

The Humanitarian Innovation lab dialogue series: defining the 'how's' of humanitarian innovation at NTNU

Brita Fladvad Nielsen

*Institute for Product Design,
Norwegian University of Science and Technology
brita.nielsen@ntnu.no*

Abstract

Humanitarian crises are expanding in frequency and the humanitarian system is overwhelmed by the difficulties of linking sustainability, resilience and urgent response through humanitarian action. Technological, service and system-oriented changes are requested and humanitarian sector ask for assistance from academia during the move towards a new humanitarian paradigm. A dialogue series have highlighted key issues for a discussion on humanitarian innovation. Humanitarian innovation at NTNU must be a collaborative effort following a conscious effort to understand and move humanitarian action towards greater fulfillment of humanitarian objectives.

Keywords: Humanitarian innovation, humanitarian design, humanitarian markets

1. Introduction

Norway plays a central role within the humanitarian system as a major donor country. A donor country is a contributor of official donor aid (ODA) to provide humanitarian assistance internationally (OECD, 2016). This role implies that Norway can also be a significant policy driver for humanitarian innovation. Norway has also created a central network for private sector to access the humanitarian market (NOREPS).

Humanitarian sector has recently started looking to academia in order to understand how this shift should take place. The Norwegian University of Science and Technology (NTNU) is a central hub for technical innovations that can influence the 'humanitarian paradigm shift', a theme that is well recognized in humanitarian sector.

A milestone in humanitarian innovation was passed the 27th of January 2016 at NTNU, when General Secretary of the Norwegian Refugee Council (NRC) Jan Egeland spoke to students

and researchers in Trondheim. Jan Egeland asked for a collaboration between NTNU and the NRC to solve humanitarian challenges together.

In this spotlight, it is important to acknowledge that we need to develop a common and cross-disciplinary understanding at NTNU of what it entails to innovate (for) humanitarian action. This will also be of relevance for other academic and perhaps particularly technology-heavy research institutions.

A dialogue series in 2015 took place as a collaboration between the Department of Product Design at NTNU and the Norwegian Centre for Humanitarian Studies (NCHS) at PRIO. The purpose was to discuss and frame central issues for humanitarian innovation research, with Norway based stakeholders as a starting point.

This paper will first include a brief summary of relevant background literature on humanitarian innovation. Finally, the key issues of relevance to NTNU as a Norwegian humanitarian innovation platform will be presented based on input from the dialogue series.

2. Understanding humanitarian innovation

In order to meet the fast expanding needs of people in emergencies worldwide, humanitarian sector is increasingly collaborating with private enterprise in order to fill the needs of crisis-affected people. This gradual shift implies a need to move direction. From a vertical, top down, system led by donor countries providing financial resources and determining delivery models, the humanitarian relief system expands to involve a vast amount of actors and handing over more control to private sector. “Transformation through Innovation” will be one of four themes of the 2016 World Humanitarian Summit.

2.1 The relevance of the humanitarian market

In order to understand how technology/product and service innovation can improve humanitarian assistance, one must understand the frames in which they have to perform.

First, one must understand how this assistance is structured. An emergency is typically divided into four phases. The *preparedness phase* is one where regional shelters are filled with equipment stock-piled to be ready at the onset of a disaster in the region. Secondly, the *immediate emergency phase* is the one where ideally all international humanitarian actors come together to act and solve a significant crisis. Later, this emergency is theoretically moving into the third *recovery phase*, before the last *transitional or durable solution phase* begins. In reality, the humanitarian world is facing a situation where more and more emergencies turn into so-called protracted or chronic emergencies or situations where particularly bordering areas move in and out of war situations without ever moving into a durable solutions phase. The humanitarian system through its strong dependency on donor support encourages problem solving more in certain phases of the emergency than others. The first two phases will receive the most political attention and financial support. In the phases focusing on longer-term issues, donor fatigue prevails and the lack of durable solutions can undermine the communities' ability to move out of an otherwise chronic emergency.

Secondly, a relevant characteristic of humanitarian action is that the assistance depends on the collaboration of a high number of actors. These stakeholders include donor countries, policy makers, humanitarian customers such as the Norwegian Refugee Council, Non-governmental organizations (NGOs), private enterprises, non-for profit enterprises (NFPs), host

governments, and public and private local partners. Understanding the way these stakeholders operate and the unpredictability of their set-up is an important factor to bear in mind *in order to involve the right interests* when designing solutions for humanitarian relief.

Third, the most influential stakeholder in a product or service development process is currently the humanitarian *customer*. The humanitarian customer is further influenced by the financing power of the donor providing them with the means to purchase a product or service. Currently, there are financial means available to fund *innovation*: this puts pressure on the customer organization to understand what innovation entails. In a key feature of the humanitarian market is that it is the humanitarian customer – the UN, or another humanitarian actor such as the ICRC, the NRC, which determine which products, and services are needed. This is because they are the only visible financial source seen from the private enterprise's side and also because the 'real' end-user is inaccessible and not currently considered through in the sense of human-centered design approaches.

Fourth, the end-users, in other words the crisis-affected people, currently have no direct influence or feedback mechanism. Such a feedback mechanism is essential in iterative innovation processes. A quasi-market is one in which the customer is not the end-user. This means that human-centred design and innovation processes are challenged. Due to practical, security, financial or ethical reasons, innovators are also prevented from accessing end-user contexts, and in essence, innovations end up targeting perceived rather than experienced needs.

Finally, the ongoing discourse in humanitarian innovation keep returning to the question of transition. How can humanitarian innovation facilitate a move from benefiting the humanitarian *customer* and short-term concerns and fads, and into a *resilience and human-focused* process? In the end, figuring out the long-term solutions and how these are influenced by humanitarian innovation will and the other way around will be essential overarching questions.

3. Research approach

The aim of this paper is to contribute to a discussion on how NTNU can strengthen humanitarian innovation by drafting some key points from issues brought up in collaboration amongst Norwegian stakeholders in the humanitarian market.

3.1 Academic contributions and research gap

The 'Humanitarian Innovation Project' at the University of Oxford (Refugee Studies Centre, University of Oxford, 2016) has been the main influence from academia to add a scholarly understanding of humanitarian innovation (HI) to the ongoing discourse in humanitarian sector. Betts and Bloom sum up the diffuse terminology defining HI in humanitarian sector as follows:

“Humanitarians have used the term “innovation” to refer to the role of technology, products and processes from other sectors, new forms of partnership, and the use of the ideas and coping capacities of crisis-affected people.” (Bloom & Alexander Betts, 2014)

Prior to Betts and Bloom, humanitarian supply chain and logistics literature (Rebecca , Mays, & Haselkorn, 2015) have been main sources of research insights on technological innovation

and the humanitarian market. The humanitarian market emerges in the aftermath of humanitarian disasters through the supply and purchase of products and services aimed at assisting crisis-affected people through the humanitarian system (Nielsen, 2013). Recent contributions in humanitarian supply chain management includes Mays et al.'s description of the mismatches between business and humanitarian sector (Mays, Racadio, & Gugerty, 2012) are of significant value to understand the frames of humanitarian innovation.

In architecture, literature has focused on Build-back-better (Kennedy, 2008) approaches and together with human geographers, they emphasize resilience and long-term focus through 'transitional design' approaches.

In more technology related areas such as industrial design and engineering disciplines, there are few studies relating to technology introduction and technological innovation specifically targeting humanitarian relief. These are limited to a small number of case studies with few frameworks that allow for comparison and learning that is relevant for the development of methods for innovation. A small and arbitrary number of research studies is also produced by micro-enterprise focused NGOs in refugee camps; yet these studies do also not discuss the topic 'innovation' but rather technology transfer and acceptance (Garfi, 2009), business development and micro-enterprise, and focus on payment models for refugee camp settings.

A significant research gap in humanitarian innovation is to be found when looking for studies seeking to describe contribution and impact in the humanitarian market at a structural level. As mentioned, the emphasis of literature specifically mentioning HI, is to find collaborative and effective ways to include private sector for the purpose of improving humanitarian relief. In order to contribute to the current research, NTNU and other academic institutions must discuss what our role should be in solving humanitarian challenges. This article will contribute to filling this gap by describing considerations brought up during the 'Humanitarian Innovation lab dialogue series' with multiple stakeholders. The article will specifically target the considerations' implications for NTNU as a contributor to solving challenges of humanitarian action.

3.2 The Humanitarian Innovation lab dialogue series

The Norwegian Centre for Humanitarian Studies at the Oslo Peace Research Institute PRIO initiated a collaboration with and the Department of Product Design at NTNU in 2014. This collaboration, entitled 'the Humanitarian Innovation Lab dialogue series' aimed at stimulating the discussion on humanitarian innovation in Norway. The idea was that the discussion needed to move from a situation where 'humanitarian innovation' is a buzzword into a more clear understanding of humanitarian innovation and how to approach it. This aim had a normative aspect that originated also in expressed interest of the participants prior to the dialogue series.

The chosen approach has consisted of three seminars during 2015 including a broad selection of humanitarian sector stakeholders. Stakeholders from Norwegian academia, NGOs, private sector, humanitarian sector and governmental institutions discussed what Humanitarian Innovation (HI) should signify. Participants have included (but are not limited to) the Norwegian Refugee Council, Norwegian Church Aid, International Red Cross in Norway, the Research Council, the Norwegian Emergency Preparedness System NOREPS, the Ministry of Foreign Affairs, the Norwegian Research Council, Medicines sans Frontiers (MSF), Norwegian Church Aid (NCA), and BI. At the seminar at the Department of Product Design

there were participants from a broad spectrum of NTNU departments; from the Department of Product design, the Department of Geography/Development studies, the Department of Urban Design and Planning, the Department of Computer and Information Science and the Department of Energy and Process Engineering. In addition there was one enterprise operating in the humanitarian market (Morpho Solar), as well as Engineers without Borders

The first seminar took place at PRIO in Oslo and included a discussion of what humanitarian innovation *is*. The second seminar took place at the Department of Product Design at NTNU, and was set up as a collaborative workshop centring on the question of how the departments could collaborate across disciplines. NCHS finally hosted the third and last seminar where humanitarian practitioners presented their recent perspectives on 'how' humanitarian innovation should happen through a panel debate. All three seminars lasted one day (approximately 6 hours each).

3.3 Data analysis

The minutes taken at each seminar were analysed using a highlighting approach in which the information that stood out and caused discussion and agreement between participants was highlighted. This technique was applied with the purpose of broadly sharing the ideas of participants without interpreting them too deeply. In order to present their holistic meaning for an open debate, the results chapter will present a broad categorization of the discussed issues. Since the rationale of the seminar series was not preceded by a set of research question but rather seeking to understand the potential of collaborations from multiple academic perspectives and stakeholder perspectives, this article will try to describe broadly which questions and insights stood out that seem relevant to the role of NTNU and academia in general in Humanitarian Innovation.

4. Findings

While the discussion in the first seminar centred on the different understandings of humanitarian innovation, the second seminar moved on to focus more specifically at challenges and opportunities for HI at NTNU. The third and last seminar included a practitioner's panel debate on the challenges and opportunities of HI; the participants chose this last seminar to raise questions on how humanitarian innovation can be done in a way that makes sense.

4.1 Humanitarian innovation: from 'why' to 'how'

While discussion in the first seminar had focused largely on the reasoning behind the recent movements for humanitarian innovation, the third seminar moved onto questions of how humanitarian innovation should be done. According to the participants, this showed a maturity among the humanitarian stakeholders and the acknowledgement that humanitarian sector needs innovation in order to meet the increasing global needs. The humanitarian system is currently overwhelmed by the increasing number of protracted emergencies and the high number of displaced people in need of protection and relief. By moving from 'why' to 'how' the humanitarian sector is opening up to academia by acknowledging the need for more knowledge and clearer visions for humanitarian innovation.

4.2 HI for who, what, and where ?

Humanitarian relief reacts through international agreement, and the humanitarian supply chain works in a way that purchase equipment based on cost and availability. This results in a

purchase system that favours one-size-fits all solutions. Still, technologies and services must perform in a particular setting which is defined by end-users preferences and former experiences, local infrastructure, political systems, socio-economic factors and so forth. When designers and human-centred engineers meet the challenges of humanitarian sector they are therefore challenged by the general terminology defining innovation within this sector. Simply to say that inspiration from private sector will increase effectiveness of humanitarian action miss clarity and meaningful targets for contributors. Participants at the seminars were looking for that clarity by asking questions connected to human practice, human lives more knowledge about marketplaces and informal economies surrounding relief areas etc.

The discussions moved onto questions regarding ownership. Who should the innovations target and who should be the 'owners' of problems and solutions? It was agreed that answering questions about ownership is crucial to understand the purpose of any HI. In order to gain knowledge on ownership in relief settings, the seminar participants highlighted the need for partnering locally and understanding that people locally often are the ones who have the solutions.

Further, all three seminar debates touched upon the question about which technological innovations do the humanitarian customers believe are of importance to bring to the field?

The Norwegian Refugee Council has highlighted Energy, Education and ICT as three of the key areas for innovation that they want NTNU to improve.

However, while the NRC presented quite concrete and technology based areas of focus, the seminar participants underlined several times that 'real' innovation needs to happen at *service and system* level. This is because most new technologies introduced in humanitarian markets fail to affect humanitarian objectives. This happens due to the inability of the humanitarian *system* to foster longer term socio-economic opportunities for the crisis-affected communities. In many relief areas, infrastructure is highly challenged, there are no electric grids and the supply of fuel, maintenance equipment and skilled labour are only some of the challenges that will interfere with the performance of technologies in field. The lack of robust financing mechanisms in the humanitarian system is another significant challenge to delivering effective technological solutions. These mentioned challenges indicate that NTNU needs to think holistically, and involve many research fields as well as partners beyond the humanitarian sector.

Where? During the dialogue series and particularly during the second seminar in Trondheim, researchers highlighted the relevance of doing research in context. Social scientists highlighted that engineering researchers need more experience with and understanding of ethics, disciplinary underpinnings of and practicalities of conducting research with vulnerable user groups and in different cultural settings. During the last seminar in Oslo, a large part of the discussion centred on how one can gain more knowledge about cultural and political factors in emergency contexts and their relevance to HI and particularly to ownership issues. There is currently little research on local and informal economies surrounding relief areas and their relevance when creating sustainable business models for technology transfer.

4.3 Hands-on suggestions from the NTNU seminar participants

The seminar at NTNU focused on the opportunities of NTNU specifically and a few hands-on suggestions were provided by the participants during a brainwriting session. A brainwriting session is one in which all participants begin with a sheet of paper on which they write down

ideas before they pass the sheet to the next person for him or her to continue the elaboration of that idea.

- A humanitarian project inventory: Within NTNU as well as nationally there is no inventory of researchers or projects relating to humanitarian innovation. Connecting people working with similar issues would be an asset for a humanitarian innovation lab at NTNU.
- Contextualization courses: The topic of contextualization had been brought up by one presentation about an energy project in Ethiopia and a resulting discussion was concerned with how the different departments can better collaborate regarding field research and preparations for field work.
- Intro courses: There should be a crash course as an introduction to the humanitarian landscape at NTNU
- Co design: a HumIn Lab should link people with NGOs, companies and locals
- Make more noise: There is currently no arena for designers of technologies to 'test' out their innovations in terms of an expert panel, or similar.
- Ethics: in social sciences Ethics is an integrated part of coursework; in technology educations less so. Participants at the Trondheim seminar emphasized the need for ethical frameworks to guide researchers from NTNU when approaching end-users in humanitarian relief settings. NTNU can build on knowledge on disaster anthropology and research on vulnerable user groups, by creating ethical frameworks targeting engineering, design and entrepreneurship scholars.
- Partnerships: an agreement must be made on how practitioners and researchers should work together.
- Identifying 'real problems': a HumIn Lab must have a determined approach to make sure it is real problems of humanitarian action that are 'treated' instead of symptoms.

5. The 'how's' of Humanitarian Innovation

The final discussion on the how's of HI brought out a set of questions to be answered. The following are open ended suggestions for a discussion on the how's at NTNU and other academic institutions that have engineering as their traditional core strength:

5.1 How do we link contributions with humanitarian goals?

NTNU can be a driver for the creation of academic knowledge on how technological innovations can impact humanitarian goals. In order to do this, we must build understanding of what the specific challenges of the humanitarian market consist of.

During the dialogue series, there was agreement that currently, HI collaborative projects have trouble documenting that their ideas actually have impact on humanitarian goals. Unfortunately, humanitarian practitioners in the dialogue series is of the understanding that new technologies and services introduced by private enterprise in relief settings, more often than not fail once the innovation has passed the pilot-phase. Once the solution has to be sustained by local communities, these fail to make a difference. Many private enterprises and humanitarian actors avoid the humanitarian market altogether due to this problem.

This is one of the fundamental challenges that humanitarian innovation is facing. NTNU can, through cross-disciplinary thinking, help to link contribution and learning from our 'donor country side' with impact on change practise at the other end.

5.2 How do we connect research on product, service and systems level?

In a recent blog-post by the UNHCR Innovation hub, recommendations following joint innovation initiatives emphasize the use of holistic approaches, inclusion of actors, definition of roles and responsibilities, monitoring and financial mechanisms. These recommendations agree with the recommendations in the theoretical framework suggesting an agenda-space approach to humanitarian innovation. Due to the complexity of the humanitarian market, the impact of an innovation does not depend on the quality of the technology alone, but on a large set of interests on global and local level. These include political and financial interests. These agendas and the complexity need to be understood and included into research frameworks for humanitarian innovation. Reducing the complexity to hands-on tasks for researchers at NTNU will require project leaders that are able to communicate and include these agendas in a useful way so that we can have research that combine product, service and system innovative thinking.

Innovation must focus strongly on service- provision and system level. Innovation from private sector in humanitarian relief has largely focused on products/technological innovation. Yet participants agree that if contributions from designers and others are to make a real impact on humanitarian objectives, focus must be shifted from product-oriented to service- and system oriented innovation. That humanitarian sector and experienced private sector representatives express that too much focus has been on products when talking about HI, is of fundamental importance to NTNUs future approach. How do we make sure that the technologies developed at the mechanical engineering departments are fit to the relief settings and how do we make sure that these research projects benefit from the extensive knowledge and research methods created for contextual understanding in the more human-centred disciplines?

The challenge of bringing technological innovations to field, or to create better and sustainable services, depend on the creation of people-centred business models or other types of interventions that take into account motivations of local partners. This means that entrepreneurial researchers and intervention-focused thinkers (such as design thinkers) would be relevant to have onboard when taking on this challenge.

5.3 How do we create people-centered innovation processes for humanitarian relief settings?

Currently, knowledge about humanitarian relief settings, particularly those in vulnerable, poorest development countries, are not well represented at the nature and science departments of NTNU. Contextual understanding is seen as the only way to understand the 'real challenges' yet academic institutions are reluctant to travel to relief settings which are often dangerous. Ethical aspects also limit the ability of academic staff to enter emergency settings. How we can achieve the necessary hands-on experience to build understanding must be discussed. 'Sound data management' is seen by the humanitarian sector as one of the areas of interest where they believe humanitarian action can be made more effective and efficient. Data management and the gathering of evidence to support innovation processes is highlighted during the seminars as a way to connect knowledge on what works with people trying to solve challenges in humanitarian action.

5.4 How do we separate (and integrate) crisis-affected people's needs from other agendas?

Humanitarian sector includes a number of stakeholders. The humanitarian *customer* is one which seek to solve own 'operational' needs to reduce cost alongside seeking innovation to solve the needs of crisis-affected people. In local contexts, there are host communities, host governments, private enterprises and public institutions which all will have their own stake in solving the humanitarian innovation challenges. Of private sector stakeholders, these can simply be divided into actors who are either looking for market opportunities in the preparedness shelters 'model'; or suppliers who are 'traditional' suppliers of basic items to humanitarian sector. Then there are larger corporations looking to expand market opportunities in development countries (MasterCard, VodaPhone etc.) While humanitarian actors are increasingly partnering with large multinational enterprises to solve operational issues such as cash-transfers and legal aid services, basic needs such as water, sanitation and energy seem to be left for longer-term, resilience focused actors.

In order to keep a clear focus for HI, it is important to understand these stakeholders' interests and their relationship with each other. This is not to say that they are not overlapping or interlinked, but to keep the meaning of HI separate, NTNU initiated projects for humanitarian sector should keep an ongoing and transparent discussion on how HI can keep needs of crisis-affected people at the core of their efforts.

One way of keeping an ongoing discussion on synergies between stakeholders is through 'Agenda Space Mapping' in which collaborative workshops become an integral part of the humanitarian innovation projects at NTNU. Through participatory observation techniques, the collaborative innovation workshops can provide insights into the prevailing agendas relevant to increase impact in a multi-stakeholder setting such as humanitarian action.

5.5 What can designers and design researchers do for HI?

Designers at the seminars asked how the humanitarian system can deliver user-centred technologies through a very top-down decision making structure. With a humanitarian system serving crisis-affected people on a global level, the challenge for designers becomes to define relevant factors within end-user contexts and to achieve more clarity about which are the 'real' end user needs. This will be valuable for NTNU when connecting different disciplines; as designers are trained to combine and simplify complex input and transfer them into applicable information and solutions that are people-centred. While engineers can be in the centre of solving technical problems, designers together with social scientists are in the key position to try to identify 'real needs' and combine these with the complex agendas of policy makers and other stakeholders in the relief area and surrounding region.

5.6 How do we access and develop robust financial mechanisms to conduct longer-term focused HI?

A last theme that was discussed during the seminars, is how to finance cross-disciplinary research that can fill the gaps needed for making sensible frameworks for humanitarian innovation. Since academia has project-based financing this is an issue that needs to be clarified.

6. Conclusion and final remarks

That the Norwegian Refugee Council has approached NTNU to ask for help to solve the increasing challenges of global humanitarian relief, is a milestone in regards to Humanitarian Innovation. Findings from the dialogue series has strengthened the idea that the humanitarian market has a specific landscape that NTNU researchers need to gain familiarity with when taking on this challenge. This article has described some key issues for further discussion.

What will be NTNU's role in the 'new humanitarian paradigm'? What can NTNU achieve as a research and educational institution, from the area of humanitarian relief?

Contributions have shown that broad collaboration is imperative while improved knowledge creation and information sharing will be key ingredients to connect technical solutions with local needs and interests in relief settings and host communities. NTNU must apply a broad yet targeted range of human resources to help solve the complex challenges posed by the humanitarian market. In order to coordinate this cross-disciplinary research task, the Humanitarian Innovation lab will be of importance as a model to continue also for the future.

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