Ethics of Information Systems Design in Humanitarian Sector: Cultivating Humanitarian values among Technologists

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ABSTRACT

Ethical considerations have been an important part of the humanitarian discourse for decades. The short paper aims to present insights from the point of view of a technology practitioner with field experience in the humanitarian sector and emphasise on the need for continued dialogue about the importance of ethics in design of appropriate technology. The paper advocates for a value sensitive design approach to information systems design and proposes the need for increasing sensitivity towards the issues in technologist working in the area and draws an outline for possible future research.

Keywords

Applied Ethics, Computer Ethics, Humanitarian Principles, Red Cross Code of Conduct, Value Sensitive Design

INTRODUCTION

The design and deployment of information systems (IS) in the humanitarian sector today has become an integral part of facilitating effective delivery of humanitarian assistance and organisational principles or value standards are considered crucial for maintaining quality in humanitarian assistance (Hilhorst & Schmiemann, 2010). The guiding principles of the humanitarian sector are based on high ideals born out of the Red Cross movement. When in 1979, the then Vice President of International Committee of the Red Cross (ICRC), Jean Pictet wrote his commentary in 'The Fundamental Principles of the Red Cross', he stated that, "a principle is simply a rule, based upon judgement and experience, which is adopted by a community to guide its conduct" (Pictet, 1979). Today, the scale, significance and scope of humanitarian action has expanded significantly since the 1980s and the Red Cross Code, more accurately known as the 'Code of Conduct for The International Red Cross and Red Crescent Movement and NGOs in Disaster Relief', is a widely accepted standard in self-policing that the humanitarian actors use. When talking about information systems in the humanitarian sector, it is important to speak of the role of technologists i.e. the applied scientists or engineers involved in designing and deploying technologies to solve practical problems. Their role is integral and hence it is imperative that they are aware of the guiding principles of the humanitarian sector to which they are making a skilful contribution. The need for a professional code of conduct in both humanitarian sector and (computer) technology or ICTs, is mainly the outcome of ethical considerations and ways to ensure respect for human values

and the greater good.

The scope of this paper is to focus on the emerging values that come out of the humanitarian principles and emphasise on the need to consider them in the design of information systems. The focus of this analysis is to conduct a moral reflection on the information systems themselves and not their use (Brey, 2010). We do not focus on the deployment or use of information systems, however, in explaining scenarios and consequences of design decisions, from time and again the connection will be made between design and deployments. When talking about mainstream computer ethics, (Brey, 2010) established the need for separating the ethical enquiry of technology as ethics of computer systems from the ethics of using them. In this paper we follow the embedded values approach called the value-sensitive design (VSD) an approach to design developed by computer scientist Batya Friedman and her associates. VSD is "a theoretically grounded approach to the design of technology that accounts for human values in a principled and comprehensive manner throughout the design process" (Friedman *et al.*, 2013). This approach adopts the position that "technologies in general, and information and computer technologies in particular, provide value suitability that follow from properties of the technology; that is, a given technology is more suitable for certain activities and more readily supports certain values while rendering other activities and values more difficult to realise" (Friedman *et al.*, 2013). As such there are two major components to the analysis: humanitarian codes of conduct and software design methodologies which will be touched upon in the subsequent section.

HUMANITARIAN PRINCIPLES, VALUES AND INFORMATION SYSTEMS

In this section, we try to identify what values emerge out of some, if not all, of the guiding principles in the humanitarian sector. We then identify which of these values can be considered applicable for consideration in design of information systems for this sector. For the purpose of this paper, the phrase 'humanitarian sector' represents the ecosystem involving any state or civil society agency particularly involved in disaster response, and broadly disaster management, to alleviate human life and suffering which has been caused by a natural or man-made disaster.

Principles of Conduct for the International Red Cross and Red Crescent Movement and NGOs in Disaster Response Programmes:

> 1. The humanitarian imperative comes first.
> 2. Aid is given regardless of the race, creed or nationality of the recipients and without adverse distinction of any kind. Aid priorities are calculated on the basis of need alone.
> 3. Aid will not be used to further a particular political or religious standpoint.
> 4. We shall endeavour not to act as instruments of government foreign policy.
> 5. We shall respect culture and custom.
> 6. We shall attempt to build disaster response on local capacities.
> 7. Ways shall be found to involve programme beneficiaries in the management of relief aid.
> 8. Relief aid must strive to reduce future vulnerabilities to disaster as well as meeting basic needs.
> 9. We hold ourselves accountable to both those we seek to assist and those from whom we accept resources.
> 10. In our information, publicity and advertising activities, we shall recognize disaster victims as dignified human beings, not hopeless objects. (Steering Committee for Humanitarian Response, 1996)

Following a "human-values approach", we can identify the following emerging values out of these principles namely; justice, equality, transparency, accountability, privacy, anonymity, opportunity, cultural sensitivity, security and autonomy. The first principle about 'humanitarian imperative' emphasises human welfare as most important. Some of these values like justice, equality, autonomy are fundamental human values. Some of the key topics discussed in the literature mention privacy, liberty and security with reference to emergency management information systems (EMIS) (Buscher *et al.*, 2013) and raise some valid concerns over giving less importance to the issue of privacy as a trade off when lives are being saved. Most of such discussion in the area focusses on the information being collected of the affected communities and the life-threatening aspects, basic right of privacy and liberty in general. As a technologist it is important to consider

the design considerations that will have impact on the decisions that the humanitarian field worker will be making on a day to day basis. The decisions have a direct impact on the life and well-being of the affected communities and their environment. Therefore, it is important for a new approach towards information system design of such systems being used in humanitarian operations to be guided by a technologist guided by these humanitarian values.

If we take a typical example of a humanitarian preparedness and response operation, two of the most common information system needs are situation awareness and needs assessment. Situation awareness gives the responders working on the ground operation an overview of the whole situation with information like: extent of damage, affected area, affected population and a who-what is where overview. Needs assessment on the other hand uses data collected in situation awareness and on the basis of certain parameters and standards, like the Sphere Standard, is used to anticipate the needs of the affected population. Sphere Standard is a set of minimum standards in key life-saving sectors in the areas of: water supply, sanitation and hygiene promotion; food security and nutrition; shelter, settlement and non-food items; and health action (Sphere Project, 2011). In both such scenarios, there is a lot of data being collected and with the presence of multiple actors and decision makers from within or outside the region, the kind of data being collected is largely influenced by power relationships, relief distribution, available resources and the socio-political characteristics present there. Sandvik *et al.* (2014) talk about the reorganisation of the relationships between the helper and the helped and how new vulnerabilities are engendered by data collection and processing, making situation awareness and needs assessment an important site for conducting an ethical enquiry. A lot of data is being collected about the affected population in new ways using new systems and tools, like biometric information, suggesting that accuracy of information about a person's identity also increases the person's risk to other vulnerabilities during or after the relief process has ended. During the response phase the priority is on saving lives, and usually issues like consent, data protection, privacy about the population and questions like what happens to the identifiable information in the future and the security of it, is something that can be overlooked while it should be addressed before hand. Introna & Wood (2002) talk about how digitisation of identifiable information like biometrics can be powerful for social

control when talking about facial recognition systems and algorithms, talking about the politics of technology and discuss how mundane design decisions may have important political consequences that ought to be subject to scrutiny.

Imagine a smartphone application is being used to collect all this information and display it on the device which is being used by each responder on the field. A responder X identifies an injured old lady who requires first aid and files a report on the app entering the information about the nature of injury, the location, the name and age of the lady and the kind of assistance needed. Another responder Y at a different location identifies another old lady who needs to be carried away to a safe location because of her inability to walk. In both cases, the responders tag the incident report as urgent and actionable. The dispatcher at the control centre uses a computer where all information is collected centrally and displayed on the central software. The default way in which all incoming reports are displayed is listed in alphabetical order and sorted as on the basis of urgency. Here we can see that the information system being used has a predefined way of information representation, which might result in a biased approach influencing the action of the dispatcher. If thousands of such reports are being received during a crisis, the first lady who might need immediate attention because of first aid, might be appearing below the second lady because of her name, who might not be in a life critical situation.

In another scenario, incident reports are coming from various sources and being aggregated into the system where a person sitting at the control centre is moderating all incoming reports and tagging reports that require immediate action by assigning them to a responder who then follow up and act. In one of such reports, the source could not be verified and yet the information seemed actionable because of the urgency in the system. However, the system was designed to show the reports being received from identifiable sources first and then the anonymous ones. This method of sorting would influence the way in which the dispatcher would act on each report. The information system itself, cannot by nature of its design figure out that the report could be crucial and require immediate action. Only a human eye and experience and knowledge about the local situation that the person has, can make a judgment call here. In such situations we know that the right information at the right time can save lives.

In both the above scenarios, we can see the design of information systems can create unintended biases in the way information is presented to the user and thereby causing unintended consequences in a critical situation like disaster response. The above behaviour of information display and decision making can also be applicable if the decision making is conducted by the field responders in an autonomous way where the influencing factor can be preloaded data about the demographics of the region they are operating in. The way information is represented can unfairly discriminate one person and deny opportunity to receive assistance or delay the assistance and hence hamper with the compliance to the humanitarian imperative principle, in particular the second principle outlined above which says "aid is given regardless of the race, creed or nationality of the recipients and without adverse distinction of any kind. Aid priorities are calculated on the basis of need alone." Here we see the harm to the above established values being caused by the way technology has been designed. Similar analysis can be made about biases in information systems when applying any methods to conduct aid delivery. For example, the cultural differences and context specific to a region might be different and something that the technologist is not aware of when she made the system especially in cases where there are marginalised communities. If in a country, special attention needs to be given to the marginalised communities with respect to their right to receive any kind of humanitarian assistance compared to the general people, this aspect cannot really be judged by an information system being used to identify affected population. If the system generates a list of people based on general criteria like age and their need and not the social construct where they are usually denied access to resources, the unintended consequence has already been caused as a result of the design decision made. The discussion on unintended consequences of information technology in general has been prominent in the scientific community for example, Rolland mentions in (Thorseth & Ess, 2005.) "IT partly lays outside the control of human actors (e.g., users, managers, inventors, policy makers, stakeholder groups)" outlining there is a part of technology that is beyond the control of technologists. Technologists tend to ignore the fact that information technology, in particular algorithms, can also operate passively as referred to by Introna & Wood, (2002) as "silent technology" having unintended consequences in information processing or display to the humanitarian responder to make a decision as they claim such systems are "operationally obscure". The way such

systems operate is actually influenced by the people who design it or understand it, as the underlying mathematical methods can only be understood by a handful of experts. That begs the question, why or how can important decision be made based on a method that was designed and deemed to as fit for the purpose by a group of experts, who are not humanitarian responders themselves and are not making the final call.

CONCLUSION

One of the key aspects of humanitarian response operations is that of working in a dynamic and uncertain environment and the role that information systems play in timely decision making is very crucial. The humanitarian sector is governed by the principles and values that are widely accepted and considered of highest regard in terms of their respect for human life and dignity. Ongoing research in the design of information systems and technology in general already show that the design and operation of such systems has moral consequences and therefore should be subject to ethical analysis. The design decisions made by technologists in designing information systems for the humanitarian sector cause embedding of certain human values or those values which manifest after the use of such systems. Since the humanitarian sector has a certain set of values and standards to be maintained at each level of operation and conduct, it is imperative that the technologists also follow similar standards and come under the same criteria in terms of following a certain code of conduct. They should become more aware of the consequences being caused by the design decisions they make. The idea is not to shift the complete blame on the technologists for any consequence, intended or unintended, being caused by the mere use of such systems. But to understand the need of a similar code of conduct and guiding principles specific to information systems design and computer system design in general, for technologists that work in this sector. Ongoing research in the academic community suggests that that "there are several dimensions of influence on the ethics of technologically augmented practise like, the technology itself, the economic, social and cultural environment and the ways in which technologies are used" (Büscher *et al.*, 2014). Further research is needed in the area of ethics in information system design to understand the minimum and ideal standards that are applicable for this sector in general and try to come up with a specific ethical framework that technologists in

this sector can follow and abide by in their profession, just like the other professionals involved in this area.

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