields. However in bad years the dependent labourer would be provided with the security of a minimum subsistence income. The system

> broke down only in extremely bad harvests, when the total product was not sufficiently large to provide a minimum of subsistence for all members of the society. Such years were famine periods, during which the customary system of rewards had to be completely suspended. But in normal times, when bad and good harvests occurred fairly regularly, the fixed rewards for customary services were based on the average product produced in bad seasons.
>
> (Epstein 1970: 247)

In conclusion, it is important to make three points about the limits to both horizontal and vertical redistribution. First, they work best in situations of uneven, short-term and limited hazard, especially in situations where organisational capacity at local or regional level remains functional. Second, they cope progressively less well with larger-scale, longer-term or major disasters, and especially where local economy and organisational capacity are undermined, for example by war or foreign conquest; the emergence of predatory states based on extraction of a rural surplus makes vertical redistribution

especially unlikely. Third, such systems of redistribution are not cost-free: they impose important economic and social constraints on their participants, and carry quite heavy costs mainly in terms of disincentives to innovation or productive risk-taking.

Following Scott's original presentation of the moral economy hypothesis, there has been a lively debate between the 'moral economists' and those who believe that peasants are motivated more by selfish, profit-maximising, behaviour, and that norms and values do not, or no longer, influence rural peoples' economic behaviour. As Platteau argues forcefully, there is no need for such opposed positions:

> The fact of the matter is that the 'moral economy' of traditional rural communities can be largely interpreted at a 'social-security' economy in that people belonging to these communities are often eager to find collective methods to protect themselves against major contingencies and production hazards. In so far as these methods or mechanisms have proved to be workable, their success ought to be ascribed *both* to self-interested behaviour on the part of the individuals and to ruling customs and norms that are designed to ensure their continuity and to control major incentive problems. On the other hand … covariate risks and incomes seriously limit collective hunger insurance possibilities.
>
> (Platteau 1991: 155)

4.2 Decline of customary collective coping

The ability of precolonial economies to achieve food security has been undermined by three major processes:

Extension of the market. The extension of the market and the reorientation of most production and exchange away from local circulation and local systems of reciprocity and redistribution, whether horizontal or vertical, has reduced the potential value of such local insurance mechanisms. Resources and labour have been commoditised, and common property resources, previously an important source of collective food security benefits, have declined abruptly. Economic relations have been progressively separated from social and political relations.

Extension of state power. There has been a substantial extension of and reorientation in the roles, powers and responsibilities of the state. The state has increasingly provided services, paid from general taxation; this has in many places greatly improved food security, but has everywhere undermined local food security arrangements. The state has everywhere tried to acquire a monopoly of political power and authority, at the expense of the roles, powers and responsibilities of alternative forms and organisation, especially of kinship and customary political groupings. The present

bankruptcy of most African states has not affected these ambitions, although it has made their achievement impossible.

Growth of population. Population growth has lead to declining availability of unappropriated and flexible resources, and has enlarged the scale of food security problems, in ways that customary arrangements are increasingly unable to cope with.

We can identify two general types of path forward from the precolonial food security model described in the previous paragraphs. These are abstractions, but correspond in important ways to specific historical experiences. For this reason I call them in 'Indian' and 'African' models, keeping in mind the great complexity and diversity of experiences in each continent; there are 'African' type examples in India and elsewhere in south Asia (especially perhaps some of the tribal areas), and 'Indian' type cases in Africa (perhaps Botswana).

4.3 The 'Indian' model

In the 'Indian' model, as a result of the historical processes mentioned in the previous section, local horizontal ('reciprocity') and vertical ('moral economy') types of redistribution have both declined considerably in this century, especially since the 1950s. The Indian system of *jajmani* labour is no longer – even assuming it once was – a general model of food security applicable to much of the subcontinent.

N.S. Jodha (1988) studied villagers' perceptions of change in two Rajasthan villages between the 1960s and the 1980s. He found that although there was an increase in the number of households below the official poverty line, most poor people considered themselves better off. In part this was because of a reduced reliance on traditional patrons, landlords and richer more resourceful people. Put in the terms used here, the villagers welcomed the decline of the moral economy, because of the reduced dependence and increased self-reliance they had achieved. They also were less dependent on low pay-off jobs and economic options, had improved liquidity and mobility, had shifted consumption patterns and practices, and had acquired new types of consumer durables. As a result of these changes, poor households had become less dependent on the patronage of richer and more powerful people for employment, income and for food security.

Table 1: Changes in welfare and food security in two Rajasthan villages		
	Changes between 1964/6 and 1982/4	
	increased	declined
Production		
• better agricultural technology	*	
• soil and water conservation	*	
• reliance on wild products		*
Exchange		
• seasonal out-migration		*
• crop sales at favourable time	*	
• milk sales	*	
• local wage employment	*	
Assets/claims		
• attached labouring		*
• off-season borrowing from patrons		*
• loans from others than patrons	*	
• household cash reserves	*	
Consumption		
• household milk consumption		*
• consumption of vegetable and sugar	*	
skipping meals		*
Other		
• guinea worm infections		*
Source: Data reanalysed from Jodha (1988). Data from 95 households in two villages.		

If we use the proximate factor framework described at the start of this article to analyse Jodha's data, some interesting features appear. Table 1 sorts Jodha's data into proximate factor categories. Some of the most important moral economy categories – under the assets and claims heading – have declined in importance, but others – especially household cash reserves and loans from others than patrons – have increased. These changes have in part taken place because of improvement in other proximate factors: in agricultural production technology, and in exchange relationships including milk markets and wage labour employment.

However it is important not to write off redistribution and the moral economy in the Indian model. Martha Chen's recent study of coping behaviour in a Gujarat village during the 1987 drought concludes that, although under strain and eroded over time, patron-client intercaste *jajmani* relationships and caste and kinship support networks remained of some importance as survival mechanisms in the drought: small loans and gifts between kin virtually dried up but were expected to

revive after the drought, *jajmani* relationships were kept up by patrons although there was some drop in payments for services; again this was not seen as an irretrievable breakdown. But the main responses by villagers were migration and public works, not reliance on social relationships (Chen 1991: 213–4).

The second characteristic of the 'Indian' model, offsetting to a great extent the decline in reciprocal and moral economy relationships, is the creation by the state of effective anti-famine and safety net policies. The Indian precolonial tradition of anti-famine planning was developed during the colonial period by the Famine Codes. Although there was a strong ideological aversion to interference in grain markets, public works programmes were implemented from the nineteenth century onwards. In the twentieth century the Indian state has considerably developed these policies, especially through the employment guarantee and public works programmes on the one hand, combined with staple cereal subsidies through the public distribution system and fair price shops on the other. The decline in the customary food security system based on reciprocity and the moral economy has been more than compensated by the creation of an effective state capability to perform these functions and provide a safety net.

Other key features of the Indian model have been: successful agricultural development policies, especially the Green Revolution, which has ensured that national per capita food availability has not fallen and that there are large domestic food reserves in store for emergencies; great improvements in infrastructure and communications, especially roads, railways and markets; much improved implementation ability through central and local government, and NGOs; the creation of elements of a civil society which ensures that vulnerability and anti-famine policies are monitored and pressure for action is maintained; and the maintenance of peace.

4.4 The 'African' model

There are major differences between the model just described and the African situation, due in part to slower and later processes of market penetration and modern state formation, and also perhaps to more favourable land:population ratios.

In the 'African' model, local redistributive and moral economy processes have also declined this century, but not nearly as rapidly or as far as in India. Important elements persist as local coping strategies. Many researchers in Africa have commented on the role of social networks and relationship as a part of drought and famine coping strategies.

For pastoral economies this includes Turton (1977) on the redistributive functions of bridewealth among the Mursi in southern Ethiopia, Bonfiglioli (1988) on social networks among Wodaabe herders in Niger, and Swift and Abdi (1991) on redistributive networks in Kenyan Boran society.

Table 2: Coping strategies in Mandara mountains

	Percent of total recorded coping responses to drought					
	during regular seasonal hunger			after very bad harvest		
	women	men	all	women	men	all
Production (eg hunt, gather, grow special crops)	5	8	6	35	25	30
Exchange (eg sell livestock, wage labour)	33	70	50	37	53	44
Assets/claims (eg borrow food or money, family assistance, use food reserves)	39	15	28	27	21	24
Consumption (eg reduce portions, skip meals)	21	1	11	-	-	-
Unclassified	2	7	5	-	1	1
Total	100	100	100	100	100	100
(n)	125	115	240	249	235	484

Source: Data reanalysed from Campbell and Trechter (1982). Data from 60 households in three villages.

There is similarly detailed evidence in African farming groups. Johan Pottier (1988) found, in rural Zambia, that despite declining food availability, social networks remained a force which households could mobilise effectively to counter hunger, a conclusion echoed in Jane Corbett's ongoing work in drought-prone areas of southern Zimbabwe. Data gathered by Campbell and Trechter (1982) in the Mandara mountains in northern Cameroun provide material for a proximate factor analysis, which is shown in Table 2.

Table 2 shows that, as a proportion of the total number of responses to drought, exchange and market based strategies are the most numerous for both men and women, although they are especially important for men. A reduction in consumption ('choosing to go hungry') is an important early response by women. Responses in the assets and claims category, which included the redistributive and moral economy responses, are also very important. Women adopt this type of response earlier than men; later, as more serious food shortages threaten, both men and women adopt such strategies.

Table 3: Coping by rich and poor women in the Mandara mountains		
	Per cent of total recorded coping responses by women to drought	
	two poorest quartiles	two richest quartiles
Production response	7	2
Exchange response	31	34
Asset/claim response	30	50
Consumption response	28	12
Unclassified	3	2
	100	100
Source: Data reanalysed from Campbell and Trechter (1982).		

In Table 3, the coping strategies of women to normal hungry season shortages are classified by their wealth status. Some differences appear: responses in the exchange, assets and claims, and consumption, categories are each about 30 per cent of all responses by poor women; richer women reduce their consumption much less than poor women; assets and claim mobilisation is much more important for rich than poor women, amounting a half of all responses; but this category of response is also important for poor women, and is one of the mainstays of their coping strategies.

Valuable new data on redistribution of food as a response to scarcity in a Bambara village in Mali are reported in this volume by Alayne Adams. Adams describes the array of social practices and institutions which help farm households minimise food insecurity and enable them to cope in a crisis. These actions are based not on altruism, but on mutual insurance and self-interest, and are not necessarily equitable. Adams lists a wide range of coping strategies resorted to by village households including production, exchange and consumption responses. Small scale collective action include collective labour groups, communal fields, village cereal banks, kin-based and dyadic exchanges. Households spread risks well beyond the village through exchange and social investment through village kin networks, marriage and migration outside the village, and through urban-village links including trader-farmer patron-client relationships. Adams provides useful quantitative data on the impact of these arrangements: 10 per cent of harvested grain is distributed in gifts, a further 10 per cent as a religious tithe; in the sample as a whole, 25 per cent of food shortage days were supplied by non-market cereal transfers, and for those households receiving such transfers, half of all food

shortage days were covered by such transfers. Her data suggest that an increase in scarcity engenders greater non-market cereal exchange.

Adams finds that poor households within large lineages do much better in this respect than others, so although food transfers serve a common need for mutual risk insurance, they also accentuate social differentiation within the village. Small, non-lineage households are most vulnerable, since they are unable to participate in labour or food exchange networks. Adams concludes that the resilience of the moral economy in central Mali is a result of the fact that households cannot rely solely on their own resources, or on the state or the market. There is an important role of small-scale local collective action. If these various data are representative of many African situations, then we may conclude that, in contrast to the 'Indian' model, redistributive and moral economy types of action still play a key role in responding to threats to food insecurity.

The 'African' model differs in several other ways from the 'Indian' one. Most importantly, there are few effective, state-sponsored, anti-famine policies and plans. Food availability remains a problem in Africa: most states do not have sufficient food stocks to guarantee distribution in case of emergency, and instead have to rely on commercial imports or food aid. Most food insecure African states have poor infrastructure, especially transport, in many areas markets are imperfect, and planning capability is low.

The ability to implement anti-famine policies, even if enacted, remains low, and there is little competent local government, a key feature of the Indian response to famine threat. And there is little viable alternative to government, almost no civil society on the 'Indian' model – the mixture of free press, democratic policies and lively civil or non-governmental organisations that plays such an important role in India. (Interestingly, the incipient 1992 food security crisis in Zimbabwe, one of the few African countries with elements of a civil society, was contained in a quite 'Indian' manner.) In general, the peace has not been kept in Africa.

Table 4: Some differences between 'Indian' and 'African' models of food security		
	'Indian' model	'African' model
local redistribution; 'moral economy'	weak, but persists	remains strong in places, but variable
formal anti-famine policies	Good	absent or ineffective
food production/availability	Good	poor/variable
Infrastructure	Good	poor
implementation capability of government and NGOs	Strong	weak
civil society	Strong	weak
armed conflict	Rare	common

Table 4 summarises some of these differences between the 'African' and 'Indian' models.

We may express these differences in another way by saying that in many customary village and tribal economies in vulnerable environments (type A situations, corresponding to most precolonial situations and to a reduced extent to many contemporary African cases, as well, perhaps, as a few cases in India) there are effective but limited guarantees of a minimum of food security mainly through collective action to redistribute horizontally or vertically some of the economic surplus. Such institutions cannot cope with major crises, but are effective at containing lesser crises. An effective modern state apparatus (type B situations, corresponding to much of India), through a mixture of technical and political measures mainly involving adequate food availability, anti-famine plans, safety nets, effective implementation capability and the checks and balances of civil society, resists the threat of famine more effectively. Where type A situations change into type B situations, as seems to have been the case for example in much but not all of India in the course of the last century, food security improves and famine is brought under control. However this transformation is not necessarily the norm. More often, especially in Africa, the limited protection from food insecurity enjoyed in type A situations has been undermined without the guarantees introduced by the development of type B situations. As a result, poor people are vulnerable to old and new types of food insecurity without even the limited support of local collective action of the sort enjoyed in type A situations.

5 Linking proximate causes to famine mortality

The previous discussion has tried to show how different proximate factors, along or jointly, can generate potentially catastrophic declines in consumption. Households themselves often choose to reduce consumption to dangerous levels in order to conserve assets, make a trade-off between long-term economic recovery potential and increased short-term risk from undernutrition.

The first section of this article suggests that starvation itself is rarely the prime cause of large scale mortality, although it plays a contributing role in various ways not yet well understood. In many cases disease is a crucial factor. At the very least we can say that where large scale disease occurs, high mortality is likely, *especially if* the populations is seriously undernourished; where it does not occur, large scale mortality is much less likely, *even if* the population is seriously undernourished.

The link between food crisis and famine mortality is not then a direct one through starvation, but an indirect one in which social and economic breakdown and disorder play a key role. The breakdown of individual and collective coping strategies leads increasingly to chaotic population displacement and to disorganised agglomerations of people (at markets, feeding centres or relief camps). Some types of coping behaviour contribute to this growing disorder, for example early migration to feeding centres by people striving to conserve and not sell assets at home. In these circumstances hygiene deteriorates and the risk of major disease becomes greater. Undernutrition and the threat of starvation contributes both to the disorganisation and also makes the vulnerable population more susceptible to disease when it strikes. Famines with high mortality then become a consequence of social disorganisation – what von Braun, Teklu and Webb, in their article in this volume, call massive social dysfunction and dislocation – not the other way round.

This perspective makes it easier to integrate war into the study of famine. War can have an important impact on all the proximate famine causes identified earlier: it can make production strategies impossible, destroy or make impossible markets and exchange, and destroy household and community assets. But above all, war creates the conditions of social disorder in which undernourished people become susceptible to disease. Civil wars are perhaps the most terrible in this respect, because the types of redistributive social networks, the links of claims and mutual support within and between communities, themselves become targets of the combatants.

In his article in this volume, Alex de Waal explores in greater detail how war has come to be synonymous with famine in Africa. He sees three main ways in which war creates famine: through the general destruction and consumption by armies of the crops and assets of poor people; through specific strategies to create famine to control insurgency, by destroying crops and markets and

preventing people from using coping strategies; and through the creation of predatory regimes based on militarised asset-stripping.

The common thread here is a deliberate targeting of collective coping, acting on all the proximate factors in the famine model, and the deliberate creation of the sort of disorder and chaos from which famine and high mortality are logical outcomes. De Waal's article is an attempt to open up this crucial area of famine studies, and provides a starting point for future analysis. This type of analysis suggests, for example, why ending famine may indeed by politically difficult in Africa.

6 Famine policy implications

These various strands of analysis suggest some of the complexities of famine processes, and some areas for policy intervention.

6.1 Need for new policies

One of the conclusions of this analysis is that appropriate policies can contain famine. Such policies, which have been detailed in part by Dreze and Sen (1989), need to cover technical anti-famine plans including employment guarantees and safety nets as well, the institutions to implement them, and the means to monitor their implementation. But anti-famine policy needs to be wider than this, and include wider economic policies. The analysis in this article suggests that the best route to ending famine in Africa lies in the design of an appropriate mix of government and non-governmental policies and institutions.

However, it is not simply a question of proposing measures to create Indian type conditions in Africa. The 'India' model works in India (and not completely even there). Although the main elements of anti-famine plans seem likely to be invariable, details and the relative stress given to different components will change from place to place. African countries need anti-famine policies adapted to their specific circumstances. But we are currently far from a feasible set of such policies.

In their article in this volume, von Braun, Teklu and Webb argue that policy failure itself is among the most important causes of famine in Africa. They identify key areas where deficient policies have contributed to the root causes of famine: low agricultural productivity, environmental degradation, lack of alternative, off-farm employment, poor education, health and sanitation services. State intervention can exacerbate food insecurity. Equally, the risk to food security posed by a weak state and by the limitations of market-based private action suggest the need for an improved role for public action. They urge that reforming the public sector in Africa should not absolve it of responsibility for

famine prevention, since there are no simple market-based solutions to famine. The need is for improved policies and institutions which reconcile the role of state, market and private actors.

6.2 Understanding the complexity of famine

The earlier discussion about the relationship between proximate factors in creating famine hints at some of the complexity of famine processes, to which reductionist models, however elegant, cannot do justice.

Susanna Davies's article in this volume gives a good example of the need to understand at least some of this complexity before policies are planned and actions undertaken. Many development and relief agencies have latched onto the idea of coping strategies as a key to doing something about famine. The idea seems simple. But Davies points to the danger of confusing coping strategies with livelihood adaptations. The former are essentially short-term fall back mechanisms adopted when food security it threatened, and as quickly discarded when conditions improve. The idea of coping if often used to describe what are in reality long-term, more permanent adaptations to a deteriorating food security situation. For policy makers and planners to seek to reinforce coping strategies may in fact be more likely to lock poor people into a low level food security trap, in which policies make long-term decisions by such people harder. At the same time Davies is sceptical about the use of coping strategies as indicators for early warning, because of their very complex and contingent nature which is necessary if they are to be effective for coping.

The first step in an effective anti-famine policy is to understand the complexity of famine, and of people's reactions to it, and to respond in appropriate ways.

6.3 Local collective action and institutional capability

The earlier discussion has emphasised the persistence, especially in Africa, of important forms of local redistribution and of local collective responses to food insecurity and famine. At the very least, relief and development interventions should not undermine local capability, for example by substituting imported procedures for delivering relief where adequate local institutions exist to do the job. It is likely that strengthening such local institutions would be an efficient and cost-effective way of improving food security.

The variety of actual forms such local actions take in different situations puts a premium on flexible, decentralised interventions, where possible run by local institutions themselves, with the state providing a safety net of last resort, and perhaps intervening to maintain minimum standards of equity.

6.4 Starvation and disease

If disease is the main cause of famine mortality, anti-famine policies need to be more concerned with the conditions which determine disease transmission, and with ways of controlling disease spread. This includes emergency immunisation programmes, policies to discourage people gathering in feeding centres or relief camps, and much greater attention to the sanitary situation of such agglomerations as do develop.

The relative success of the 'Indian' model of famine prevention suggests that African policy priorities should be to raise agricultural productivity, employment and human capital formation, to provide entitlement protection and safety nets among vulnerable groups, to control disease in famine situations, and to search for a new mix, appropriate to contemporary African conditions, of government, NGO and local community institution strengthening for food security.

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