# Beyond the ‘raw’ and the ‘cooked’: a history of fortified blended foods

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This paper offers a history of fortified blended foods, a humanitarian product that first emerged in the middle of the twentieth century. Tracing its emergence and development, the paper argues that this food was the product of four key historical trends: (i) the search for a compact and efficient diet in the wake of the Second World War; (ii) the high modernist movement that saw science and technology as a way to improve on traditional foods; (iii) the state-led industrialisation of the development decades oriented around the notion of a worldwide ‘protein gap’; and (iv) the legacy of ‘productivist’ agriculture in the United States, generating massive surpluses in certain crops that had to be adapted creatively for a multitude of uses. The paper positions fortified blended foods in these broader historical processes, and asserts that humanitarian techniques are very much rooted in cultural, political, and social conditions.

**Keywords:** fortified foods, history, humanitarianism, modernism, nutrition

## Introduction

A new emergency food burst on to the humanitarian scene sometime between the end of the Bihar famine (1966–67) and the beginning of the Biafran War (1967–70).[1] Called Corn-Soy Milk (CSM), it was manufactured from three of the largest surplus commodities in the United States: dried milk; maize; and soy flour. It came as a pale power, which could be reconstituted in hot water to produce a nutritionally balanced porridge. The maize provided carbohydrates, the milk and soy provided proteins, and the whole mixture was pre-cooked and blended with vitamins and other micronutrients. For many aid workers, the attraction of this food was its ease and simplicity. Here was a food that could be prepared in bulk and

[1] Most sources, including *Nutrition Reviews* (1969) and Graham (1971), indicate that CSM was developed in 1966. There is some evidence that it was used in Bihar, India, in 1966–67 (see, for example, Black, 1996, p. 268). There is ample evidence of its use in Biafra in southeast Nigeria in 1967–70, especially in the archives of the British Red Cross and the United Nations Children’s Fund (UNICEF) (see also Ifekwunigwe, 1971; Black, 1996, p. 280). Many similar fortified foods were used in this period, such as Bal Ahar and UNICEF’s own blend called Post-Kwashiorkor Food Mix (PKFM).

supplied en masse, producing an almost instant, rounded meal (Nutrition Reviews, 1969; Higgins, 1974).

CSM was an early example of what soon became a large industry: fortified blended foods for emergency use. Other products, including Corn-Soy Blend (CSB), Soy-Fortified Bulghar (SFB), Wheat-Soy Blend (WSB), and Wheat-Soy-Milk (WSM), were based on a similar principle: a pre-cooked blend of cereals and pulses designed to offer a more nutritionally balanced food for weaning and supplementary feeding. Soon they became an important component of emergency feeding all around the world (Peel, 1977).

This paper is concerned with their history and context. Where did the idea for these products originate? What historical forces shaped their development? Rather than offering a detailed narrative of changing nutritional policies, this paper uses fortified blended foods to illustrate how historical events shape contemporary humanitarian practice.[2]

The starting point for this study is that humanitarian approaches, like all sorts of other inventions and innovations, often emerge not only for reasons of efficacy, but also due to a variety of contingent historical developments (Shapin, 2010). In the case of fortified blended foods, there are four main factors that had an important influence on the materialisation and uptake of this humanitarian foodstuff:[3]

- First, there was the search for compact and efficient diets following the Second World War, which occurred in a context of international shortage and generated some important prototypes of supposedly 'complete' meals in a compact powder.
- Second, there were the ideals of high modernism: a powerful ideology in the mid-twentieth century that sought to replace tradition with scientific solutions and technological processes.
- Third, there was the state-led industrialisation of the development decades, which in terms of its thinking on food and nutrition became oriented around the notion of a worldwide 'protein gap' and spawned an ideal environment in which to nurture new approaches to human nutrition.

[2] For a narrative of changing nutritional policies, see Golden (2010).

[3] The term 'fortified blended food' is generally accepted now, but its use to describe practices before the 1980s is largely anachronistic. Various terms have been used to describe the same broad idea, including 'fortified cereal blends', 'multipurpose foods', 'processed weaning foods', 'protein rich foods', and 'supplementary relief foods'.

- Fourth, there was the legacy of 'productivist' agriculture in the US, which saw agribusinesses seeking new outlets for their commodities in the humanitarian operations of the late 1960s.

This study contends that these four factors were central to the attractiveness and the longevity of the fortified blended food.

The history of the fortified blended food is particularly fascinating because it is a paradigmatic example of 'ready-made' solutions in humanitarian action: the desire to produce a unified, comprehensive approach that can be applied in a multitude of scenarios. As Levine and Chastre (2004) have argued, aid agencies now tend to rely on a relatively narrow number of predetermined interventions, or 'off-the-peg' solutions, which are set out in handbooks and take a similar form all over the world. These can be appealing because they appear to offer efficiency and effectiveness in complex situations. Fortified blended foods are not only 'ready-made' in the sense that their physical form is designed to be nutritionally rich and easy to prepare, but usually they are distributed through a standardised regime, involving registration, anthropometric measurement, and cooking and hygiene training (World Food Programme, 2001; World Health Organization, 2004; Sphere Project, 2011; Scott-Smith, 2015). Such a system is attractive to aid workers because it is highly practical, delivering a relatively balanced meal through a simple powder (which may be mixed onsite with oil and sugar to enhance its nutritional profile). It does, however, have numerous disadvantages: people may not like the taste, the foods are rarely made from local staples, and there are some fundamental issues relating to cultural acceptability and flexibility that are difficult to resolve given its relatively inflexible material form.[4]

Many of these problems have been acknowledged in recent guidelines for emergency feeding, but like other 'off-the-peg' solutions, fortified foods still retain a central place in humanitarian programming. As Levine and Chastre (2014, pp. 19–21) have emphasised, the one-size-fits-all approach is very useful in a context of high staff turnover, where aid agencies require a simple and replicable system of relief. More importantly, the fortified blended food offers a 'nutrient density and ease of preparation' that is particularly useful when meeting nutritional needs in emergencies (World Food Programme, 2001; World Health Organization, 2004, p. 27). These factors, though, only tell part of the story, and this

[4] There is evidence that fortified blended foods can be very versatile (see, for instance, Mears and Young, 1998), but their form, by definition, makes it impossible for beneficiaries to use the various components in more culturally appropriate and flexible ways (for an example see Scott-Smith, 2015).

paper seeks to establish how humanitarians do things for relatively contingent historical reasons as well. The past leaves many legacies in the present, especially in an industry where institutional memories are relatively weak. It can be useful, therefore, to return to the original moment at which humanitarian techniques entered the practice of aid agencies and to try to understand how this occurred (Roth, 1981).

In the case of fortified blended foods, this emergence is closely tied to the intellectual and social environment of the mid-twentieth century. At their inception, these products embodied a distinctly modernist dream: they offered a solution to hunger that echoed space-age functional simplicity, allowing particularly young children—or so the claims went—to ingest the nutrients from a full meal in the form of a simple powder.[5] They were designed to be more modern and nutritionally comprehensive than staple foods, permitting aid professionals to exert some kind of control over the intake of nutrients through the design of the product from a distance. They were also designed to be practical and useful: making the most of agricultural surpluses that were a key feature of the 1950s and the 1960s.

Before delving further into this history, it is worth making a brief theoretical diversion to examine the relationship between food and culture. This will help in making sense of the attractions and the challenges of fortified foods, as well as 'off-the-peg' solutions more generally.

**Dry and wet, raw and cooked**

The history of humanitarian nutrition has generally seen two main approaches to humanitarian 'supplementary' feeding: dry and wet (Lusty and Diskett, 1984, pp. 31-40). Wet feeding involves distributing cooked food, usually in a kitchen or canteen. Perhaps the most significant early twentieth-century example occurred during the Russian famine of the 1920s, when the first large aid agencies (such as the American Relief Administration and Save the Children) distributed cooked gruels made of imported wheat flour or rice, lard, salt, and water (Patenaude, 2002, pp. 86–89).[6] Photographs from the time show aid workers standing over massive cauldrons of gruel in stained aprons, dishing them out to the masses

[5] To be clear: fortified blended foods have never contained all of the nutrients that the body requires, but their nutritional comprehensiveness was a key claim at their inception, and a significant part of what made them so attractive. This is particularly true for MPF (see Borsook, 1948, pp. 7–9). Although such products initially were developed for a wider constituency, they eventually focused on infants and young children, especially with the inception of Incaparina.

[6] Details of these soup kitchens can also be found in the Save the Children Fund Archives, EJ202, Box A0413, and EJ200, Box A0410.

with a hunk of bread. The advantage of this approach was that the aid worker could measure and monitor the intake of nutrients: Herbert Hoover, the founder of the American Relief Administration, preferred it because he wanted to see food go 'right down the children's throats' (Wilson, 1945, p. 11).

The disadvantage of wet feeding, however, is that the food may not be attractive or appropriate: it may be badly cooked, culturally unsuitable, and served on an impersonal, industrial scale. Anthropologists since Audrey Richards (1932) have underscored the importance of food to social life; food is, they point out, the most fundamental bond of human societies, a formative part of relationships from the very moment of birth. Anthropologists have also documented how tastes can differ wildly from culture to culture, something many aid workers will understand if they have been faced with starving people who refuse to eat the food that has been offered to them. Given the importance of cultural tastes to diet, the significance of eating in social life, and the inflexibility inherent in providing a single meal to large groups of people, the soup kitchen model of relief can be highly limiting. Consequently, aid workers have long made use of 'dry' rations instead, which become particularly crucial if the malnourished cannot travel to communal kitchens and canteens.

Distributing dry rations also has a long history. During the Russian famine, Hoover's American Relief Administration was acutely concerned about controlling the spaces in which food was consumed, but other relief workers allowed people to collect and take away their food—typically accompanied by crude attempts at registration and control, such as ration cards, spot checks, or requiring that empty packages were returned before any further food was given out. The problem with dry rations has always been that food might be misused in some way, and these mechanisms of control have been developed to manage the manifold risks. The grain, once it is taken home, might not be prioritised for the sickest, weakest, and youngest, but added to a communal pot. The food might be cooked in the wrong amounts or combinations, offering a poorly balanced diet. The commodities might be taken down to the market for sale, exchanged for weaponry, or stolen at a checkpoint (see Terry, 2002, pp. 17–55). All the same, these risks can be weighed against the greater flexibility and cultural appropriateness that come with the distribution of dry rations, affording people direct access to commodities that they can then cook for themselves (Jaspars, 2000).

This spectrum of humanitarian nutritional interventions, from the wet to the dry, is reminiscent of the work of Claude Lévi-Strauss (1970), particularly his distinction between the 'raw' and the 'cooked'. Lévi-Strauss was a structuralist who looked for harmonies across

cultures, and one of his central ideas was that all societies share a core distinction between raw, natural ingredients and cooked, cultural products. The binary of the raw and the cooked, Lévi-Strauss suggested, was an enduring intellectual structure that existed across all societies; across the world, he claimed, people imbue natural things with cultural values through the act of cooking. This attractively simple idea reflects how social conventions shape what is edible, how cultural practices determine what kinds of food we eat on which occasions. After all, our digestive systems can deal with many things that we do not eat, but our diets have been moulded mainly through social conventions, in which the raw is shaped into the cooked—that final, cultural product.

The distinction between wet and dry feeding takes on new implications in the light of such structuralist thinking. In distributing dry instead of wet rations, and in abdicating some control over the ingestion of food, certain aid programmes allow beneficiaries to mediate the cultural transformation of commodities. Compare two scenarios: in the first, aid workers provide a cooked meal in a refugee camp or canteen, offering a cultural product, a meal that has already been socialised. This food may not be culturally accepted, but cooked meals are a useful tool because they are a good way to ensure that the right people eat the right kinds of food at the right time. In the second scenario, aid workers distribute raw materials, basic commodities; they allow other people to take these away, use them, prepare them, cook them, and impart their own cultural traditions. This is riskier for all of the reasons given above, but it can be more culturally appropriate and more empowering for the beneficiaries.

Although both techniques of feeding have been employed for decades, the story of humanitarian nutrition can be told through a gradual shift from the cooked to the raw: from the dominance of the Victorian soup kitchen to the rise of more personalised and individualised rations; from the carefully controlled distribution of hot meals in communal kitchens to the rise of models offering more space for self-care and self-government (Redfield, 2005, 2012; Fassin, 2007). Developments such as Ready-to-Use Therapeutic Food (RUTF) and the Community-based Management of Acute Malnutrition (CMAM) are an interesting manifestation of this trend, as they involve aid workers 'letting go' of control over the ingestion of food—a trend that has reached its apotheosis in the cash transfer scheme (Cretì and Jaspars, 2006). This is not to say that 'cooked' nutritional solutions have entirely gone away; in fact, a consensus has now formed around a composite approach, in which individual commodities are distributed in General Food Distributions (GFDs), while, at the same time, a limited number of 'cooked' solutions are provided in supplementary and therapeutic feeding. In recognising the continuing benefit of wet feeding in certain

circumstances, nutritional guidelines for emergencies generally have developed a three-pronged approach: (i) meals are given to the moderately malnourished; (ii) prepared therapeutic formulae are given to the severely malnourished; and (iii) there is a wider distribution of dry rations (Sphere Project, 2011, pp. 139–238). This represents a growing appreciation of human culture in the consumption of food, combined with enough paternalistic control in certain circumstances to ensure that people are fed at the right times, and in the right amounts.

The problem with thinking in binary terms about wet/dry and raw/cooked is that the world cannot be so neatly divided into these elegant structuralist dualisms. As Bruno Latour (1993) has argued, things cannot be split neatly into what is natural and what is cultural—something that is especially true when it comes to food. Most crops have been the product of millennia of breeding, crossing, and experimentation; they are planted, tended, and tilled in social arrangements. The very choice of what to grow is cultural, and once harvested, such crops are processed in a complex network of material and social systems. A bag of maize flour is not simply a 'raw' material, a de-cultured object that exists in the natural world alone. It is a deeply social thing, which has been enmeshed already in a variety of relationships, even before it was taken home and cooked. When a bag of maize is supplied in a humanitarian scenario, therefore, one cannot pretend that a 'raw' material is being given, in the sense of an object without cultural and social implications. If this is true for a bag of maize, furthermore, it is even more so for CSM, which is an amalgamation of three products that have each been produced, refined, fortified, and combined, and whose cultural, economic, and social history reveals a great deal about their origins in the mid-twentieth century.

The 'soy' in CSM, for example, is the result of extensive research and a complex industrial process. Although it is an ancient crop in East Asia, soy was only grown on a large scale for human consumption in America in the 1920s, when it became clear that the plant had many uses. Soy can be pressed into oil, converted into milk, and transformed into lecithin (an extremely common emulsifier and lubricant for processed foods), as well as serving as the basis of a number of non-dietary products as diverse as biofuels, candles, crayons, insulation, and solvents. The defatted soy flour, which is the main ingredient of CSM, is only one element of a product that has become a very profitable part of agri-business.

Consider also the 'milk' in CSM, which, again, is a long way from being a natural product. This ingredient really is dried skim milk, the residue left over after processing butter and cream; preserving it only became possible with the advent of industrial-scale spray

drying in the first half of the twentieth century and the preference for cream and butter among richer consumers (Valenze, 2011). Dried skim milk became an important US surplus after the Second World War, and since it was long-lasting and easy to transport it became crucial to the foundation of the United Nations Children's Fund (UNICEF) in 1946: an organisation that has been described by its biographer as a 'gigantic organisational udder', a proselytiser for milk and distributor of its dried form (Black, 1996, pp. 35, 141). CSM was developed in the 1960s after US milk surpluses declined: it combined smaller amounts of dried milk with corn and soya to produce a new product, with a similar nutritional profile to milk, but cheaper.

The 'corn' in this mixture, likewise, was produced on a massive scale, part of an industry that manufactures so many central ingredients in our diets, such as baking powder, caramel, citric acid, high fructose corn syrup, and malodextrin, extracting profits from the multiple components of high yielding crops.

Fortified blended foods, therefore, are the product of a complex historical system and it makes no sense to designate them as purely natural, raw commodities, or as a final, cooked, cultured solution to malnourishment. They illustrate the impossibility of dividing anything into binary systems, and they stand as an example of what Latour (1993) calls 'hybrid' objects: neither purely natural, nor purely cultural, neither 'raw' nor 'cooked'.

In many ways, the problem with fortified blended foods is that they give the illusion of *not* being hybrid, of being a raw material. From the very beginning, CSM was imagined as a material that could be made into a variety of culturally-appropriate forms, presented as a de-cultured object, which might be reasonably manipulated for universal use (*Nutrition Reviews*, 1969). This is, as Latour (1993) has contended, a central characteristic of the modernist vision: the physical and social worlds are purified constantly, and culture and nature are assumed to be neatly distinguishable. One can see this kind of dualism in humanitarianism more broadly, which tends to quantify physical human needs (enumerated in, for example, lists of nutritional requirements), and often suggests that an impartial, neutral, scientific kind of relief can be implemented while isolating many of its socio-political effects. One way of interrogating this kind of modernist purification is to assess the vast array of economic, intellectual, political, and scientific influences on the development of objects such as fortified blended foods. An analysis that positions humanitarianism in broader patterns of social change, viewing engrained practices as a product of *more* than just practical efficacy, helps to sharpen the focus of debates about programming that, in many cases, are already under way.

**Post-war prototypes of the fortified food**

The genealogy of fortified blended food begins just after the Second World War. During the interwar period (1918–39), nutritional science underwent massive change, with a simple input–output dynamic being replaced by a much more nuanced depiction that incorporated the discovery of vitamins and numerous experiments in the colonial world, painting a picture of the most 'efficient' diet for mankind (Worboys, 1988; Rabinbach, 1990; Vernon, 2007). These experiments sought to discern the minimal biochemical inputs required for human functioning, rendering the human need for food, with all its cultural, political, and social complexity, into a list of hard figures (Vernon, 2007, pp. 81–117; Cullather, 2007; Scrinis, 2013; Shapin, 2014).[7] By the start of the Second World War in 1939, relief workers were excited about the possibilities of such knowledge with regard to the management of hunger, and there was a profoundly confident attitude in the air, nicely captured in the words of one aid worker, Francesca Wilson (1945, p.13):

> What child's play it will be this time! We were groping in the dark then [First World War]. Now we know what vitamins are needed for every type of malnutrition. A bomber load of vitamins will be enough to cure a whole population.[8]

This idea—that the basic nutrients in the diet could be provided in a compact form—seemed, at the time, to flow naturally from the multivitamin pill, which was treated in some quarters as a miracle solution to nutritional problems (at least as far as deficiency diseases were concerned). It had not been without its critics; in the 1940s, for example, British economist John Maynard Keynes was ridiculing this kind of thinking by sarcastically suggesting that shipping mountains of vitamins pills was undoubtedly the first priority for a devastated, starving, post-war Europe (Borgwardt , 2005, p. 116; Vernon, 2007, p. 150). Such was the faith in science, though, that there was now hope for a similar, lightweight solution for calorific needs. Francesca Wilson (1945, p. 13) outlined the vision excitedly: 'A good

[7] This is not to dismiss the achievements of nutritional science and biochemistry, but simply to point out that all disciplines illuminate some things and ignore others. Gyorgy Scrinis (2013) and Michael Pollan (2009) have explained the socio-political implications of this process, which they call 'nutritional reductionism'.

[8] The findings of nutritional science and the interwar articulation of nutritional standards helped in managing food supplies, rationing, and wider structures of governance during the Second World War (see Cullather, 2007). Overconfidence, though, also led to botched interventions, such as the use of protein hydrolysates after the liberation of the Bergen-Belsen concentration camp in Germany on 15 April 1945 (see Shephard, 2006, pp. 90–123).

meal for a hungry man of meat, potatoes, carrots and greens . . . is now the size of a crown piece'. This was not true, but her rhetoric captured the hopes of many humanitarians of the time, who were basing their optimism on scientific work with precisely this aim (Belasco, 2006). It was in this context that they began developing Maltavena and Multi-Purpose Food (MPF): the distant ancestors of the fortified blended foods of today.

MPF originated in the US in the early 1940s. It was spurred on by an enthusiastic philanthropist and businessman named Clifford Clinton: the proprietor of an enormous cafeteria in downtown Los Angeles, California, which had become renowned for offering meals at only five cents. A self-consciously good citizen, Clinton had decided that no one should be turned away hungry, regardless of funds, and he developed something called the *Vita-Meal*, a plateful of soybeans, rice, meat, and vegetables, which was offered to anyone entering his cafeteria unable to pay. It was a curious business model: part soup kitchen, part cafe, and it developed into a wider humanitarian experiment. Towards the end of the war, Clinton enlisted the assistance of a scientist from Caltech to convert his Vita-Meal into a cheaper, standardised product, and together, they came up with MPF: a pre-cooked, dehydrated powder, which was distributed around the world by a foundation called 'Meals for Millions' (*Life*, 1944; Hafner, 1961; *The Los Angeles Times*, 1961).

MPF was made from pre-cooked soy grits and dehydrated vegetables. It could be prepared by adding water to the powder and boiling into a thin gruel, and it was packaged in a silver can emblazoned with 'MPF' in huge letters. The reverse of the can asserted that two ounces of the powder was equivalent to one-quarter of a pound of beef, a glass of milk, a baked potato, and a dish of peas. A small amount of powder, in other words, claimed to distil all of the nutritive goodness of a full meal into a porridge-like gruel (Hill, 1955; Meals for Millions Foundation, 2001). Clinton embarked on the project with the following criteria: three servings were to supply the full nutritional requirements of an adult; the food had to be quick to cook; it must require only the most rudimentary cooking equipment; it had to keep for up to a year; it was to cost no more than three cents per meal; it could not offend any religious principles; and it had to be transported easily (Borsook, 1948, p. 9). These principles encapsulate the main motivations of the project, but also constitute a succinct summary of a wider approach: a distinctly modernist vision of nutrition, in which a single powder could produce the necessary components to keep human beings alive.

The second prototype of the fortified blended food was Maltavena, which was conceived as a weaning food and designed to supplement the scanty milk supply in Europe. The formula was devised by a chemist at the Peroni Brewery in Rome, Italy, after working

with a British Red Cross worker called Bernard Ward Perkins. Perkins was one of those fascinating characters that punctuate the history of relief: bursting with enthusiasm and liberal with his ideas as well as his letter writing. A correspondent at the British Ministry of Food described him as 'an extraordinary old boy, [who] first popped up with his Maltavena when he was working in Rome on an honourary basis for the British Red Cross. . . . Through sheer force of character he has interested certain notable people in Maltavena'.[9] His force of character certainly worked: interest in Maltavena punctuates the post-war files of several prominent aid agencies, and the concept of a milk alternative had a direct influence on the production of fortified foods in the developing world.

Made from malted cereal grains, Maltavena involved taking powdered malt, soaking it with oats in hot water, and straining the wort through a linen cloth, which left a pale yellow liquid, sweet to the taste, that could be used as a milk substitute, or thickened with more oats to form a weaning food. The idea was to produce a substitute for milk, which could be produced cheaply across Europe and which had practical and nutritional justifications. Practically, its ingredients and manufacture were designed to be adaptable by any brewery: the use of malted grains, the mashing, and the filtering of liquid were procedures familiar to any brewer (and there were plenty of breweries still operational after the war). Nutritionally, it was believed that young children would find it easier to digest and absorb this fluid because the starch in the cereal had been broken down during the malting and soaking process—very much as it would do in the digestive tract.[10]

There is little doubt that Maltavena played a limited role in immediate post-war aid (it appears only rarely in relief-worker memoirs and would have made only a very small contribution to the food needs of the displaced), but it had a longer-term influence as an idea. It was attractive because it was portable, offering an innovative logistical solution to milk shortage, and it anticipated the rise of more explicitly high modernist schemes in the developing world. In fact, Maltavena led directly to a proliferation of initiatives to produce local 'milk alternatives', becoming a significant industry in the 1950s and the 1960s. Indeed, UNICEF's enthusiasm for milk was not an institutional oddity but a wider obsession: milk

[9] Letter from M. Pyke, Ministry of Food, to A. Bour, Welfare Foods Division, 11 November 1946, Archives of the Ministry of Food, MAF 256/93, National Archives, London.

[10] Typed memorandum from Dr Moran to Miss Ritchie, 21 March 1945, Archives of the Ministry of Food, MAF 256/93, National Archives, London; 'Background Letter No. 63', 9 December 1948, delivered as a lecture by R.F.A. Dean in Göttingen, Germany, in January 1949 and issued by the Ministry of Supply as translation T.P 523, Archives of the Foreign Office, FO 943/470, National Archives, London.

was seen, particularly in the West, as having magical nutritional properties. At the end of the 1940s, one of the workers on the Maltavena project moved to Makerere University in Uganda to develop a similar formula in the tropics, publishing many articles and starting a decade of expansion in the production of milk substitutes, which were all based on a similar model: cereal flours fortified with additional protein and vitamins.[11]

**Fortified foods during the 'development decades'**

The spread of this vision was rapid. There were more than a 100 different fortified foods or milk substitutes in production by the end of the 1960s, from Lebanon to South Africa, Hong Kong to Panama (Orr, 1972, 1977; Mitzner, Scrimshaw, and Morgan, 1984). One of the first and most successful was Incaparina, which was developed in Central America in the early 1950s (Scrimshaw, 1980). Designed to be made into *atole*, a hot, corn-based Latin American drink, it was far more complex than Maltavena or MPF, and more enthusiastically modernist in its orientation. To produce it, four main ingredients had to be heated or boiled separately in calcium hydroxide, and then ground, dried, and prepared into flours: cottonseed, kikuyu grass, maize, and sorghum. Next they had to be mixed with Torula yeast, rice polishing, and a vitamin mixture, and blended and ground again. The concoction was then slurried in water and dried in a double drum drier, then an air drier, and run through a flaker.[12] This was a very ambitious project, more than Maltavena or MPF had ever been, and it was based on the modernist idea that scientific and technological solutions could be found to the most intractable political challenges.

Incaparina featured in a number of prominent newspaper articles in the 1960s, even appearing as part of an advertisement for IBM (International Business Machines) in 1963: an illustration of its modernist spirit (*The New York Times*, 1964). Computers, the advertisement claimed, 'helped scientists develop this lifesaving powder', and as a result of such publicity, there was a veritable explosion of newspaper reporting on various Incaparina imitators. The movement was given impetus by the dominant theory of a 'protein gap', which had become a widespread, if erroneous, notion among international policymakers (McLaren, 1974; Ruxin, 2000). Suddenly, the large-scale production of high-protein fortified foods or milk substitutes seemed not just attractively modern, but also necessary to prevent 'the most serious and

[11] 'Proposed fieldwork in Uganda by R.F.A. Dean and assistant', c.1949, CO 859/233/2, Archives of the Colonial Office, National Archives, London.

[12] 'Progress report on development of Vegetable Mixtures 9 and 10', written for Instituto de Nutrición de Centro América y Panamá (INCAP) donors, dated September 1958, Nutrition/18/20/04, Archives of the London School of Hygiene and Tropical Medicine, London, pp. 2–6.

widespread nutritional disorder known to medical science' (Brock and Autret, 1952, p. 2). Examples abound from across the world:

- in Algeria, there was Superamine, a mixture of wheat, lentils, dried milk, and sugar (DeMaeyer, 1976, p. 402);
- in Ethiopia, there was Faffa, based on wheat, soy, and chickpea flours (Taba, 1970; Hofvander, 2011);
- in India, there was Bal-Ahar, made from soy, cottonseed flour and peanut flour (Hornstein, 1986; Tandon, 1982);
- in Lebanon, there was L'Aubina, based on chickpeas, parboiled wheat, dried milk, and bone ash (Brody, 1967); and
- in Sri Lanka, there was Thriposha, made from corn, soya, and dried milk.

These products were all versions of what had become a common vision: a high-protein, nutritionally balanced food that met as many needs as possible in a single, ready-made product (Jensen, 1979). They emerged from the modernist idea that science could improve on nature, that food could be reduced to nutrients. In addition, they tied in with modernising development narratives, since their production was seen to facilitate industrialisation, the creation of new factories, the scaling up of agriculture, and the establishment of new markets. The schemes were different in each country, but they tended to be driven by national governments in an example of state-led development, with funding and technical support from the West. The Sri Lankan Ministry of Health, for instance, instigated Thriposha with funding from CARE and the United States Agency for International Development (USAID). Incaparina was driven by the Instituto de Nutrición de Centro América y Panamá (INCAP), an organisation governed jointly by ministries of health in six Central American countries and with funding from the Rockefeller Foundation. Faffa was established at the Ethiopian Nutrition Institute, with funding from Sweden, and Bal-Ahar was developed at a government-run research institute in Mysore, funded by the United Nations Educational, Cultural and Scientific Organization (UNESCO) and USAID. The adoption of local names seems, at first glance, to disguise the modernising project, but when translated they reveal it. These products were marketed with lionising toponyms, such as L'Aubina, derived from the American University of Beirut (AUB), and Incaparina, derived

from INCAP, and they featured appeals to human improvement, such as Faffa, meaning 'to grow big and strong'.

The aim, in all cases, was to transform the way people ate—a task facing many obstacles, not least tradition, and the desire of many people to keep eating what they had always done. The modernisers interpreted any reluctance on the part of project beneficiaries as backwardness, a barrier to progress. There is always 'resistance to change', wrote one manager of the World Food Programme in reference to fortified foods, especially 'when one is endeavouring to introduce new or unfamiliar foods to a wide range of people around the world'. 'It is important to overcome these difficulties by education,' he continued, suggesting that 'simple illustrated literature in the right language', 'practical advice and demonstrations', coupled with 'a reasonable element of persuasion' constituted the best approach (Hutton, 1974, p. 146). An aid worker from CARE echoed this sentiment in the same conference: 'cereal foods blended with soy is a new idea', she said, 'and primitive or traditional societies are unreceptive to anything which is new or different'. She then quoted 'an old proverb' that 'wisely says, "what little farmer don't know, little farmer won't eat"' (Higgins, 1974, p. 143). It was a highly patronising sentiment, suggesting that malnutrition was caused by the poor's own fear and bloody-mindedness, combined with an irrational rejection of the latest food technology.

**US surplus disposal**

The final triumph of the fortified food came with the arrival of CSM, just before the Biafran War. On a material level, CSM was based on predecessors like Incaparina and MPF, but intellectually it drew on all of the trends that had been building since the end of the 1940s: high modernist ideas of science conquering hunger, the importance of addressing the worldwide 'protein gap', state-led ideas of development and progress, and the long-standing vision of foods reduced to nutrients, which could be manufactured synthetically for lightweight delivery. The arrival of CSM was also driven by US surplus production and a legacy of Fordist[13] agriculture that was geared towards massive overproduction on the back of government subsidies, with a great deal of this surplus exported through the mechanisms of the 'Food-for-Peace' programme. This system gave rise to US Public Law 480 and drove the expansion of the World Food Programme (Shaw, 2001); it also gave CSM a dominance

[13] Named after Henry Ford and in reference to modern economic and social systems based on industrialised, standardised mass production and mass consumption.

that the earlier fortified foods had lacked, a supremacy that, for some development workers, represented a threat to their own programmes: Oxfam, for example, had invested financially in a Kenyan product called Supro, and its field director complained bitterly about the arrival of CSM, which was a much cheaper competitor.[14]

'Food-for-Peace' began in 1954 and was deigned to dispose of US agricultural surpluses in two main ways: title I was a resource transfer to poor countries, allowing concessional sales of food to governments friendly with the US; and title II provided food for famine relief, targeted at vulnerable people (Ruttan, 1993; Barrett and Maxwell, 2005). The latter had a more humanitarian, rather than developmental, goal: to get food directly to the most malnourished through donations to aid agencies, rather than via a government-to-government transfer. Until the middle of the 1960s these donations only included commodities in surplus, but a 1966 amendment to the original law allowed for the purchase and export of stuffs that were *not* necessarily in surplus, while also permitting the government to pay for the processing, fortifying, and blending of foods (Sullivan, 1970; Marchione, 2002, p. 2106). This (crucial) change led to the production of the acronym-labelled items now so familiar in the aid world (CSB, SFB, WSB, and WSM), all of which were milled, blended, and fortified in the US before being exported as massive sacks of modernist foods to starving people all over the world.

These products were intimately tied to the 'productivist' food system, in which farms enjoyed massive economies of scale, reliant on fertiliser, and specialised in a limited number of commodities, such as corn, rice, soy, and wheat, which were then broken down into a variety of derivatives for 'added value' (Friedmann and McMichael, 1989; Goodman and Redclift, 1991, Friedmann, 2004). In fact, CSM was just one of many ways that the food industry began to extract the maximum value from its massive overproduction of a few commodities. A particularly striking illustration can be found by comparing CSM with the slimming food Metrecal, which was a big dieting fad in the US in the 1960s. Metrecal was an ancestor of the Slim Fast plan, whereby dieters drunk a nutritionally balanced 'milkshake' for breakfast and lunch, followed by a normal dinner. Its main ingredients were dried skim milk, soybean flour, and corn oil: the same surplus commodities used in CSM. Metrecal harnessed these ingredients for the opposite purpose. In Metrecal, corn, soy, and milk were packaged

[14] 'Memorandum to the board of Supro laboratories Kenya limited: tour of Mr. T F Betts to Uganda, Rwanda and Burundi', January–February 1967, Oxfam Archives, DIR/2/3/2/54, Bicester..

for losing weight; in CSM, they were packaged for gaining weight. Metrecal was a treatment for overconsumption; CSM was a treatment for famine.[15]

Both products, however, offered a way to extract value from the same crops: Metrecal was promoted to dieters, and CSM to aid agencies. The 1960s saw a big opportunity for the latter, since many humanitarian organisations were, for the first time, becoming operational in the Third World. Previously they had concentrated on raising funds and channelling these to local partners, governments, or churches, but now they were moving into territories and implementing programmes directly. Oxfam, for instance, worked through grants to local organisations until 1967, when it began to run relief itself: first in the Bihar famine, then in Biafra the following year (Gill, 1970, p. 67; Black, 1992). Similarly, UNICEF had been primarily a middleman, locating food surpluses and then transferring them to governments, while offering technical advice. In Biafra, though, it started to purchase trucks, employ staff, and distribute foods directly. This trend towards direct operations provided an important outlet for US-produced fortified foods. Suddenly, Western agencies needed stocks of food; they required inventories and warehouses, and they had to make decisions on what to supply. If the old approach was to transfer money to local committees, which would buy local foods or invest in local projects, the new approach meant sourcing and distributing foods, which necessitated cheap cereals, particularly those that could demonstrate efficiency and some kind of additional nutritional value. Fortified foods were perfect for these roles.

## Conclusion

Fortified foods had become a well-established feature of the humanitarian landscape by the late 1960s. Their rise is best understood as the result of mid-twentieth century political and social conditions: a high modernist mentality, which presented science and technology as an improvement on traditional diets; the legacy of the 'development decades', with its protein obsession and raft of state-led programmes to manufacture milk alternatives; and a productivist agricultural regime, which generated vast quantities of just a handful of crops, which were disassembled into derivative ingredients for processed food. These historical forces help to explain the humanitarian uptake of fortified blended foods; they demystify an

[15] The basic similarity of the products led some humanitarian agencies to distribute Metrecal as a famine food: in a letter from Church World Service to Christian Aid, a project manager commented that 'one of the best high protein products has been, paradoxically enough, a diet supplement like Metrecal' ('Letter from Melvin Myers (director of the material resources program of Church World Service) to Janet Lacey, Christian Aid, 21st June 1968', File CA/C/13, Archives of Christian Aid, SOAS Special Collections, London).

object that was originally adopted *not* because it was inherently superior and had been dispassionately tested against a variety of other foods, but because it slotted so neatly into the political and social preoccupations of this formative era of humanitarian action. To return to the dualisms at the start of this paper, these historical patterns also demonstrate how foods, even in their 'dry' form, can never be simply 'raw' objects because they are always rooted in politics and society; indeed, this story is a great example of the point made by Bruno Latour (1993): that one cannot divide what is natural from what is cultural in any meaningful way.

This being said, the distinction between the 'raw' and the 'cooked' is still a useful way to think about humanitarianism, especially if it encourages aid workers and policymakers to be culturally aware and to abdicate some control over the delivery of resources. Just as 'dry' rations have allowed beneficiaries to reinsert food into their cultural life, other sectors can reap the benefits of providing 'raw' materials rather than final, ready-made products. In the shelter sector, for instance, Ian Davis (1978, 2011) has long pointed out that ready-made prefabricated solutions are expensive, complicated, inflexible, and inappropriate; the best provision, he argues, is to provide basic materials such as bricks, corrugated iron, and plastic sheeting, which can be adapted, transformed, and transported in accordance with circumstance and culture.

In these instances, the challenge for the aid community is to resist the convenience of a 'ready-made' solution, taking the time to find more participatory, locally appropriate, and culturally-sensitive options, which frequently entails helping people to source the raw materials they need, rather than presuming that we know what is best. Increasing awareness and recognition of this has been one of the achievements of cash programming advocates in recent years, making a re-examination of the history of 'raw' materials timely. One must not forget, however, that even ostensibly 'raw' materials come with embedded assumptions. Fortified foods are a striking example of this need to think beyond the raw and the cooked, heightening awareness of how culture inhabits not just the preparation of foods and their transition into a meal, but the individual ingredients as well.

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