

REFLEXIVITY AND VALUE-SENSITIVE DESIGN

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Keywords: *value-sensitive design, hermeneutics, ICT, reflexivity, ethical assessment*

Abstract

Value-Sensitive Design (VSD) offers a methodology to make social and moral values central to the design and development of new technologies. Although VSD incorporates views from philosophy and stakeholders involved in the process, it notably lacks reflexivity on the position of those involved in conducting the methodology itself e.g. ethicists, researchers and/or designers. Where technology is considered value-laden, the neutrality of those involved in the methodology seems to be taken for granted. The problem of a lack of reflexivity among VSD practitioners means stakeholder values may have less influence on technological design than is methodologically intended.

Understanding VSD as an extension of applied ethical assessment offers a fruitful outlook on how to tackle this problem. As in any sort of ethical assessment, reflexivity and transparency are key to allow all stakeholders to participate, and to ensure outcomes are not decided through power relations alone. This will promote reflexivity and forward a culturally-sensitive approach to VSD that may simplify the process across different cultures.

If the designs produced by VSD are seen as products of ethical debates, the lack of reflexivity in VSD undermines the credibility of the designs, understood in terms of how far the designs reflect the values of stakeholders encountered and not merely those of the designers. Without reflexivity the reasons supporting prioritisation and analysis of stakeholder values lose credibility, undermining the designs and technologies produced through VSD. As it stands, it is difficult to defend VSD and its designs as products of a coherent design methodology which identifies clear reasons for preferring certain values over others. To begin to correct this deficiency, the cultural-specificity of dominant 'value frameworks' in VSD should be reflexively assessed against the outputs of the SATORI FP7 project by practitioners reporting on VSD.

1 Introduction

Critical reflection on ethics and social dimensions of technology is important. This is underscored by recent events in the so-called 'Summer of Surveillance' in which ethical concerns were raised in the media about what the far-reaching surveillance practices of the National Security Association (NSA) (the Guardian, 2014). The surveillance systems used by the NSA were being criticised for neglecting the values of privacy and human dignity in favour of (national) security. Whistle-blowing about these practices by Edward Snowden ignited public debate reflecting on whether the current value trade-off built into design of such surveillance systems is justified or not. Instead of discussing

its moral implications after a system has been implemented and its (undesired) consequences have materialised, it has been suggested that these value trade-offs can be made at a much earlier stage of the system's life-cycle. To this purpose Value-Sensitive Design (VSD) offers an approach that accounts for values throughout the design-phase of a system (Friedman & Kahn Jr, 2002). The (potential) impact of technologies on individuals and society urge for deployment of VSD as a strategy to deal with these impacts in the design of technology (van den Hoven, 2013; Von Schomberg, 2013).

One could argue however, that in the NSA case values have been designed into the system, namely such that security is favoured over privacy. The question then arises, whose value-judgments should be incorporated into a system design? For example, values of the different end-users, designers or owners of a system? Whereas VSD makes a point about reflecting on values during design, its methodology seems to leave out reflection on the sources of those values.

In recent years this methodological issue has been discussed in literature on VSD (Borning & Muller, 2012; Le Dantec, Poole, & Wyche, 2009), in which a lack of reflexivity has been identified among VSD practitioners. In this paper we contribute to this debate by first exploring the philosophical justification for reflexivity in value-sensitive design, before turning to the difficulties for reflexivity created by pre-determined 'value frameworks', or lists of human values which are influential 'shortcuts' in identifying values in VSD, such as Friedman's '12 values of ethical import' (Friedman & Kahn Jr, 2002). We argue that for such frameworks to play a justified role in reflexive VSD, their cultural basis needs to be clearly explained whenever they are called upon so as to allow for assessment of the cross-cultural acceptability of the resulting values and system designs.

Our argument is constructed as follows: first VSD is introduced together with our understanding of VSD as an assessment framework. Next, justification for embedding reflexivity in VSD is discussed, followed by an argument for the need for culturally-sensitive reflexivity, according to which practitioners are able to identify, understand and report on the existence and effect of culture on VSD analysis and value frameworks. Finally, the potential contributions of the SATORI research project towards helping VSD practitioners identify cultural biases and identify common cross-cultural values and frameworks is considered.

2 Value-Sensitive Design

VSD is a methodology based around the idea that ethical reflection and the moral and social values of stakeholders (e.g. developers, users) can be included in the design process of technology. Originating at Stanford in the 1970's as a subject for Computer Science, the idea in the 1990's came to be referred to as *Value-Sensitive Design* (van den Hoven, 2013). VSD has been defined as 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, Kahn, & Borning, 2002).

Although VSD has been suggested for different technologies and applications (J. van den Hoven, 2007), it has been predominantly developed and applied in relation to ICT (Friedman & Kahn Jr, 2000; Manders-Huits, 2010; Timmermans, Zhao, & van den Hoven,

2011; Vermaas, Tan, Hoven, Burgemeestre, & Hulstijn, 2010). More recently VSD also became associated with Responsible Research and Innovation (RRI) (Owen et al., 2013; van den Hoven, 2013), a new research approach currently incorporated in research policy both at a national (NWO, 2010) and European level (European Commission, 2011).

VSD starts from the basic assumption that human values, norms, moral considerations can be imparted to the things we make and use (van den Hoven, 2007). According to this view technological artefacts are regarded as value-laden (van den Hoven, 2013), rather than value-neutral, or of purely instrumental value to human endeavours and activities (Manders-Huits, 2010). Technologies are instead seen to have political and moral consequences themselves (Vermaas et al., 2010). According to VSD, values and norms therefore should be considered in the design and construction of technological artefacts. Consequently they must be specified and exemplified in the process of technological design and later function as high-level architectural principles that for instance can be utilised as non-functional requirements (Vermaas et al., 2010).

To this end VSD consists of an iterative methodology that integrates conceptual, empirical, and technical investigations (Friedman et al., 2002). While the order in which these investigation occur varies according to application and practitioner (Borning & Muller, 2012; Friedman, Freier, Kahn Jr., Lin, & Sodeman, 2008; Le Dantec, Poole, & Wyche, 2009), the steps can be summarized as follows: The traditional first methodological step (Friedman & Kahn Jr, 2002) involves discovery and philosophically informed conceptual analysis of central values at stake in a particular design context (Manders-Huits, 2010; Miller, Friedman, & Jancke, 2007). VSD particularly focuses on values that are often implicated in technological developments, such as the values of human dignity, justice, welfare, human rights, privacy, and trust (Friedman et al., 2002). To complement the value investigation, stakeholders are identified of the technology in question (Friedman, Kahn, and Borning 2002). In the 'second' empirical step, both qualitative and quantitative research methods such as focus groups, surveys and interviews can be deployed to investigate the stakeholders' assessment of the technology (Friedman et al., 2002). The 'third' technical step focuses on how the values identified in the first two steps can be supported or compromised by the technology (Friedman et al., 2002). Results of the conceptual and empirical phases thus are proactively incorporated into the design.

In VSD different frameworks of ethical values are explicitly considered to shape the design of a technology. Rather than a one off event, assessment is embedded throughout the design process, from initial conceptual analysis, through empirical study of stakeholder and designer values, through to the finished technological design (Friedman, Kahn, & Borning, 2008). In this way the design of the technology is subject to an ongoing assessment dialogue between designers and stakeholders, in which the social and ethical values of both influence the final design.

3 Reflexivity

Although VSD recognises technologies as value-laden and seeks to create a dialogue between designers and stakeholders intended to influence the values embedded in the system's design, VSD notably lacks reflexivity on the position of those involved in conducting the methodology itself e.g. ethicists, researchers and/or designers (Alsheikh,

Rode, & Lindley, 2011; Borning & Muller, 2012). Where technology is considered value-laden, the neutrality of those involved in carrying out VSD seems to be taken for granted in the methodology. Even if it is assumed that the involvement of those conducting VSD is solely of a procedural nature, meaning methodological steps are merely instrumentally implemented and not substantive in the sense that views and opinions are purposefully incorporated into the process, it seems unavoidable and inevitable that personal views play a role in the execution of the methodology. For example, in assessing the views of stakeholders and deciding how to incorporate these views into the design of the technology in the last step of the VSD methodology, personal values inevitably influence the relative weight, importance and meaning attributed to different views (cf. Molewijk, Stiggelbout, Otten, Dupuis, & Kievit, 2003); the individuals carrying out the methodology, at least according to non-objectivist ontologies (e.g. Kuhn, 1970; Oates, 2006), are inevitably subjective in the sense that one's prejudices and background cannot be entirely separated from interpretation of phenomena (Gadamer, 1976).

3.1 UrbanSim Case

The lack of reflexivity in VSD can be seen in the perceived loss of the 'voice of the researcher' (Borning & Muller, 2012). This loss means that reporting frequently fails to discuss the values, biases and personal/cultural background which 'frame' (cf. Gadamer, 1976, 2004) interpretation of data and translation of values into design in VSD. An example may help illustrate this point. One case frequently discussed in VSD literature is that of the development of UrbanSim (Friedman, Kahn Jr., & Borning, 2008), in which the values of fairness, freedom from bias and accountability were considered in the development of a large simulation package for predicting patterns of urban development. The case addresses regional concerns in the US about pollution, traffic jams, resource consumption, loss of open space, loss of coherent community, lack of sustainability, and unchecked sprawl (Friedman et al., 2008). UrbanSim set out to provide 'urban planners and other stakeholders with tools to aid in more informed decision-making, with a secondary goal to support further democratization of the planning process' (Davis, 2006; Friedman et al., 2008).

During the conceptual investigation phase, the researchers distinguished between 'explicitly supported values (e.g. ones that they explicitly want to embed in the simulation) and stakeholder values (e.g. ones that are important to some but not necessarily all of the stakeholders)' (Friedman et al., 2008). Also they decided that fairness and accountability should be supported by the design (Friedman et al., 2008). Furthermore, the researchers recognised the 'tremendous conceptual challenges' due to disputing stakeholders that bring to the table 'widely divergent values about environmental, political, moral, and personal issues' (Friedman et al., 2008). The researchers/designers thus had the task to characterize wide-ranging and deeply held values of the diverse stakeholders, prioritise the values, conceptualise them and incorporate them into the design.

The case clearly shows that the researchers that conducted the VSD methodology have significant influence on what values are considered. Not only did the researchers single out some values they deemed important, they also interface the values forwarded by stakeholders. This raises the question on what grounds values are selected, a concern first forwarded by Manders-Huits (2010). More importantly, it also questions how

personal views and opinions held by the researchers affect the selection and interpretation of values which affect design. The fact that values are prioritised and philosophically analysed once collected from stakeholders again exceeds a merely procedural approach; substantive views held by the people prioritizing and doing the conceptual analysis cannot be discarded entirely, even where objectivity is sought.

Unless a purely objectivist ontology is adopted in which VSD researchers can separate themselves entirely from their prejudices (cf. Gadamer, 1976), the inevitable influence of the values of the researchers in prioritisation and analysis of stakeholder values creates a need for reflexivity in reporting the researcher's influence on the resulting system design. However, this influence is often not clearly described. VSD can be said to lack reflexivity whenever a clear explanation of the reasons behind prioritisation and analysis including the influence of personal views, backgrounds and beliefs is not given to explain the substantive role of the researcher. To understand how analysis in VSD is actually carried out, details are required concerning the professional and philosophical background of the researchers involved which limit or influence how they understand and prioritise certain values. Where such a discussion is not found, a lack of reflexivity can be said to exist.

3.2 The Need for Reflexivity

While a lack of reflexivity can be found in VSD, it is unclear why this should be a cause for concern. We suggest that the need for reflexivity can be shown by considering VSD as an extension of applied ethics. In his acclaimed book on applied ethics, the philosopher Peter Singer (1986) argues that ethicists have a special role in settling ethical debates. Their special knowledge, skills and training make them especially fit to conduct (applied) ethical analysis, and to mediate ethical debates to clarify the values and views of stakeholders involved. Central to this skill set is reflexivity—being able to identify the influence of one's backgrounds and values on the analysis of a case, and make this influence evident to others involved (Ives & Dunn, 2010). Reflexivity means applying the same skills used to assess the positions of others to personal values and beliefs, and to identify their influence on this analysis as far as possible.

The difficulty for VSD is that researchers, designers and ethicists involved in such analysis do not currently make clear the role their own values play in the outcome of the case. A key skill for mediation of debates in applied ethics has not obviously been transferred to VSD, despite the methodology creating ethical debates to influence technological design. Following on from this, the problem of a lack of reflexivity in VSD means stakeholder values may have less influence on technological design than is methodologically intended. Reflexivity is therefore key to ensure stakeholders are free to participate on a 'level playing field' with developers, meaning outcomes are not decided or values prioritised according to power relations alone (cf. Habermas, 1984, 1985; Sengers, Boehner, David, & Kaye, 2005).

Potential imbalances of power have been recognised previously in VSD literature; for example, in recent years VSD has been accused of unthinkingly embedding universalistic 'value frameworks' into design (e.g. Friedman et al., 2008; Friedman & Kahn Jr, 2002) representing the (typically Western) cultural and personal biases of designers into system design, thereby limiting the influence of a plurality stakeholder values on the process (Borning & Muller, 2012; Le Dantec et al., 2009). If VSD is

intended to truly represent stakeholder concerns in system design then this situation creates a problem in the sense that it is often unclear, perhaps due to a lack of a prescribed methodology to incorporate reflexivity, whose values are dominant in the process.

This situation creates potential conflicts between designers and stakeholders, resulting in systems which are unfit for purpose or unacceptable to their intended audience, perhaps due to differences in cultural values which inform technological expectations (Alsheikh et al., 2011). The question of whose values influence the design of the technology, and in which ways, is increasingly difficult to answer (e.g. Alsheikh et al., 2011; Le Dantec et al., 2009). If technologies are classified as more or less acceptable or 'value-sensitive' according to their 'fit' with the social and ethical values of the stakeholders they are meant to serve, then the lack of a reflexive account increases the difficulty of evaluating the success of a particular instance of VSD, and the ethical acceptability of the resulting technology. Incorporating reflexivity into VSD may address these conflicts—a better understanding of how values achieve influence in VSD may help practitioners to improve the fit between the (values embedded in) a system's design and the plurality of stakeholders it is meant to serve.

4 Culturally-Sensitive Reflexivity in VSD

Up to this point in the argument, practicalities of embedding reflexivity in VSD have not been provided. At a minimum, a reflexive account should discuss the VSD practitioner's personal and philosophical background and values, and the influence of these in interpreting, disagreeing with or prioritising stakeholder values (cf. Borning & Muller, 2012). Cultural biases should also be explicitly discussed to identify the meaning given to ethical concepts such as 'privacy' (cf. Alsheikh et al., 2011; Borning & Muller, 2012), allowing for identification of values and conceptions which are common between different stakeholder groups and cultures. By understanding the cultural-specificity and extent to which the values influencing system design are shared across different stakeholder groups, technologies which are more broadly acceptable to a plurality of stakeholders from different cultural backgrounds can be created. This potential outcome of a culturally-sensitive reflexive VSD should not be overlooked, as it can lead to system designs better fitted to specific cultures, while also providing a critical tool to identify divergent values among practitioners with a shared cultural background.

Undertaking this type of cross-cultural reflexive analysis is not a trivial task, requiring significant knowledge of the values and interpretations of ethical concepts prominent among different cultures, assuming a sufficiently homogenous cultural group can be identified in the first instance. As a first step towards a more culturally-sensitive VSD, research should be carried out into the cultural-specificity of the various 'value frameworks' popular among VSD practitioners. Such frameworks can reduce the need to engage stakeholders to identify and understand values to embed, especially when a veneer of universality is given to a particular set of values (cf. Borning & Muller, 2012; Friedman & Kahn Jr, 2002). By identifying the cultural bias inherent in these frameworks, historical culturally-sensitive analyses can be carried out into particular instances of VSD to identify where designer values have achieved problematic influence on a system design. Additionally, cultural biases not shared by the stakeholders addressed by the technology can also be identified.

It is difficult to justify a technology as truly ‘value-sensitive’ if the set of values designed for cannot be traced from stakeholder consultation through to system design—in this sense ‘value frameworks’ may act as a shortcut which hides the fact that a sort of cultural-dominance has slipped into VSD. This is not to suggest VSD practitioners are purposefully giving preference to personally or culturally biased values and system design choices; rather, the justification of a design as ‘value-sensitive’ becomes increasingly difficult if the necessary evidence, in this case a reflexive account of the influence of the designer’s personal and cultural ‘biases’, is lacking.

4.1 Complementary Research

Assessment of the cultural-sensitivity of instances of VSD requires a nuanced understanding of culture-specific social and ethical values and concepts. Research currently being undertaken in SATORI (Stakeholders Acting Together On the ethical impact assessment of Research and Innovation), a FP7 Mobilisation and Mutual Learning Action Plan, may assist VSD practitioners in carrying out this type of assessment. Stakeholders in ethical assessment processes are being consulted by the project to develop a roadmap to create a unified European ethical assessment framework. By engaging a plurality of stakeholders a knowledge base is being developed concerning the meaning of ethical and social values in different national and cultural frameworks which inform approaches to ethical assessment, such as VSD. The outcomes of SATORI’s activities are therefore directly relevant to understanding whose values are embedded in value sensitive design, in particular regarding the national, cultural and context-sensitive specification of ethical values in assessment. SATORI is providing the necessary information basis for VSD practitioners to begin assessing the cultural-specificity of their values and frameworks, starting at a European level. Furthermore, SATORI’s outputs can promote reflexivity in VSD and other types of ethical assessment by creating a map of cultural influences in ethical assessment, allowing practitioners to ‘link’ their values and specifications of value frameworks against those of other nations and cultures. In doing so practitioners may better understand and address the influence their unique (culturally informed) interpretive framework (cf. Alsheikh et al., 2011; Gadamer, 1976, 2004) has on design. Even where direct links or homogenous cultural groups cannot be established, the SATORI ‘map’ can help VSD practitioners better understand the plurality of values information different VSD stakeholders, increasing the cultural-sensitivity of VSD in the process.

5 Conclusion

VSD is a methodology that enables ethical reflection and inclusion of moral and social values in the design process of technology. The (potential) impact of technologies on individuals and society urge for deployment of VSD as a strategy to deal with these impacts in the design of technology (van den Hoven, 2013; Von Schomberg, 2013). The influence of personal views and opinions towards values urges for the inclusion of reflexivity to defend the methodology as a socially and ethically-sensitive approach to technology design.

Understanding VSD as an extension of applied ethical assessment opens the door to tackle this problem. As in any sort of ethical assessment, reflexivity and transparency are key to allow all stakeholders to participate fairly, and to ensure outcomes are not

decided through power relations alone, thus reflecting the culture and personal values of the designer alone. If the designs produced by VSD are seen as products of ethical debates, the lack of reflexivity in VSD undermines the credibility of the designs. Without reflexivity the reasons supporting prioritisation and analysis of stakeholder values lose credibility, undermining the ethical acceptability and cultural-sensitivity of technologies produced through VSD. We recommend that as a first step the cultural-specificity of value frameworks in VSD be assessed against the outputs of the SATORI project. This first step should prove part of a broader movement towards reflexivity in reporting VSD, so as to better justify the ethical acceptability of its outputs.

Acknowledgement

The research leading to these results has received funding from the European Community's Seventh Framework Programme (FP7/2007-2013) under grant agreement n° 612231.

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