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# Famine systems: A new model for understanding the development of famines

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## ABSTRACT

Humans have experienced famines throughout their history. Even today, the world faces the prospect of several of these crises occurring simultaneously. Yet despite their persistence, there is no agreed model for the development of famines, making it difficult to detect their emergence and to prevent their occurrence. Examining a diverse range of historical and contemporary crises, this paper argues that the evolution of famines can be identified by a set of recognizable elements: pressure, hold, self-reinforcing dynamics, famine system, and rebalancing. It suggests that severe pressure on a population, when held in place for sufficient time, leads to self-reinforcing dynamics that can eventually organize into a famine system that rapidly causes high levels of mortality, until it re-balances and collapses. It contends that this famine systems model can provide analytical insight into the development of most famines and can potentially be used to better identify and respond to these crises in the future.

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## 1. Introduction

Over time, specialists in famine have developed crucial insights into the formation and evolution of these crises – from descriptions of their basic stages to more detailed analyses of the sequences of coping strategies employed. However, in part due to the inherent complexity of the social, economic, political, and environmental dynamics involved, the insights have never been assembled into a widely agreed model for the development of famines. Yet the continued persistence of famine, including the recent concern over its potential occurrence in Nigeria, South Sudan, Yemen, and Somalia, makes finding such a model an urgent task.

This paper makes an initial attempt to fill this gap by proposing an analytical model consisting of five elements that seek to provide insight into the development of famines: pressure, hold, self-reinforcing dynamics, famine system, and rebalancing. Severe pressure on a population, when held in place for sufficient time, leads to self-reinforcing dynamics that can eventually organize into a famine system that rapidly causes high levels of mortality, until it re-balances and collapses. Although these elements take different forms depending on the circumstances, they appear to be applicable to both historical and contemporary crises. A better

understanding of these elements may assist with the detection and response to famines<sup>1</sup> in the future.

The paper is divided into five sections. Following this introduction, the second section reviews the literature that informs our current understanding of the evolution of famines, describing the wealth of existing insights but also pointing out some of the current limitations. The third section identifies the basic concepts of the famine systems model. The fourth section tests these concepts by applying them to several historical and contemporary famine situations to see if they can help provide insight into the development of the crises. The final section identifies possible lessons for early detection and response and makes suggestions for the way forward.

## 2. Review of relevant literature

Broadly speaking, three competing views have emerged to characterize the development of a famine, describing it as an event, a process, or a composite of a process and event (Howe, 2003). For many years, famine was understood as an event: a sudden rise in

<sup>1</sup> For the purposes of this paper, famine is defined using the criteria of the Integrated Food Security Phase Classification (IPC): 20 percent of households in the area experiencing famine conditions; acute malnutrition exceeding 30 percent; and crude death rates above 2/10,000/day or under 5 death rates above 4/10,000/day (IPC, 2017).

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malnutrition and mortality, often attributed to a food ‘shortage’ or ‘scarcity’ (cf. Dando, 1980; Glantz, 1987; Ravallion, 1997). In *Poverty and Famines*, Amartya Sen (1981) challenged part of this formulation, arguing that it was not food shortages but an inability to access food through a breakdown of entitlements that led to famines. However, he seemed to affirm the sudden nature of the crisis, suggesting that a person could be “plunged into starvation” and that starvation arose from “a sudden collapse in the level of food consumption” (Sen, 1981, pp. 40–41).<sup>2</sup>

A number of academics criticized this view of famine, arguing that it decontextualized and depoliticized the crises, by separating the event from its causes. A new set of researchers suggested, instead, that famine should be viewed as a process (Walker, 1989). The precise interpretation of the process took various forms, but most posited the existence of various stages. Some took a longer-term view of the stages. Keen (1994), for example, analysed the historical, underlying, and immediate processes in the 1992 famine in what was then southern Sudan. Others focused mainly on the more immediate stages of the crisis. Rangasami (1985) suggested that the famine process consists of three periods: dearth, famishment, and morbidity. Still others contributed different models that illuminated new dimensions of these crises, such as health-related mortality (de Waal, 1989), the relationship to nutrition (Young & Jaspars, 1995), and the process in conflict settings (Hendrickson, Armon, & Mearns, 1998).

These models were, in turn, critiqued because while they offered insight into the process that led up to the event, they failed to recognize the distinctive, time-bound nature of a famine (Rubin, 2016). By blurring the temporal dimensions of the crisis, they created confusion about its duration and made it difficult to meaningfully analyse them. Partly as a result, a ‘composite’ view emerged that argued that the famine event was a result of a process. Several models have reflected this view. An MSF model identified three stages: food insecurity, food crisis, and famine, health crisis, and death (Oxfam, 2001). Walker (1989) suggested that, in the context of a larger process, a famine starts when affected populations undertake coping strategies that undermine their “future security for present survival” (p. 50). The pressure and release (PAR) model (Wisner, Blaikie, Cannon, & Davis, 2003) takes a similar composite view, arguing that a range of processes that increase the vulnerability of households, on one side, combined with natural hazards, on the other, can create the pressure that leads to crises, including famines.

While these models seek to identify the broad outlines of the crises, there is another literature that analyses the detailed sequences within these larger phases. The literature on coping strategies has described the overall pattern of actions that households seem to consistently take in response to drought-induced food crises (Corbett, 1988; Walker, 1989; Watts, 1983). There have been important nuances of these findings, suggesting that some strategies are carried out in parallel (Devereux, 1993) or applying the concept to other contexts, such as urban settings (Curtis, 1995). More recent formulations have distinguished between intensification, diversification, and migration (Scoones, 1998), and have emphasized the role of social capital in surviving famines (Maxwell, Majid, Adan, Abdirahman, & Kim, 2016). Taken together, they have created a rich understanding of affected populations’ responses to these crises.

This paper will draw on many of these insights about the broader phases and the more detailed understanding of the affected populations’ responses. It will adopt what is essentially a composite approach. While recognizing that historical and under-

lying processes are critical to understanding the causation of famines, it focuses on a time-bound set of stages. One of those stages is the ‘famine system,’ which represents the famine event, or simply the famine, itself. As we will see, the preceding stages may or may not lead to the development of a famine system, depending on a number of factors. At the same time, the paper will draw on the coping strategy literature that has informed the understanding of how these crises are experienced and responded to by affected populations.

However, in doing so, it also attempts to offer a new model that builds upon several critical insights that have not been fully incorporated into previous approaches. First, expanding on Howe (2010), the paper emphasizes systems thinking, suggesting that there are synergistic interactions among different elements that lead to the rapid shifts that characterize famines: the price spirals, the rise in malnutrition and mortality, and the intensive responses, after which interest and support taper off. It suggests that it is the interaction of factors in a system, rather than a simple linear sequence of stages, that characterizes the evolution of a famine. While Howe (2010) describes some of the key features of self-reinforcing dynamics and famine systems, this paper explicitly names these elements, introduces the concepts of pressure, hold, and rebalancing, and creates a more comprehensive and generalized model that integrates them into a coherent, overarching framework.

Second, it makes a distinction between two types of models. The first provides labels for different categories of crises, based on their level of severity. For food security crises, these have currently been agreed as: minimal, stressed, crisis, emergency, and famine (IPC, 2017). Since most crises pass through these different levels on their way to becoming a famine, they can be viewed as different ‘stages’ or phases of a famine’s evolution. In this paper, by contrast, the emphasis is on explaining the pattern of elements that come together dynamically to generate these crises of various levels. In some cases, they will only create a ‘crisis;’ in others, if conditions are right and sustained, they will generate a ‘famine.’ It therefore does not focus on the ‘stages’ of severity, but rather on the ‘stages’ of the dynamics that produce that severity.

Third, by examining both historical and contemporary crises, it searches for a model that is applicable to all types of famine. If the literature of the 1980s emphasized nature-induced crises (Corbett, 1988; Sen, 1981; Walker, 1989), the seminal works of the 1990s focused on the prominent role of conflict (Duffield, 1994; Keen, 1994; Macrae & Zwi, 1994). In the 2000s, more attention has been given to the global and political natures of crises and the diverse circumstances in which they occur, identifying a wider range of famine types than previously understood (Devereux, 2007). A strong literature on individual crises in the Soviet Union (Dolot, 1985), Maoist China (Becker, 1996), Greece (Hionidou, 2006), North Korea (Natsios, 2001), Malawi (Vaughan, 1987), and other locations has also broadened our understanding of the different circumstances that might lead to a famine. This model attempts to capture and account for this diversity.

Finally, in the process, the paper indirectly engages with and potentially complicates the understanding of accountability in famines. A number of authors (Marcus, 2003; de Waal, 2017) have argued for the criminalization of famine, a task which is in part dependent on the ability to assign culpability. The model proposed in this paper, with its non-linearities and feedbacks, identifies a range of factors that need to be considered in understanding the formation of a famine system, possibly making attribution more difficult. However, since it also clearly recognizes that some acts can be intentional – and proportionally more significant and decisive – in a famine’s development, the model does not stand at odds to the larger project, but may add a degree of context and a layer of complexity to the discussions.

<sup>2</sup> Interestingly, in some of his case studies, Sen did describe different temporal phases of the famines, suggesting a clear awareness of processes, too.

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