

From Value- to Norm-sensitive Design? An Empirical and Intercultural Framework

Introduction

The purpose of this paper is to discuss problems related to value-sensitive design frameworks, especially in cross-cultural and international environments, and why “norm-sensitive design” would be a better alternative. To do so, this paper is divided into three parts. First, it begins by discussing the nature of value-sensitive design and why it might appear to be fruitfully applied to global contexts. Next, this paper moves on to explain problems with this move – in other words, problems related to value-sensitive design, especially from international and cross-cultural perspectives. Finally, it finishes by describing norm-sensitive design, what is meant by this term and why it would be better than value-sensitive design.

The account here is not meant to be either exhaustive or definitive but exploratory, raising questions and encourage debates within this space, bringing different disciplinary perspectives to the discussion.

Value-Sensitive Design, across Cultures and Countries

The first part of this paper discusses the nature of value-sensitive design frameworks, and why these might appear to be appropriate in addressing problems related to the increasingly global contexts of contemporary technology.

Value-sensitive design has helped to introduce non-technical concerns into engineering projects, where different, sometimes competing stakeholder goods are considered and addressed. Although lots of different types have been proposed, in general, value-sensitive design frameworks consist in considering values when designing things and processes – in other words, how things and processes might embody, promote, or hinder different kinds of values [1]–[4]. A prototypical example of this is the speedbump. The speedbump is a simple technology that embodies and promotes certain values, specifically, those associated with safety. (Since it directly concerns and affects behaviors, however, we would argue the speedbump is also an example of norm-sensitive design, a point to which we return below.) Other examples include designing benches that discourage homeless people from lying down/sleeping on them and installing nubs on ledges and handrails to prevent skateboarders and rollerbladers from doing tricks on them.

Value-sensitive design frameworks help to show that technology is never value neutral, never only technical but always value laden, embodying, promoting, or impeding the realization of different types of values. In recognizing this, those responsible for design can consider the ways certain values are promoted and others hindered. Given the increasingly global environments of contemporary engineering [5]–[7], such frameworks might be useful in addressing cross- and inter-cultural concerns in engineering, where different, sometimes competing cultural values can come into conflict.

Since values vary by culture and county [8], [9], value-sensitive design frameworks might seem well positioned to address problems associated with the increasingly global environments of contemporary technology. Insofar as technologies are used by different people in different

places, value-sensitive design frameworks would help to promote stakeholder interests, insofar as these interests would always be considered in value-sensitive design, how technologies are promoting or undermining these interests. Although there's nothing wrong with considering the interests of stakeholders – especially when these interests might be different from those working with technologies – value-sensitive design frameworks would do so in a misguided manner.

Problems with Values, across Cultures and Countries

The second part of this paper discusses problems with value-sensitive design frameworks, which would make them inappropriate, especially in cross-cultural and international environments.

Values are typically conceived as long-standing beliefs or ideas, about which states are worth pursuing, that guide behaviors [10]. The problem with value-sensitive design frameworks is that they don't work the way they're supposed to, either normatively or empirically.

First, value-sensitive design frameworks are normatively weak: Normatively, these frameworks don't necessarily tell us about which kinds of values *should* be pursued or implemented in design. Values aim at preferred states, but simply because some states are preferred says nothing about why they should be preferred, or hierarchies within value frameworks [11]. Although one could argue that no design framework that neglects the preferences/values of stakeholders could be normatively sufficient, simply because design frameworks address stakeholder preferences/values doesn't mean they would be normatively sufficient. In other words, accounting for values is a necessary but not sufficient condition of ethical design. Behnam Taebi has identified this problem as a difference between “ethical” (or normative) and “social” (or descriptive) acceptability [12].

Next, value-sensitive design frameworks are empirically weak: Empirically, values are not especially good at picking out cultural groups, and they fail to predict behaviors across cultures. For example, regarding the first, the values of mainland Chinese, Hong Kongese, and Singaporean Chinese – which are typically conceived as all belonging to the same cultural group – are closer to those of people in Zimbabwe, Israel, and Malaysia, respectively, than they are to each other [13]. Regarding the second, the power of values to predict behaviors varies by culture [14]. The values of non-WEIRD (Western Educated Industrialized Rich and Democratic) groups say less about how people will behave. Since values concern internal states, they can only ultimately be accessed reflectively, through self-reports. By contrast, as norms concern external behaviors, they are publicly available and have been measured using various methods, not only self-reports but also experimental and quasi-experimental procedures, including economic games and mathematical models [15]–[19].

One might object, saying they understand and use the term “values” differently, such that these criticisms wouldn't apply to their understandings or frameworks. That seems ill advised, since branches of the social sciences have long used “values” in the above-described manner, carrying out empirical work in the process. That move would cause this work to become disconnected from and relatively useless to discussions involving the broader social implications of technology. (One of the authors of this paper has argued for understanding “values” in design differently – see [blinded].)

Norm-sensitive Design as an Alternative to Value-sensitive Design

This final part of the paper discusses norm-sensitive design, what this means and why it would be a more appropriate alternative to value-sensitive design frameworks, especially in global environments.

Versus values, norms have been conceived as intrinsically motivating rules, about which types of behaviors are obligatory or prohibited, which are propagated, enforced, and internalized through sanctioning systems, typically punishment [17], [20]. Norms have been conceived as following from values, insofar as values concern states worth pursuing, and norms ensure these states are achieved [1]. However, this relation only make sense when *internal preferences* are closely linked to *external behaviors*, typical of WEIRD cultures. WEIRD cultures consider intentions and internal psychic states when judging whether actions are blame- or praise-worthy, as well as the amount of punishment blameworthy actions deserve [21], [22]. Among non-WEIRD cultures, amounts of punishment, and judgments of praise- and blame-worthiness, are based on the outcomes of actions – for instance, if people are harmed and to what extent – rather than the intentions of actors [23].

Unlike values, norms and norm systems directly concern behaviors and, therefore, affect the world. They have evolved, affecting behaviors that facilitate the universally human problem of large-scale, anonymous cooperation [16]. This commonly human concern provides a touchstone in terms of which to understand and address different, conflicting norms.

Normatively, all such systems address the same ultimate concerns, although they would do so in different ways, addressing specific circumstances related to differing climates, resources, and histories throughout their evolutions. For instance, regions with fewer natural resources and more challenging climates have tended to develop “tighter” rather the “looser” cultures [24]–[26]. Tight cultures are ones with more norms, which are more strictly enforced. Loose cultures are ones with fewer norms, which are less strictly enforced. Brazil has a prototypically loose culture, whereas Singapore has a prototypically tight culture. As these two examples make clear, cultural tightness/looseness picks out something different from values.

Values have been conceived in individualist versus collectivist terms [27], [28]. Both Singapore and Brazil are collectivist cultures, although Brazil is loose whereas Singapore is tight. Similarly, both New Zealand and Germany are countries with individualistic values, although Germany is tight and New Zealand is loose. Although interesting theoretical observations, one might wonder about the practical implications of this work, what differences they would make to design work.

At the broadest level, norm-sensitive design would help to facilitate larger-scale human understanding and cooperation, a condition of – and what should be a goal for – global engineering, through more culturally inclusive and responsive design processes.

First, since norms and norm systems are better indicators of cultural groups than values, a norm-sensitive design framework would help to better identify and understand cultural groups, based on what they *do collectively* rather than what they *believe individually*, understanding cultural groups in terms of *norms* rather than *values*. For instructional purposes, this would need to consist in drawing attention to the natures of and differences between values and norms, as well as how they function differently between cultural groups. The Astroworld Festival tragedy of

November 2021 provides an excellent example of why norm-sensitive design is so important: The tragedy resulted less from what *anyone believed individually* and more from what *everyone did collectively* [29]–[31]

Second, since norms are better predictors of behaviors cross-culturally than values, a norm-sensitive design framework would be more inclusive of and responsive to different cultural groups. For example, although the difference between a norm- versus value-sensitive design approach in Denmark might be negligible – since values reasonably predict behaviors among Danes – this might not be the case in non-WEIRD countries or those with more culturally diverse populations, such as China and the US. Hence, although value-sensitive design approaches might appear to be inclusive and responsive – since they attempt to seek out and address values in design processes – they are only inclusive of and responsive to those from WEIRD populations. This form of chauvinism is perhaps even more pernicious, as it gives bigots an initiative towards which they can point when those who're negatively affected rightfully complain – such as inclusion and diversity initiatives by tech giants, which recruit woman and people of color, only to subject them to the toxic, monocultural environment that tend to comprise the industry [32], [33]. For instructional/design purposes, again, this would consist in highlighting the differences between values and norms, as well as considering the cultural groups for which engineering solutions are being designed, specifically, the strength of norms relative to values. This could comprise a step in the design process, identifying the nature of norm systems among stakeholders, for example, their cultural “tightness-looseness” [24].

Third, since norms and norm systems have evolved as reactions to common human problems, norm-sensitive design would help to foster understanding between different groups. Different norms and norm systems could be understood as diverse solutions to common human problems, similar to what Charles Ess has described as a *pros hen* ethical pluralism [34], [35]. In the classroom, this point could be tied to engineering design work intuitively, for instance, how all bridges serve a similar function – allowing individuals, animals, and things to move/be moved over water/between land – but that they are designed and built differently, depending on more specific circumstances surrounding this task, for example, the number of individuals, frequency, weather conditions, and so on.

Fourth, norm-sensitive design has concrete implications for design processes, placing greater emphasis on product prototyping and participant observation. Since norms are concerned with behaviors, behaviors would be of primary consideration in design processes – how behaviors are elicited, amplified, supplanted, or suppressed by technologies – rather than beliefs or feelings, for example, “satisfaction,” which is an entirely subjective state. Behaviors are affected by myriad unconscious and environmental factors [36], [37]. This has two implications for design work: First, it can be difficult to foresee or understand how technologies will affect behaviors outside of the environments in which they are used; second, humans are not particularly good at determining why they behave the ways they do. As a result, forms of user experience research – based on interviewing and/or the assumption people are capable of or good at accurately assessing themselves and their motivations [38] – are limited in their ability to understand and predict behaviors. Instead, prototypes should be developed as quickly as possible, used within their intended environments, and observed by those responsible for design work. These

suggestions could obviously be applied to curricular/extra-curricular projects, for instance, including/extending time to observe participants using prototypes.

By identifying norms, the design and implementation of technologies can be crafted around them, to encourage or discourage certain behaviors. In this regard, a speedbump is also an example of norm-sensitive design, since it directly concerns and affect behaviors. To an extent, norm-sensitive design is already carried out in the fields of behavioral economics and social psychology, developing decision architecture and formulating kinds of “nudges” [39]. Technologies could change norms by dispelling “pluralistic ignorance,” a lack of knowledge regarding what others do/think one should do, as has been done with practices involving binge drinking, hook-up culture, and genital mutilation [19], [40]–[42].

Conclusion

This paper explored norm-sensitive design as an alternative to value-sensitive design. First, it discussed what value-sensitive design approaches are and why they might appear to be fruitful avenues for addressing the increasingly global environments of contemporary technology: Value-sensitive design is an approach that attempts to identify and account for the ways technologies can promote or hinder certain values. Since values are related to culture, value-sensitive design might help to account for the ways that cultures differ, as well as addressing the implications of these difference for technologies. Second, this paper explained why this would be a mistake, why value-sensitive design approaches are misguided, especially when considering the global environments of technologies: Values fail to do either the normative or descriptive work they are meant to. Based on values alone, there is no good reason to prefer one set of values to another, and it is impossible to differentiate cultural groups or predict behaviors across these groups. Third, it outlined norm-sensitive design as an alternative: Norm-sensitive design consists in considering norms and norm systems when designing and implementing new technologies. Versus values, norms are more directly related to behaviors across cultural groups, allowing for greater understanding and cooperation between these groups.

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