**BOOK REVIEW**

**Values, Imagination, and Praxis: Towards a Value Sensitive Future with Technology**

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**Value Sensitive Design: Shaping Technology with Moral Imagination** By Batya Friedman and David G. Hendry. MIT Press Hardcover $40.00 S | £30.00 ISBN: 9780262039536 256 pp.

As a scholar who has Value Sensitive Design (VSD) as their central theoretical precept for the development of new technologies, I was obviously elated to hear that two of the founders of VSD have published a monograph that deals exclusively with the topic. Prior full-length books on the topic have either dealt with VSD as one design approach among a host of others (i.e., van den Hoven, Vermaas, & van de Poel, 2015) or as complementary towards a specific technological artifact (Friedman & Kahn Jr., 2003). Either way, the VSD literature as a whole has existed primarily within the realm of academic publications, albeit with some success spreading out into the real-world of design practice. This book seeks to change that in its form and content. *Value Sensitive Design: Shaping Technology with Moral Imagination* provides both a primer to introduce interested readers to VSD as well as an invaluable resource for design scholars to navigate decades worth of VSD resources and projects.

Sitting at only 256 pages, the authors are able to seamlessly condense over two decades of VSD history and scholarship into a comprehensive, clear and digestible format. The book is divided into five main chapters: (1) Introduction, (2) Theory, (3) Method, (4) Applications and (5) Conclusion. This is followed by two short envois (1) Visual Language and (2) Photo Poem that demonstrate both visual and poetic tools for understanding how VSD can be conceptualized for technological design from various points of view as well as across multiple lifespans.

The introduction briefly and clearly lays out the history of VSD as well as why and how the approach was developed and implemented. This is followed by some of the prima facia hurdles that VSD faces and the reasons for which it has been discussed so prominently over the course of the last twenty or so years (Winkler & Spiekermann, 2018). The second chapter on theory outlines the discussion of the ethical and social issues of novel technologies as well as the concept of what constitutes ‘values’ as a whole. VSD is then introduced as a conceptual tool that is used to intervene early on and throughout the design program of a technology and even so after its deployment. To this end, the authors’ position is that the VSD approach is predicated on an interactional theory of technology, one that holds that the human-technology relationship is co-constitutive. This means that of course humans, groups and organizations design and develop technologies which have certain effects, but that these technologies in turn also have an effect on humans, groups and organizations. Although this interactional stance is not controversial, seeing as it has been the contention of the sociology of technologies that human-technology relations co-vary (Winner, 2003), the VSD position pushes back against the strong notion of technological determinism that nonetheless continues to hold sway in technology discourse and particularly among Silicon Valley professionals who believe that technology is an unstoppable guiding force that determines human futures (Naughton, 2018). In fact, the VSD approach aligns directly with the World Economic Forum’s suggestions for considering ethics and a human-centered approach to technology design (Philbeck, Davis, & Engtoft Larsen, 2018).

Similarly, it is here in the second chapter that the famous tripartite methodology of VSD is outlined into its constituent conceptual, empirical and technical investigations that form an iterative and recursively self-improving method. Who the stakeholders are, what their values are, how those values come into tension with one another and how those tensions are confronted, as well as how technologies shape and are shaped by social structures, are all taken under consideration here. Design across multi-lifespans, a topic that has been gaining interest in the design literature and STS is also considered given the potential long-term and emergent effects of technologies (Friedman, Nathan, & Yoo, 2016; Nathan et al., 2011; Yoo et al., 2016). One example of multi-lifespan thinking that the authors cite is their exploration of how information systems can be used to support transitional justice with the Voices from the Rwanda Tribunal project (Friedman et al., 2016). What VSD aims to do with this kind of thinking is to centre anticipatory and long-term goals early on and throughout the design and deployment of a technology. Also explored as a critical facet of the design process is how social structures and knowledge processes can be supported to encourage multi-lifespan design thinking.

Chapter three delves into the method of VSD by drawing from a large portion of the existing VSD literature to date including previously published literature reviews on VSD. The authors outline seventeen distinct methods that have been used, modified and adapted for the specific technologies in question. Friedman and Hendry here provide a helpful table (Table 3.1) that lists the method and provides the purpose or aim of that method. This is coupled with an overview description of that method as well as the key studies where that method was used. In the following pages, each of the different methods is given a more thorough treatment. The authors describe how and why each of the listed methods were employed in the circumstances they were and how they provide useful information given the context. Each of these short analyses is followed with a list of ‘foundational studies’ to which the reader can easily refer for a more in-depth account of the method in action. Fourteen of the seventeen methods were earlier identified by Friedman, Hendry and Boring (2017) in their survey on VSD methods. This volume adds three new methods to the list: (1) Stakeholder Tokens whose purpose is stakeholder identification and interaction (Yoo, 2017), (2) Multi-lifespan timeline to prime longer-term and multi-generational consideration in the design process (Yoo et al., 2016) and (3) Multi-lifespan co-design that aims to envision and anticipate implications of design on future generations (Friedman et al., 2016; Yoo et al., 2016).

The chapter concludes with what is perhaps one of the most useful parts of the book for researchers and practitioners of VSD: given the listed methods in existent studies, they illustrate how VSD can be put into action for a new project. Friedman and Hendry are clear that VSD is not dogmatic, and that the listed methods are neither exhaustive nor exclusive of each other. Rather, certain technologies make certain methods more potent and one or more method can be used in tandem. That being said, some methodological pointers and heuristics are given for getting started on a new project using VSD including framing the technical work, identifying the various stakeholders, and identifying values and harms/benefits for those stakeholders. Examples are given throughout to help illustrate exactly how VSD can be employed and how to face certain ethical and technical issues that almost certainly will arise in any technical design project. One of the most compelling examples for one method called *Value Scenarios* is boxed off from the main text in traditional case-study-like fashion. The example called “One Dad’s Dilemma” makes the value of *privacy* in the design of a fictitious tracking app for parents remarkably poignant. It manifests the tensions between privacy and trust in a clear and present way (Czeskis et al., 2010; Friedman & Hendry, 2019, 97). The narrative is used to illustrate not only how value scenarios can be envisioned, but how value scenarios function across contexts, ranges of stakeholders and for different purposes. This is powerful not only as an illustration but as a didactic tool that practitioners can use. The construction of narratives is fundamental to the success of value scenarios and thus the example used demonstrates a way that designers can construct their own narratives early on in the design process.

Chapter 4 focuses on a list of ten application domains, such as informed consent online, privacy in public and land use, transportation, and environment. Each of the application domains is drawn from various published work; the authors, key values implicated in the domain, as well as the key technologies of those domains are similarly listed. Each of the ten domains are then explored in further depth, detailing the project, how it employed the VSD method, the key design challenges and flows that the project encountered, and how issues were confronted and resolved. It is here also that the authors are clear to stipulate how each of these domains and research projects have contributed to the theoretical underpinnings and development of VSD as a whole. For example, the domain of Land Use, Transportation and the Environment contributed to VSD the idea that stakeholder values should be identified systematically and that any apparent tensions between these values should be confronted with an empirical solution. Similarly, the values that VSD identifies should be scalable across the transportation sector as a whole to envision and take into account stakeholders at all levels within a given domain.

The fifth and final chapter concludes by evaluating the robustness of the VSD methodology. It does so by investigating VSD along four criteria: (1) comprehensiveness, (2) durability, (3) extensibility and (4) actionability. The authors here use the examples of the application of VSD in the previous chapters as strong evidence for VSD’s robustness across all these categories which serves to make it a suitable framework for designing technologies for values. The chapter also briefly engages with critiques of VSD such as the foundations for its ethical commitments as well as how different voices are engaged with and represented in design, among others. Some of the potential areas for further research such as accounting for nonhuman values (i.e., nonhuman animals, the biosphere, etc.) as well as how VSD projects are reported on are briefly outlined. Although the authors do bring awareness to some of the critiques of the VSD methodology, they do not engage with those critiques in any substantive way, relying instead on the potential for other researchers to engage with them in a more thorough way. Some authors have already taken up this call, albeit before this book was published, which makes sense given that many of the listed issues such as the foundation of values in VSD and the inclusion of nonhuman stakeholders have been issues since VSD’s inception (Jacobs & Huldtgren, 2018; Umbrello, 2019; van de Kaa, Rezaei, Taebi, van de Poel, & Kizhakenath, 2019).

Overall, Friedman and Hendry provide a solid account of the VSD approach that has taken hold in the worlds of both engineering and philosophy. Written in a clear, direct and active voice, Friedman and Hendry’s text offers the reader a way of understanding why technologies are and need to be designed with human values, how that can and has been done as well as how novices to VSD can begin to think in a value-sensitive way about new technologies. This in and of itself is worth the cost of admission.

There is one cumbersome technical element to the volume that begs mentioning. The book is explicit in its target audience of both professionals and practitioners as well as theorists of all levels of expertise. That being said, the book’s table of contents merely lists the chapter titles without making reference to the plentiful subsections that each chapter is divided into. This makes the book somewhat unwieldy as a reference text, which it surely is given its overall organization. However, a professional looking to quickly find the section, author, study, and/or example that they may need will be forced to the index to track down the keyword that may bring them to the sub-section that they need. The book’s goal as a reference text would be greatly improved in later editions if the table of contents were expanded to list all of the sub-divisions of each chapter.

Yet, despite this minor hurdle, this book nonetheless merits consulting and returning to, perhaps continually: it’s an unquestionably practical resource that condenses much information and apprehends much effort.

**Bibliography**

Czeskis, A., Dermendjieva, I., Yapit, H., Borning, A., Friedman, B., Gill, B., & Kohno, T. (2010). Parenting from the pocket: Value tensions and technical directions for secure and private parent-teen mobile safety. In *Proceedings of the Sixth Symposium on Usable Privacy and Security* (p. 15). ACM.

Friedman, B., & Hendry, D. G. (2019). *Value Sensitive Design: Shaping Technology with Moral Imagination*. Cambridge, MA: Mit Press.

Friedman, B., Hendry, D. G., & Borning, A. (2017). A Survey of Value Sensitive Design Methods. *Foundations and Trends® in Human–Computer Interaction*, *11*(2), 63–125. https://doi.org/10.1561/1100000015

Friedman, B., & Kahn Jr., P. H. (2003). Human values, ethics, and design. In J. A. Jacko & A. Sears (Eds.), *The Human-computer Interaction Handbook* (pp. 1177–1201). Hillsdale, NJ, USA: L. Erlbaum Associates Inc. Retrieved from http://dl.acm.org/citation.cfm?id=772072.772147

Friedman, B., Nathan, L. P., & Yoo, D. (2016). Multi-lifespan information system design in support of transitional justice: Evolving situated design principles for the long (er) term. *Interacting with Computers*, *29*(1), 80–96.

Jacobs, N., & Huldtgren, A. (2018). Why value sensitive design needs ethical commitments. *Ethics and Information Technology*. https://doi.org/10.1007/s10676-018-9467-3

Nathan, L. P., Lake, M., Grey, N. C., Nilsen, T., Utter, R. F., Utter, E. J., … Friedman, B. (2011). Multi-lifespan information system design: Investigating a new design approach in Rwanda. In *Proceedings of the 2011 iConference* (pp. 591–597). ACM.

Naughton, J. (2018, October 21). Think the giants of Silicon Valley have your best interests at heart? Think again. *The Guardian*.

Philbeck, T., Davis, N., & Engtoft Larsen, A. M. (2018). *Values, Ethics and Innovation - Rethinking Technological Development in the Fourth Industrial Revolution*.

Umbrello, S. (2019). Imaginative Value Sensitive Design: Using Moral Imagination Theory to Inform Responsible Technology Design. *Science and Engineering Ethics*, 1–21. https://doi.org/10.1007/s11948-019-00104-4

van de Kaa, G., Rezaei, J., Taebi, B., van de Poel, I., & Kizhakenath, A. (2019). How to Weigh Values in Value Sensitive Design: A Best Worst Method Approach for the Case of Smart Metering. *Science and Engineering Ethics*. https://doi.org/10.1007/s11948-019-00105-3

van den Hoven, J., Vermaas, P. E., & van de Poel, I. (2015). *Handbook of ethics, values, and technological design: Sources, theory, values and application domains*. (J. van den Hoven, P. E. Vermaas, & I. van de Poel, Eds.), *Springer Reference*. Springer Netherlands. https://doi.org/10.1007/978-94-007-6970-0

Winkler, T., & Spiekermann, S. (2018). Twenty years of value sensitive design: a review of methodological practices in VSD projects. *Ethics and Information Technology*. https://doi.org/10.1007/s10676-018-9476-2

Winner, L. (2003). Do artifacts have politics? *Technology and the Future*, *109*(1), 148–164. https://doi.org/10.2307/20024652

Yoo, D. (2017). Stakeholder Tokens: a constructive method for value sensitive design stakeholder analysis. In *Proceedings of the 2017 ACM Conference Companion Publication on Designing Interactive Systems* (pp. 280–284). ACM.

Yoo, D., Derthick, K., Ghassemian, 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 2016 CHI Conference on Human Factors in Computing Systems* (pp. 4423–4434). ACM.

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