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Innovative Research Design – A Journey into the Information Typhoon

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Abstract

Disasters are often characterized by their sudden onset and complex nature. The need for innovative and trans-disciplinary research that starts from the practice of disaster response is uncontested. Yet, the realities of field research require a rework of research design and processes. In the aftermath of Typhoon Haiyan that hit the Philippines in November 2013, a small team of researchers with different backgrounds came together in an innovative setting to investigate information management for decision support and sensemaking in the field. We combined the research in the field with remote support for logistics, communication and spot analyses. This letter describes our findings in working this setting, and discusses key methodological questions in the transformation of research from desk to field ... and back.

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Keywords: Type your keywords here, separated by semicolons ;

1. Introduction

Typhoon Haiyan made landfall in the central Philippines on November 8, 2013, mainly affecting the provinces Samar and Leyte province. According to the latest OCHA situation report[†], more than 14 million people were affected by the Typhoon, and more than 4 million are still displaced. In response to this disaster, a worldwide effort

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[†] UN OCHA Situation Report No. 34 of January 28 2014.

<https://philippines.humanitarianresponse.info/system/files/documents/files/OCHA%20Philippines%20Typhoon%20HaiyanSitrep%20No%2034%2028Jan2014.pdf>, accessed on January 30, 2014.

was made to save lives, provide protection, telecommunication, food, shelter and healthcare. The UN organized the response into 11 clusters, assigning a Level 3 emergency on November 12, 2013. Since the declaration more than US\$ 650 have been contributed [1]. In the Camp Coordination and Camp Management Cluster alone, 566 partners including local NGOs and government organizations work on providing assistance to displaced persons [2]. This effort was supported by the work of volunteers that worked remotely – organized in networks such as the Humanitarian Open Street Map Team (HOT) or the Standby Task Force [3].

Along with this joint global effort comes a rise in information and information products that are designed to address the needs of different communities. Platforms such as the Virtual OSOCC[‡], humanitarianresponse.info and reliefweb.int[§] are designed to foster online communication and information exchange between the global communities involved in the response – ranging from researchers, humanitarian response practitioners and potentially with affected populations.

1.1. *Sharing information without sharing the knowledge?*

Globalised communication enables information exchange between local communities, humanitarian responders and researchers. Yet expertise and experiences in disaster vary widely – ranging from research deskwork to field operations. Besides differences in terminologies and jargon, often *codified knowledge* that is made explicit is accessible to those who did not participate in operations of disaster response. This type of knowledge, which can be made subject of reflections, scientific debate and peer review, is to a large extent the basis for accepted scientific research. It is thought by many that much of this knowledge is often separate from actual practice. *Personal knowledge*, acquired by experience is another cognitive resource, which a person brings to a situation and that enables individual thinking and (re-)action [4]. This personal knowledge often enables one's ability to act in a complex situation, and naturally also determines the ways, in which we understand and interpret information.

As researchers we aim to acknowledge this difference and engage in working with practitioner communities knowing that we as researchers will interpret and understand information in the light of our very disciplines, while practitioners and responders can oversee the applicability and consequences in the field far more intuitively. This means, that sometime we may unintentionally misrepresent and misunderstand the very environment that we are engaging in and investigating. Rather than avoiding and not addressing this gap that inevitably exists in practitioner-oriented disaster research, we understand it as an integral part of our work, and that we are learning in real-time. What can we state and contribute from our perspectives as researchers while acknowledging the uncertainty related to our lack of experience in the field? How can we engage with practitioners rather than extracting information and interpreting it in a context that is very different from the reality in the field? These questions were among the guiding questions of our overall vision of this field research and will be addressed throughout the paper and in our future work.

1.2. *The Information Typhoon...*

Despite the amount of information available during recent humanitarian crisis and disasters, many responders and those who support response efforts describe the difficulties in pinpointing and finding information that may be useful for specific information needs [5]. In part, this difficulty is linked to the lack of context and personal knowledge or experience with this very disaster that anyone working remotely will naturally have. Confronted with this information overload – even when working remotely – and a lack of knowledge about the reality of the response to Haiyan, a small group of researchers with different research questions came together under the umbrella of the Disaster Resilience Lab (DRL) with the aim to understand the needs for sensemaking and decision support in the field as well as commence an introductory understanding of how information products may be used by humanitarian

[‡] For Typhoon Haiyan: http://vosocc.unocha.org/rss/vo_2455gzwe.html

[§] For Typhoon Haiyan: <http://reliefweb.int/disaster/tc-2013-000139-phl>

practitioners in this context. The individual perspectives and backgrounds in the team were as different as information management, healthcare, decision analysis and logistics. These different lenses were not only the foci, via which we interpreted the information products when working remotely, but were also present in our intuitive understanding of the operations and the questions we asked in the field. In this sense, our research can be understood as an effort of co-construction and co-creation from both different scientific disciplines and via our engagement with practitioners.

This paper discusses the design of our field research in the Philippines after Typhoon Haiyan, acknowledging the uncertainty and differences in understanding of researchers vs. practitioners. In Section 2 we report on our findings from the field research in the Philippines and outline how we combined a field research team with remote reach back support. In Section 3 we reflect on the research and compare this approach with other networks of remote collaboration and provide an outlook on future research design in the field. Finally, we discuss the need for the future development of adaptive and dynamic fieldwork methodologies balancing rigour of design and the relevance in the field.

2. Designing the Disaster Resilience Lab Field Research for the Philippines

2.1. The challenge: Designing A Multidisciplinary Field Research Approach

The need for multidisciplinary research for disaster management is uncontested [6]. The integration of aims from a diverse group of researchers into one common goal requires a synergistic process to leverage the individual skills and resources, but it requires a rework of design and processes such that the individual techniques, methods and approaches that are typically applied in each discipline can be merged and combined into a common approach. The field aspect is another dimension of complexity- requiring a redesign of coordination, communication, workflows, and infrastructures that may not frequently be intuitive to many traditional researchers.

The method and approach chosen should be fit for multiple purposes, reflecting the complexity and diversity of the group as well as the strategic goals. Moreover, the individual level of experience – both in terms of research and field experience – need to be respected and integrated into the design.

2.2 Field Team and Remote Support Design

The rise of new information and communication technologies is a facilitator for new (virtual) forms of collaboration, enabling experts with different backgrounds to work in the field and remotely on the same problem. In this way, it is now possible to have researchers, responders, and volunteers with different backgrounds, needs and interests work in concert. Not only are they potentially able to observe and review what is taking place [7], but they are also able to process information and engage in an active and transparent process of communication, sensemaking and decision support.

As the DRL research team, we used technology as a bridge and conduit for the redesign- the role of reachback support and standby support.

The idea of reachback support stems from a longstanding history of military operations and descriptions of agile command posts and joint operations. [8] While the research team may have markedly different aims and goals, the mechanism of being able to “reach back” to another location with more robust resources (e.g., information access, connectivity, staff with less logistical and environmental demands) is what may be common in both settings. Technology as a mechanism with which to harness and leverage reachback approaches has also been described. [9] Others cite new reachback approaches as being driven by strategic choice and collaborative strategies. [9] [10] There are likely more examples in academic, grey literature, and informal communication channels that expound upon reachback approaches across multiple domains.

Reachback support with virtual skilled volunteers has been described anecdotally by a well-experienced urban search and rescue (USAR) responder. With limited time, restricted resources to process information and maintain ongoing situational awareness, he reached back to USAR team members not currently deployed to the post Haiti earthquake environment. Over brief communications, he described the field team's needs, time requirements, and examples of what information was needed for USAR field operations.

'Find out anything you can from Léogâne, the best maps you can find, identify potential targets, where are there large building, hospitals, shopping, create lists, and GPS coordinates.' (excerpt from Disaster 2.0)[11]

Specifically where to look for information, how to make sense of the information provided and the optimal way to present remote situational awareness back to the field USAR team was likely not fully specified. A reachback and standby support team with knowledge of these dynamic information and environmental requirements can potentially interpret “find out anything”, “best maps” and “potential targets” that fits the needs of the field team.

There are likely many more example of successful and challenged circumstances from disciplines and environments that explore reachback and standby support activities for which we have inadequately addressed in this paper and require further research.

2.3 Preparations

Remote preparations of the field research team started at the end of November, and the field research team embarked for Manila on December 11, 2013. There were bilateral connections between the individual team members, but the entire team met face to face after the trip. The preparation phase was a virtual collective effort, in which we combined our individual research agendas into a synergised protocol of generic questions on information management and decision support and use of information products. To enable individual researchers to meet their specific research interests, we designed sub-interview protocols that reflected the individual interests and the requirements for research in the respective discipline. These were, by the very nature of the team, in part quantitative and in part qualitative. We designed specific interview support material such as map books that consisted of a collection of dozens of maps and or dedicated statistics on the distribution of disaster relief goods.

To design our travel schedule and organize the logistics of this very trip, we relied on help and support of many organizations and individual contacts.

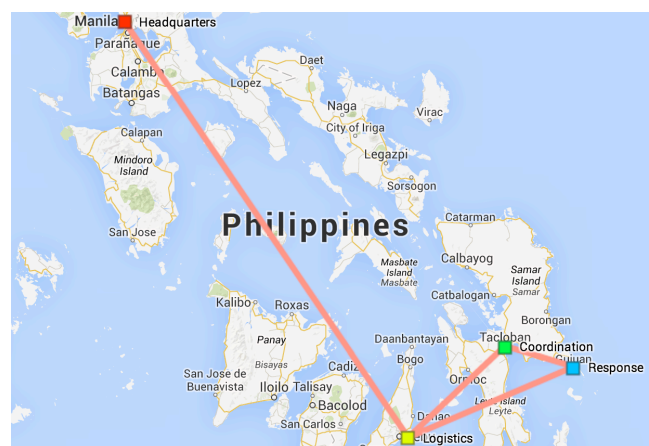


Fig. 1. The DRL field research trip

Figure 1 summarizes our route, and indicates the focus of our work in the respective locations. To understand this very fragmented disaster, the trip began in Manila, followed by an investigation of the logistics in Cebu, and lastly to the severely affected areas around the cities of Tacloban and Guiuan.

We explored roles for individual team members and protocols for various situations that we were foreseeing as potentially relevant. Owing to the short time, we mostly focused on communication protocols to connect the field team with the remote support.

2.4 Field Experiences

The field team arrived in Manila on December 12, 2013, about a month after the Typhoon struck. According to the Decision Makers' Needs Workshop Report [11], the phase of the trip was likely to commence at the end of the response phase, when decisions are still largely linked to organizing the responses of different actors but transitioning into the recovery phase with longer term strategic goals of reconstruction, development and preparedness. The MIRA report had been released and cluster and coordination documents were beginning to discuss recovery activities. During the field trip, the government strategy for reconstruction assistance was published by the National Economic Development Authority NEDA [12] and the MIRA II was published on December 20.

The key to our trip was to understand the transition of new ideas and approaches that are redefined for the purpose of disaster and humanitarian response management into practice in the Typhoon Haiyan context. This endeavour was unique, as we went as independent multidisciplinary researchers rather than members of direct field operations, coordination entities, or consultants embedded in a specific organization. The team started the field trip with common goals, but all taking various risks with this new and innovative endeavour – from technical and logistics questions, to the questions regarding how this multidisciplinary work would be accepted by practitioners. There was also a risk as to the degree to which traditional research and academia would accept this approach and the subsequent research findings. This risk was and is particularly palpable in the forms of feedback modalities to practitioners and accepted venues for publishing results in academic disciplines. Still, the willingness to try something new and to down prioritise individual aims united us in this project.

Enablers of this work were the relatively open Philippines post disaster environment, where international support for humanitarian operations was not severely restricted. This openness along with the team's pre-existing relationships with responding agencies at various field levels provided a foundation for this exploration. The overall stability of the political and social structures made the trip logistics and management feasible and limited risks for an independent team.

While it has been stated in the World Disaster Report 2013 [13], information management and technology have become drivers in the humanitarian systems, the DRL field team further explored the multifaceted nature of technology and information management. For example as the team travelled deeper into the field from Cebu to Tacloban on December 16, connectivity became increasingly challenging. With the aim to keep the field team updated with new situational awareness from online sources, the reachback and standby team member reduced file sizes with key information, data, and maps to an absolute minimum. Opening an email or sending out a text message became difficult. The team switched from smart phones to old Nokia cell phones to reduce dependence on electricity.

In this trip, given very limited resources, a two-pole communication structure emerged mostly supported by the authors of this paper: in field communication keeping the link to the back office and reporting on the most urgent needs and issues of the field team. The reachback and standby support was provided by Jennifer Chan, with 8 years of research and field experience in similar settings, including personal familiarity with logistics, administrative needs in the field and working in low tech settings. When the field team posed requests, experience with existing humanitarian information networks (i.e. online networks, personal contacts) were explored, filtered, and triangulated to fit the needs of the team.

Communication was reduced to very efficient information exchange: short, concrete questions were asked and answered roughly once per day. If information was not available immediately, the data collection was done remotely and offline. Our conversations had an average length of about five to ten minutes. Information was also translated into feasible short emails & SMS. In low connectivity and fragmented connectivity settings (i.e., Guiuan and

Tacloban) select information was sometimes duplicated over multiple intermittently available communication channels (e.g. SMS & MMS on two mobile telecommunication systems) to ensure transfer of high priority information while attempting to minimize information overload.

2.5 Results

The field team conducted 41 semi-structured interviews and engaged in meetings and conversations. Preliminary analysis indicated that our main source of information were UN affiliated contacts, and a subset of NGOs, government representatives and members of the Red Cross Red Crescent Movement IFRC/ICRC.

By the very nature and timing of this field trip, our research was to a large extent exploratory, including engaging with different actors and also giving them room to express the most urgent issues from their perspective. In this manner, the field trip continuously balanced the needs of rigorous and comparable research with the realities in the field, ranging from limited access to information and time limitations. Decisions were made by researchers at times to adjust data collection methodologies. This was done in acknowledgment of the stressful field environment and power of personal conversations and reflection during interviews, rather than adhering to standardized interview protocols.

The output of this work is multi-fold and ongoing. While we are mirroring back our work into our respective domains and disciplines, including enriching the data and conducting further experiments or analysis, the emerging processes and a new understanding of networked field research is an interesting result in itself. This requires a respective understanding of the work context, the skills and capacities of the teams. As we move forward we will continue to investigate the potential role of a cohesive but flexible approach to sharing research findings, providing feedback to communities, and advancing research ideas and its translation into education and practice.

3. Conclusions and Lessons Learned

3.1 Collective Intelligence vs. Individual Inspiration

Collective intelligence has been described as the potential of human beings to come to better results in groups rather than individually [14]. It can be inferred that this idea is related to the efforts of groups and organizations such as of the Standby Task Force (SBTF) and Humanitarian OpenStreetmap (HOT). These “digital humanitarians” often engage in microtasking activities to support humanitarian and disaster response activities. Researchers, however, may have specialised knowledge approaches to information collection that is unique in their discipline and field. Bringing researchers together from various disciplines, often with different theoretical approaches and methodologies may likely create more robust collective research endeavors and a potentially more powerful understanding and intelligence of the highly complex post disaster environment.

To achieve specialised results, we balanced the aims of a synergised but ad-hoc engagement of researchers by leveraging the capacities of a larger group of people with the specific ideas, skills and (potential) contribution of each individual expert.

3.2 Planning ahead

This is the first experience for the Disaster Resilience Lab team and also the first experience of using reachback and standby support in the setting of multidisciplinary research in the field. It is only an “n of 1”. While the learning curve was challenging, it inspired us for future projects, and we believe it shows great potential. More exploration and learning is necessary to better co-create a research framework and model of this kind. For example, further exploration into reachback support systems (e.g., military, business, humanitarian operations) in other settings will inform the iterative co-creation of a model for multidisciplinary field researchers.

We aim at building on the experiences of this first research trip by deploying researchers in different roles and settings. In this manner, the shared understanding and experience of the team will contribute to a better planning and management of the research design, and also improve the interpretation and understanding of notes taken, messages sent, and interactions with field practitioners.

To a large extent, this type of research requires balancing control of rigorous research that is expected to meet the predetermined individual and collective research aims with the dynamic and often uncertain field environment emerging opportunities and challenges in the field. By the very nature of transdisciplinary co-creative research, which relies on individual experts, even the use of standardized questions or forms cannot replace the presence and engagement in the field. Rather, trust and a shared understanding of the most relevant research questions and the most urgent issues are required along with the ability to flexibly adapt the research design if the realities of the field require so.

Research teams themselves are part of the ecosystem of information explosion, which we expect to only increase. To be able to understand the needs for decision support or sensemaking in different settings, their ability to interface with different groups and communities is vital – from field practitioners, communities and local organizations to headquarters and academic desktop researchers.

We are aware that collecting this information and communicating it contributes to the (research) information explosion. While the growth of the academic body of knowledge is of smaller magnitude, it nonetheless sets the stage for a redesign of research ways of data collection, data sharing, analysis and dynamic feedback to practitioner and academic communities.

We also believe that more effort should be put forth to redesign feedback of research findings and impressions. This includes exploring new way to quickly push forward analytics (and potentially push back open analysis), while improving feedback to practitioner communities. Additionally, further methods and approaches are required to report about the uncertainties related to our lack of understanding and the exploration of the personal and professional knowledge that is highly important yet mostly implicit in humanitarian settings.

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