



Delft University of Technology

The future of value sensitive design

Friedman, Batya; Hendry, David G.; Umbrello, S.; van den Hoven, M.J.; Yoo, Daisy

Publication date

2020

Document Version

Final published version

Published in

18 International Conference on the Ethical and Social Impacts of ICT

Citation (APA)

Friedman, B., Hendry, D. G., Umbrello, S., van den Hoven, M. J., & Yoo, D. (2020). The future of value sensitive design. In J. Pelegrin-Borondo, M. Arias-Oliva, K. Murata, & M. L. Palma (Eds.), *18 International Conference on the Ethical and Social Impacts of ICT: Paradigm Shifts in ICT Ethics: Societal Challenges in the Smart Society* (pp. 217-220)

Important note

To cite this publication, please use the final published version (if applicable).

Please check the document version above.

Copyright

Other than for strictly personal use, it is not permitted to download, forward or distribute the text or part of it, without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license such as Creative Commons.

Takedown policy

Please contact us and provide details if you believe this document breaches copyrights.
We will remove access to the work immediately and investigate your claim.

THE FUTURE OF VALUE SENSITIVE DESIGN

Batya Friedman*, David G. Hendry, Steven Umbrello, Jeroen van den Hoven, Daisy Yoo

University of Washington (USA), University of Washington (USA), Institute for Ethics and Emerging Technologies (Italy); TU Delft (The Netherlands); Aarhus University (Denmark)

batya@uw.edu; dhendry@uw.edu; steve@ieet.org; M.J.vandenHoven@tudelft.nl; dyoo@cc.au.dk

EXTENDED ABSTRACT

In this panel, we explore the future of value sensitive design (VSD). The stakes are high. Many in public and private sectors and in civil society are gradually realizing that taking our values seriously implies that we have to ensure that values effectively inform the design of technology which, in turn, shapes people's lives. Value sensitive design offers a highly developed set of theory, tools, and methods to systematically do so.

In short, value sensitive design is an approach for foregrounding human values in the technical design process (Friedman and Hendry, 2019; van den Hoven, 2013). First developed in human-computer interaction (HCI), value sensitive design has now been applied in a wide range of computing and related fields including artificial intelligence (Umbrello and De Bellis, 2018), biomedical and health informatics (Mueller and Heger, 2018), civilian drones (Cawthorne and Cenci, 2019), computer security (Denning, et al., 2010), computer supported cooperative work (Harbers and Neerincx, 2017), data science (Winkler and Spiekermann, 2019), multi-lifespan design (Friedman and Nathan, 2010; Yoo et al., 2016) nanotechnology (Timmermans et al., 2011; Umbrello, 2019), natural language processing (Bender and Friedman, 2018), participatory design (Friedman and Hendry, 2012; Yoo, Hultgren, Woelfer, and Friedman, 2013), and robotics (Santoni de Sio and van den Hoven, 2018; Cheon and Su, 2018; van Wynsberghe, 2013) to name a few.

Since its inception in the early 90s (Friedman, 1996), value sensitive design has continued to expand, develop and adapt as new work and issues have emerged. Notably, in 2012 Borning and Mueller (Borning and Mueller, 2012) proposed four topics for next steps in the evolution of value sensitive design, including (1) adopting a pluralistic position on values; (2) contextualizing lists of values that are presented as heuristics for consideration; (3) strengthening the voice of the participants in publications describing VSD investigations; and (4) making clearer the voice of the researchers themselves writing about VSD investigations. Many of those have now been achieved and integrated into the core of value sensitive design theory and practice. For example, it became a best practice for VSD researchers to include a section called "Researcher Stance" in their publications, in which the researchers self-disclose their background, relation to the participants in the study, and relevant personal values that may be important for readers in evaluating the research.

Continuing with this self-reflective process, a workshop in Aarhus, Denmark in 2015 and a second workshop at the Lorentz Centre in Leiden, The Netherlands in 2016 began the discussion about the next decade for value sensitive design. A set of 12 grand challenges emerged from those conversations. A special issue of the journal *Ethics and Information Technology* was devoted to this topic, comprised of a broad range of short thought pieces on novel applications and theoretical directions (in progress). An international network of research centers in the United States, Australia, China, Denmark, Germany, The Netherlands, and Sweden has been formed to share research findings as well as exchange lessons learned, best practices, and findings from projects undertaken with industry and government organizations.

While value sensitive design has experienced much success with regard to its adoption and appropriation in the research community, as it makes its foray into industry appropriation much is yet to be done to support widespread, meaningful adoption. The time is now ripe to ask this question: What near term next steps for value sensitive design? And what longer term vision?

Panel Focus. To convey the focus of this panel, we provide a list of some of the questions the panel takes up, including:

- What are the key grand challenges researchers and practitioners working within a VSD approach should take up?
- How does VSD speak to and differ from other design-for-values approaches to technologies that are referred to and supported in the literature as well as by industry?
- What are near term next steps for VSD?
- Regarding the theme of ETHICOMP 2020, “Paradigm Shifts in ICT Ethics: Societal Challenges in the Smart Society,” what are the key challenges faced in the smart society? Given the strong interdependency between technology and policy in the smart society, how can VSD enable policy design and technical design proceed in tandem?
- How can VSD handle apparently disparate, yet converging technologies that are essential to the fourth industrial revolution (i.e., AI, AR/VR, exoskeletons, etc.)?
- What lessons can be learned from the diverse fields in which VSD has been applied, particularly with how to account for a plurality of contexts, concerns and values?
- As VSD continues to develop and be appropriated in industry and universities, what would computer science practice and education look like 20 years from now?
- How will we know if a VSD approach is improving computer science practice? What metrics can we use? What data should we be collecting now as baseline data to enable assessments 5, 10, and 20 years from now?
- Given the merits of VSD approach as well as how it aims to seamlessly integrate in existing design practices, how can we make VSD more accessible and easier to understand by a wide range of engineers and technologists as well as by non-specialists and non-designers?

Panelists and Moderator. Panelists are comprised of two senior—Batya Friedman and Jeroen van den Hoven—and two younger—Steven Umbrello and Daisy Yoo—scholars working in value sensitive design. As a group, they represent a diversity of expertise including applied moral philosophy, computer science, design, ethics, and information. They also represent countries in Europe and North America and are comprised of a balance of women and men. The senior scholars pioneered value sensitive design; they will be positioned to speak to VSD’s early years and development to date as well as their hopes and visions for the future of VSD. The younger scholars came of age in an intellectual landscape in which VSD was established and have taken VSD further in their respective work; they will be positioned to speak to where they see VSD’s opportunities and challenges for younger scholars as well as their hopes and visions for the future of VSD. Thus, the panel is poised to discuss VSD’s future within a multi-generational light. David Hendry, the panel moderator is also a long-term member of the VSD community.

Batya Friedman is a Professor in the Information School at the University of Washington where she co-directs the Value Sensitive Design Lab. She pioneered VSD in the 1990s. Her 2019 MIT Press book co-authored with Dave Hendry is *Value Sensitive Design: Shaping Technology with Moral Imagination*.

David Hendry is an Associate Professor in the Information School at the University of Washington where he co-directs the Value Sensitive Design Lab. Dave is currently at work on new ideas for teaching value sensitive design through tech policy case studies – the joint consideration of policy and technical design.

Steven Umbrello is the Managing Director of the Institute for Ethics and Emerging Technologies where his primary research focus is on autonomous weapon systems, responsible innovation and the general ethics of emerging and transformative technologies.

Jeroen van den Hoven is the University Professor in Ethics and Technology at Delft University of Technology and the scientific director of the Delft Design for Values Institute. He is a permanent member of the European Group on Ethics and Editor-in-Chief of *Ethics and Information Technology*.

Daisy Yoo is a Postdoctoral Research Fellow and a member of the Value Sensitive Design in Higher Education (VASE) project at the Aarhus University, Denmark. Dr. Yoo completed her Ph.D. at the University of Washington, where she worked on the Voices from the Rwanda Tribunal project to investigate multi-lifespan design.

Panel Structure. The 90-minute panel will be organized as follows:

1. Introduction of Panel Topic and Panelists (6 min)
2. Remarks by Individual Panelists (6 min each; 24 min total)
3. Comments and Questions from the Audience (30 min)
4. Audience Small Group Work to Discuss and Record Audience Visions for VSD (30 min)

KEYWORDS: applied ethics, computing education, computing practice, grand challenges, responsible innovation, value sensitive design.

REFERENCES

- Bender, E. M., & Friedman, B. (2018). Data statements for natural language processing: Toward mitigating system bias and enabling better science. *Transactions of the Association for Computational Linguistics*, 6, 587–604.
- Borning, A., & Mueller, M. (2012). Next steps for value sensitive design. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '12)* (pp. 1125–1134). ACM.
- Cawthorne, D., & Cenci, A. (2019). Value sensitive design of a humanitarian cargo drone. In *2019 International Conference on Unmanned Aircraft Systems (ICUAS)* (pp. 1117–1125). IEEE.
- Cheon, E., & Su, N. M. (2016). Integrating roboticist values into a Value Sensitive Design framework for humanoid robots. In *2016 11th ACM/IEEE International Conference on Human-Robot Interaction (HRI)* (pp. 375–382). IEEE.
- Friedman, B. (1996). Value-sensitive design. *interactions*, III(6), 17–23.
- Friedman, B., & Hendry, D.G. (2019). *Value Sensitive Design: Shaping technology with moral imagination*. Cambridge, MA: MIT Press.

- Friedman, B., & Hendry, D. (2012). The envisioning cards: a toolkit for catalyzing humanistic and technical imaginations. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '12)* (pp. 1145–1148). ACM.
- Friedman, B., & Nathan, L. P. (2010). Multi-lifespan information system design: a research initiative for the hci community. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '10)* (pp. 2243–2246). ACM.
- Denning, T., Borning, A., Friedman, B., Gill, B. T., Kohno, T., & Maisel, W. H. (2010). Patients, pacemakers, and implantable defibrillators: Human values and security for wireless implantable medical devices. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '10)* (pp. 917–926). ACM.
- Harbers, M., & Neerincx, M. A. (2017). Value sensitive design of a virtual assistant for workload harmonization in teams. *Cognition, Technology & Work*, 19(2-3), 329–343.
- Mueller, M., & Heger, O. (2018). Health at any Cost? Investigating Ethical Dimensions and Potential Conflicts of an Ambulatory Therapeutic Assistance System through Value Sensitive Design. In *ICIS 2018 Proceedings*. Association for Information Systems.
- Santoni de Sio, F., & Van den Hoven, J. (2018). Meaningful human control over autonomous systems: a philosophical account. *Frontiers in Robotics and AI*, 5, 15.
- Timmermans, J., Zhao, Y., & van den Hoven, J. (2011). Ethics and nanopharmacy: Value sensitive design of new drugs. *Nanoethics*, 5(3), 269–283. <https://doi.org/10.1007/s11569-011-0135-x>
- Umbrello, S. (2019). Atomically precise manufacturing and responsible innovation: A value sensitive design approach to explorative nanophilosophy. *International Journal of Technoethics (IJT)*, 10(2), 1–21. <https://doi.org/10.4018/IJT.2019070101>
- Umbrello, S., & De Bellis, A. F. (2018). A value-sensitive design approach to intelligent agents. In *Roman Yampolskiy (Ed.), Artificial Intelligence Safety and Security* (pp. 395–410). CRC Press. <https://doi.org/10.13140/RG.2.2.17162.77762>
- van den Hoven, J. (2013). Value sensitive design and responsible innovation. In *R. Owen, J. Bessant, & Heintz, M. (Eds.), Responsible innovation: Managing the responsible emergence of science and innovation in society*. John Wiley & Sons, LTD. <https://doi.org/10.1002/9781118551424.ch4>
- van Wynsberghe, A. (2013). Designing robots for care: Care-centered value-sensitive design. *Science and Engineering Ethics*, 19(2): 407–433.
- Winkler, T., & Spiekermann, S. (2019). Human Values as the Basis for Sustainable Information System Design. *IEEE Technology and Society Magazine*, 38(3), 34–43. <https://doi.org/10.1109/MTS.2019.2930268>
- Yoo, D., Derthick, K., Ghassemanian, S., Hakizimana, J., Gill, B., & Friedman, B. (2016). Multi-lifespan design thinking: two methods and a case study with the Rwandan diaspora. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '16)* (pp. 4423–4434). ACM.
- Yoo, D., Hultgren, A., Woelfer, J. P., Hendry, D. G., and Friedman, B. (2013). A value sensitive action-reflection model: Evolving a co-design space with stakeholder and designer prompts. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '13)* (pp. 419–428). ACM.