

Crisis-driven innovation: The case of humanitarian innovation

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1. Introduction

Innovation is often presented as a survival issue and this provides a powerful metaphor to focus attention on the need to manage it effectively. But in the humanitarian context it takes on a very literal meaning. Crises, whether natural or mad-made, require rapid problem solving if agencies and aid workers are to avoid the huge negative impacts of such disasters.

That makes consideration of how innovation takes place in this sector an urgent challenge. How can the humanitarian sector best organize to enable innovation and what are the roles for key actors – donors, agencies, and most importantly ‘users’ ? Our paper summarizes the nature of the challenge and reviews experience so far in humanitarian innovation (HI).

There is a second issue which we also explore. Arguably crisis conditions provide a ‘laboratory’ for exploring alternative approaches and generating novel innovation trajectories which might diffuse more widely – the concept of ‘reverse innovation’. Are there lessons which could be learned for mainstream innovation management? And if so, what are the mechanisms which might enable such learning and experience exchange to take place?

2. Humanitarian innovation

Although HI has always taken place there has been little formal attention paid to how it might be organized and managed until comparatively recently. A key study was published in 2009 by ALNAP¹ which attempted a definition and offered a suggested framework for HI, drawing on a series of case studies as illustrations and building on relevant literature [1]. That study closed with a framework for humanitarian innovation that showed that innovation forms and processes were embedded in three supporting areas):

- Capacities, including those of innovation entrepreneurs and leaders; field and operational staff; researchers and evaluators, and external experts;

¹ The Active Learning Network for Accountability and Performance in Humanitarian Action was established in 1997 as a mechanism to provide a forum on learning, accountability and performance issues for the humanitarian sector. See www.alnap.org for more information.

- Relationships, including with affected populations, within aid agencies, between international and national actors, with researchers and academics, with the private sector, and between operational agencies;
- Contextual factors relating to the sector, including culture of risk, financing, codes and standards and incentives.

The study also showed that the turning point in innovation management involved not just a series of windows of opportunity for a new idea or practice, but also serious constraints on the existing standard operating procedures, so that there was little choice but for a new approach to be attempted. ALNAP's work was used to support the founding of the Humanitarian Innovation Fund (HIF), an agency with the remit to provide both a funding route for entrepreneurial ideas in the HI space and also to raise awareness and build capacity in the field.

Some influential reviews in the wider humanitarian aid field include a focus on innovation – for example, the Humanitarian Emergency Response Review of the UK Government's aid efforts [2]. HI research involves multiple themes – for example, the University of Oxford's Humanitarian Innovation Project (OxHIP) highlights the need for more bottom-up, user driven innovation especially amongst refugee groups [3]. Medecins sans Frontieres (MSF) took a sectoral perspective in their review of medical innovations[4].

Other sector reviews have taken a rather different stance, looking at the potential of innovation to improve practices. For example, the HIF commissioned a review of the gaps in emergency water and sanitation that would be the focus of targeted innovation management processes and The Shelter Centre has convened similar research in emergency shelter.

There have also been stand-alone case studies of specific innovation processes. Most have been developed by the institutions already mentioned here: ALNAP have produced seven case studies by way of follow-up to the original report and there are a number of HIF project reports and several OxHIP reviews.

Overall, innovation practices appear to be slowly evolving: for example, the growing use of design-led approaches in public, social and development innovation is now diffusing into the humanitarian sector.²

3. Research design and methodology

This paper reports on progress so far in a project funded by the UK's Department for International Development. It draws upon a literature review [5], an extensive (and continuing) series of interviews with over 50 key stakeholders in the humanitarian

² An example is the UK AMPLIFY project, conducted with support from IDEO. See <https://www.gov.uk/international-development-funding/amplify-collaborative-challenge-fund> for more.

innovation (HI) system and on a series of detailed case studies in five key sectors dealing with food, water and sanitation, healthcare, shelter and the underlying financing of HI.

In this work we are using a framework for analysis exploring key resources, roles, relationships and routines, and a systems map as a means by which the different elements and interactions (invention, development and adoption of innovations) of the HI ecosystem can be better understood [6-8].

Research has been based on secondary sources and interviews with key players in the field, using a *snowball* approach in which respondents are asked to nominate others who could contribute useful perspectives. Building upon the interview survey referred to above, the case studies included over 200 in-depth interviews with technical experts, service providers, managers, researchers, etc., in each of the respective humanitarian sub-sectors covered in the case studies.

4. A case example – cash-based programming in food assistance

Our purpose in the research is to contribute to understanding of the HI ecosystem and how different elements interact to generate scalable innovations. It will be helpful to present a brief example – innovation around cash-based programming (CBP) in food assistance - from the research, which highlights some key themes:

- Crisis forces a rethink and search for radical alternative options to the 'dominant design'
- This search process involves entrepreneurs experimenting at the fringes
- The role of users in this context is critical in enabling co-evolution of solutions which work and which are compatible with the context of application
- Prototypes are then extended to structured pilots and eventually, via a process of rigorous evaluation, to full scale adoption and diffusion

Early days

Although there are many early examples of food aid the origins of a systematic and large-scale response can probably be dated back to the 1950s. A combination of accumulated surpluses in developed countries like the US and the EEC and the desperate plight of many in famine-afflicted areas led to the development of food aid programmes. In 1963 the World Food Programme (WFP) was formed as a UN agency with the mission of eradicating hunger and malnutrition.

A supply and distribution ecosystem emerged with major agencies like WFP linking donors of money and food with large non-governmental organization (NGO) delivery partners (like World Vision, CARE and Oxfam) handling distribution. By the 1970s the systems for delivering such aid were well-developed and there was extensive innovation supporting the core mechanisms in place. Process innovation focused on

improving warehousing and consolidation, on transport and logistics and on distribution management. Product innovation included work on improving nutritional value and 'position innovation' [9] was concerned with extending the range of targets towards which aid could be delivered and learning and adapting systems for those contexts.

The 1980s – gradually changing the pattern

The 1980s saw a gradual shift in approach, in part triggered by the decline in agricultural surpluses in the developed countries and in part by recognition that local markets could often be a viable source of supply.[10] There was also growing concern that large food aid deliveries had a depressing effect on local markets. Emphasis shifted towards procurement rather than delivery and this period saw a move towards internal or regional purchases to stimulate markets. Agencies like WFP began to receive an increasing proportion of donations in the form of money rather than kind and this shift created a need for new capabilities and infrastructure – for example in monitoring prices and suppliers on the international market and brokering aid delivery.

In parallel a small number of experiments with a radical alternative were taking place using cash directly to enable the purchase of food on local markets. These emerged for many reasons – sometimes (as in the Eritrea crisis) it became dangerous to ship food because convoys were attacked. Instead mechanisms evolved to allow surreptitious movement of money to crisis zones to enable some form of food assistance to be provided. There was also growing recognition that even if food was provided as aid recipients would sometimes trade this on local markets for things which they needed more – in essence food was being used as a currency with which to procure other supplies of goods or services.

The idea behind this was not new – for example, Clara Barton, one of the founding figures of the American Red Cross, helped to organize cash relief following the Franco-Prussian War of 1870–71 and similar programmes were organized in response to the Galveston floods in Texas in 1900 [11]. In 1948 the British administration's response to the famine in Sudan was to distribute cash, coffee and train tickets and in India they responded to famines by providing waged labour [12]. Cash relief interventions were also implemented in famines in Tanganyika (now Tanzania), Rhodesia (now Zimbabwe) and colonial China [13].

There was also discussion around the theoretical ideas of cash vs. food aid going back to the 1970s but whilst the principle was recognized it was not until the mid-1980s that actual experiments with the practice began [14]. These were very much isolated bottom-up pilots, pioneered by entrepreneurial agents working in the field and taking advantage of local autonomy to explore novel approaches. The individuals involved were loosely connected in an informal network and so some degree of experience-sharing and accumulation of core models for cash-based programming began to emerge.

The 1990s – further experimentation

The 1990s involved a limited expansion of experimentation, with a number of models being tried in different locations. All shared the idea of moving away from direct delivery of food aid and towards using cash as a way of empowering local players to procure what they needed. Examples included programmes tied to specific objectives like cash for work through to more open-ended schemes and different modalities were tried, ranging from vouchers and cards to direct cash payments.[15]

These experiments also highlighted challenges in establishing a viable cash model. For example, issues of distribution and control, of security and of developing an underpinning infrastructure in terms of technology and skills. There was also a need to improve understanding of the ways in which local markets operated in order to avoid distorting effects from cash interventions.

One other important factor in the 1990s was the growing understanding of the *context* within which food and other assistance was being placed [16]. In particular the Vulnerability Assessment Method and other approaches began to influence the ways in which major agencies like WFP and delivery NGOs like Save the Children and CARE began to operate [17]. Tools for assessment of needs became sharper and more sophisticated, allowing assistance to be more carefully targeted and matched. Part of this development involved growing recognition of end-recipients as active agents in the aid process.

The early 2000s - Maturing of the concept

By 2001 considerable evidence from ten years of small-scale experiments had accumulated demonstrating the solid case for considering cash programming as an option in food assistance [18]. This brought the potential of this radical innovation to the attention of senior policy-makers [19] and key networks like the Humanitarian Policy Group began to shape the discussion and provide a focus for sharing of evidence and experience. Early advocates pressed for more exploration and the agenda was beginning to shift from “*should we work with cash?*” to “*how do we work with cash?*” But despite growing interest and activity – particularly amongst *early adopters* like Oxfam, British Red Cross, DFID, Adeso or the Swiss Development Corporation – the overall level of activity was still low.

For example a report for ODI in 2005 commented that “*cash and voucher approaches remain largely underutilised in the humanitarian sector. A review of all of the 2004 United Nations consolidated appeals, reveals almost no use of cash or vouchers.*” (13).

During this period considerable learning took place about the challenges of designing and implementing viable cash systems. The need for new skills and knowledge, the potential of new technologies and the opportunities opened up by a change in the underlying *dominant logic* of food assistance were increasingly recognized and

explored. And the concept moved from a *'one size fits all'* model to an increasingly configurable one, shaped to meet different operating contingencies.

2004 - the 'tipping point'

The huge scale of the 2004 Tsunami crisis prompted a massive response and a significant injection of resources into the humanitarian aid system. Combined with negligible damage to food production and marketing systems beyond the immediate coastal areas this sparked widespread experimentation with and evaluation of cash and vouchers as alternatives to in-kind food deliveries.

Major cash-based programmes were implemented in a variety of locations, offering opportunities for learning and refining the approach. The crisis acted as a prism through which the idea of cash programming became diffracted, spreading out in terms of operating models, delivery systems, target populations and enabling technologies. Some were centralized and linked to large-scale formal programmes like cash for work whilst others were *bottom-up*, configured with considerable input from end-users. Some were food-focused; others linked their programmes to a wider set of needed resources including shelter. This was an important phase in the maturing of the concept since it highlighted the importance of a deep understanding of context in designing, configuring and implementing effective programmes.

The Tsunami experience accelerated mainstream adoption of the CBP approach. A 2005 review by the UK Overseas Development Institute (ODI) [19] concluded that:

" ... a strong body of evidence is starting to emerge to indicate that providing people with cash or vouchers works. It is possible to target and distribute cash safely, and people spend money sensibly on basic essentials and on rebuilding livelihoods. Cash transfers can provide a stimulus to local economies, and in some contexts can be more cost-effective than commodity-based alternatives..."

The field was maturing with evidence about many different contexts (for example cash tools were used in the Hurricane Katrina and German flood contexts [11]) and the emergence of policy tools such as checklists to help target where, when and in what form CBP would be appropriate.

An important contribution here was the role of CaLP – the Cash Learning Partnership. The origin of this group was an informal experience sharing network collating and curating the emerging body of knowledge around cash programming. It was formalised in 2005 with Oxfam, Save the Children and the British Red Cross as founders and has grown to be a key institution in the humanitarian innovation landscape supporting capacity building, research and information sharing.³

³ For more details see their website: <http://www.cashlearning.org/>

In parallel with this the range of technological options to enable cash programming had expanded, especially with the growing use of mobile money across cellular phone networks. The experience of M-PESA in Kenya opened a wide range of new complementary possibilities around how cash systems could be quickly established and operated [20].

2010 - moving to scale

Further impetus was given to the use of cash in the aftermath of the Haiti earthquake in 2010. This was characterized by a very high level of cash-based interventions; local food markets began functioning soon after the disaster and the government stopped food distribution interventions after only three months. However the lack of formal distribution systems (such as ATMs and key parts of the physical banking infrastructure) meant an upsurge in alternative methods of cash distribution. Some were *low tech* involving human agents or physical collection at bank branches but there were limits to the scale and location of these operations, especially in rural areas. For this reason cash transfers enabled by mobile phone were widely adopted, demonstrating the considerable potential of such approaches in rapidly setting up and scaling viable systems [21].

During the past five years the expansion has continued, both in CBP projects themselves and in learning around specific aspects of the approach – for example about delivery mechanisms [22], gender [23], scaling up [24], nutritional impact [25] and comparative impacts of food aid and cash transfers [26]; Hoddinott et al., 2013 [27], [28],[29]. The response to the 2011 Somalia famine was significant because it effectively broke the *scale barrier* – it was the first time that international aid agencies used cash and vouchers at scale in a humanitarian response with an estimated \$77m committed in this form by 2012.

Major agencies have made substantial changes in their delivery programmes – for example, between 2008 and 2011 WFP increased its CBP portfolio by a factor of ten, from 5 projects to 51. Its 2008-2013 strategic plan stated the intention to provide 30-40% of its assistance in the form of cash and vouchers by 2015. Another signal of the acceptance of cash is the Food Assistance Convention. Through this international treaty, which entered into force in January 2013, countries commit to providing certain amounts of annual food assistance. But unlike its predecessor (the Food Aid Convention), food aid is no longer the only tool through which countries can achieve their commitments; cash and vouchers are considered as contributions.

Table 1 summarizes the key features of this brief history.

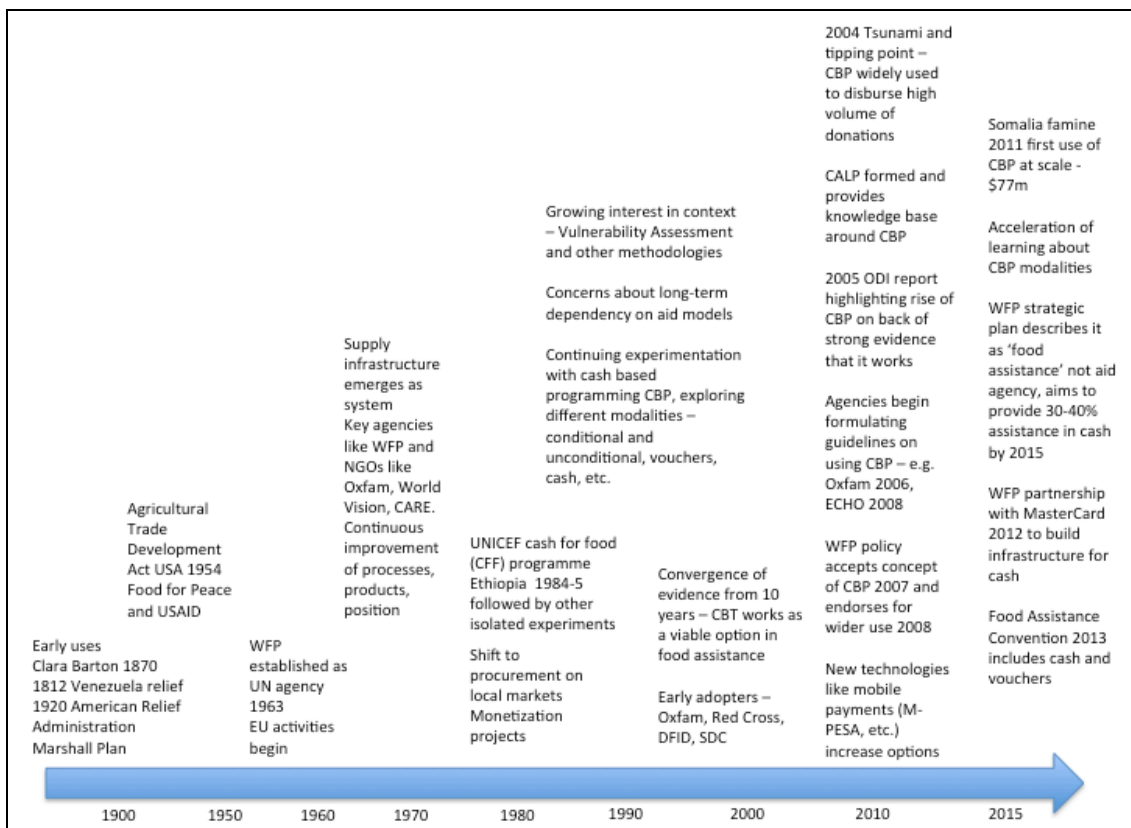


Table 1: Key points in the food aid/relief timeline

5. Learning for the HI sector

Innovation theory provides a number of lenses through which to interpret this case and provide insights into the workings of the humanitarian innovation ecosystem. For example the Abernathy/Utterback model of innovation life cycles highlights the ways in which a dominant design becomes embedded in a mature system and the role played by entrepreneurs in challenging it, recreating a fluid state from which a new dominant design emerges [30]. Another helpful lens is Christensen's theory of disruptive innovation which sees radical innovation emerging at the fringes of the mainstream, driven by entrepreneurs experimenting and learning in that space [31]. Early problems are solved and the innovation develops in maturity until it becomes attractive to mainstream markets – at which point it poses a challenge to existing incumbents.

The process is one of fast failure and learning, gradually refining key elements of the innovation in the context of application. Recent models of *agile innovation* build on this, using concepts like rapid prototyping, minimum viable product, scrum teams and sprints to define a set of tools which enable fast cycles of experimentation and learning [32, 33].

In the case of cash programming this was very much the observed pattern with small-scale entrepreneurial activity refining and defining a new model via a process of controlled experimentation with different delivery models, technologies and

other elements. In particular the process took place at a time of rapid technological change where new developments (such as mobile payments and better online security) facilitated the building of a carrier infrastructure for cash programming.

The evidence base grew to a point where original objections were overcome – for example about whether end users could be trusted, how to avoid corruption, maintain security, etc. We can map this on to a classical S-curve and explain many of the features around slow take-up and then acceleration in terms of diffusion theory [34]. In particular slow take-up and early resistance is not simply a matter of *mindset* although this is a powerful inertial force. Henderson and Clark's theory of architectural innovation highlights the big challenge to the underlying structures and competencies required to implement radically new models which requires both learning new ways of working and simultaneously letting go of old but no longer relevant approaches [35]. Cash programming requires a new technological infrastructure with different skills, moving away from a supply and distribution model to one resembling more closely a financial system. It also moves from a centralized mode towards a decentralized network model, with corresponding shifts in power and influence.

Arguably cash programming represents a *paradigm shift* in the underlying mental models around food; this is reflected in the change of terminology from *food aid* to *food assistance*. This has required considerable adaptation on the part of mainstream incumbents and challenged much in the way of established structure and practice.

The case highlights the existence of an innovation *ecosystem* within the humanitarian sector and the challenges of managing innovation at this level. There are key players and institutions and connectivity across a network which supports what Christensen calls *sustaining innovation* – effectively doing what we do but better. But there are also points where experimentation takes place and new, radical options emerge; these tend to be at the fringes of the mainstream system and not well integrated, often driven by individual entrepreneurs acting in *maverick* mode. They have greater flexibility to experiment, uninhibited by the biases, standard operating procedures, bureaucracy, cultures, strategic commitments, and other rigidities common in established organizations of all kinds.

Finding ways to couple these two systems – the mainstream *do better* machine with its advantages of scale and the entrepreneurial fringe with its capacity for radical new thinking – is a significant challenge for the ecosystem in the future.

Ambidexterity also places emphasis on the role of users in context who can help shape and configure innovations so that they are suitable for wider diffusion; the process is essentially one of co-evolution. There is also considerable opportunity within the sector for more *open* approaches to innovation, especially in cross-sector learning. The significant contribution of financial sector professionals and institutions to enabling the radical shift in infrastructure is a good example where such collaboration can accelerate change.

6. Learning from the HI sector

The role of crisis is central to humanitarian innovation and often leads to pressure for a different kind of response. As a source of radical innovation, a way of breaking with dominant designs and established trajectories, it represents an important approach which has wider potential. (Significantly some organizations report making use of 'constructed crises' as an aid to moving into new mindsets and generating space for radical innovation paper [36])

In particular crisis –driven innovation is characterized by

- Extreme conditions forcing a radical rethink of solution approaches, potentially opening up new innovation trajectories
- Users and context are critical
- Rapid prototyping and learning are a key feature, linked to entrepreneurial experimentation
- Rapid diffusion- a combination of urgency of need, configuration of appropriate solutions by engaged users and resource backing from major aid agencies to drive adoption to scale
- Recombination – the failure of existing solutions under crisis conditions forces a rethink and wider search space, opening up potential for cross-sector learning

So how might a process of systematic learning from crisis innovation operate? Table 2 sets out an outline process model involving several linked stages. Crisis conditions set stretch targets and force search behaviour in new directions; they also cue attentional responses to new signals rather than filtering them out. In the HI cases the ability to find a passionate entrepreneur at the centre may not be coincidence – their role is to have the vision but also the passion to infect others and bring them into the vision.

Exploration of potential new directions involves the observatory stage, in which search behaviour is enabled in novel ways. This corresponds to open innovation search patterns and may well require brokerage, cross-sector linkages, working with users, foresight, ethnography and multiple other approaches and often involves deliberate recruitment of *outsiders* to bring alternative experience and perspectives. It also requires the ability to abstract the core problem to a higher level such that potential solutions in other sectors/worlds can be perceived as relevant.

The laboratory stage involves experimentation with the original idea to adapt it to the new context. By its nature this process involves failure and fast learning and user input is critical in shaping and configuring a robust solution. Whilst the initial idea may be radical its shaping and development involves integrating a wide range of

small scale incremental improvements in a process of experimentation, learning, capture and codification.

In the prototype stage there is further need for high user engagement and development of robust configurations which will actually work and be accepted. At this stage it is important to have a working model of the system level innovation which can act as a *boundary object* demonstrating the operation and advantages of the new approach but also allowing input from potential adopters in further shaping and developing the ideas.

Finally widespread diffusion depends on the codification of the new system into a transferable model – a *standard package*. This does not mean that further innovation will not take place; indeed it is characteristic of the examples given that continuous improvement is embedded in their design. But the basic model has become standardized and codified to the point that it can be handed on to others who have not had direct experience and sufficient detail of the *standard operating mode* available to enable them to set up and operate in a different context. This part of the process is assisted by the fact that users and players have been involved in co-creating and especially configuring the model.

Table 2: Suggested process model for working with crisis-driven innovation

Stage	Characteristic activity
Crisis	Creation of a driving entrepreneurial vision which simultaneously articulates the need for change and for radically different solution involving anew trajectory
Observatory	Extensive search in novel directions to find relevant approaches which could be adapted – requires ability to abstract problem and solution thinking to a higher level and brokerage mechanisms to make connections
Laboratory	Experimentation around core ideas and creating in context a new system through recombination of proven elements from elsewhere
Prototyping	Development of a scale version of the system which allows for testing and configuration in context with users. Also provides a <i>boundary object</i> which can demonstrate potential and engage key agents in further development and diffusion
Scaling and diffusion	Codification of core model into a <i>standard</i> transferable package which can be replicated. Importantly this allows for further innovation and continuous improvement via channels which integrate emerging ideas into the <i>standard operating model</i> .

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