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## Combinatory and Complementary Practices of Values and Virtues in Design: A Reply to Reijers and Gordijn

**ABSTRACT:** *The purpose of this paper is to review and critique Wessel Reijers and Bert Gordijn's paper moving from value sensitive design to virtuous practice design. In doing so, it draws on recent literature on developing value sensitive design (VSD) to show how the authors' virtuous practice design (VPD), at minimum, is not mutually exclusive to VSD. This paper argues that virtuous practice is not exclusive to the basic methodological underpinnings of VSD. This can therefore strengthen, rather than exclude the VSD approach. Likewise, this paper presents not only a critique of what was offered as a "potentially fruitful alternative to VSD" but further clarifies and contributes to the VSD scholarship in extending its potential methodological practices and scope. It is concluded that VPD does not appear to offer any original contribution that more recent instantiations of VSD have not already proposed and implemented.*

**KEYWORDS:** *Virtue ethics, Value sensitive design, Virtuous practice design, applied ethics.*

### 1. Introduction

Developed in the early 1990's by Batya Friedman at the University of Washington, value sensitive design (VSD) has since become one of the most discussed methodological approaches to responsible innovation (RI) with regards to technology design<sup>1</sup>. Birthed within the human-computer interaction domain, VSD has spread its tendrils into other technological domains such as robotics<sup>2</sup>, nanotechnology<sup>3</sup>,

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

2 A. van Wynsberghe, *Designing Robots for Care. Care Centered Value-Sensitive Design*, in "Science and Engineering Ethics", XIX (2013), no. 2, pp. 407-33, <https://doi.org/10.1007/s11948-011-9343-6>.

3 J. Timmermans, Y. Zhao, J. van den Hoven, *Ethics and Nanopharmacy. Value Sensitive Design of New Drugs*, in "NanoEthics", V (2011), no. 3, pp. 269-283, <https://doi.org/10.1007/s11569-011-0135-x>; S. Umbrello, *Atomically Precise Manufacturing and Responsible Innovation. A Value Sensitive Design Approach to Explorative Nanophilosophy*, in "International Journal of Technoethics", X (2019), no. 2, pp. 1-21, <https://doi.org/10.4018/IJT.2019070101>.

energy technologies<sup>4</sup>, industrial manufacturing technologies<sup>5</sup>, as well as artificial intelligence<sup>6</sup>, among others, all underpinned with the aim of developing these technologies in a responsible way, predicated on the values of stakeholders. Often described as a principled approach to technology design, VSD's strength is that it encourages existing design practices regardless of domain to be seamlessly integrated into its tripartite methodology (see Figure 1) of *conceptual investigations* where the philosophical literature is investigated and values are defined, *empirical investigations* where social scientific methods for eliciting stakeholder values are put into practice and *technical investigations* where the technology itself is looked at as to how it can support or constrain those stakeholder values. In doing so, it not only allows ethics to be integrated *into* practices, but it allows practices to manifest themselves *towards* responsible innovation. Simply put, VSD is not hegemonic in its normative prescriptions but allows for a dynamic design program to emerge in any given sociocultural context.

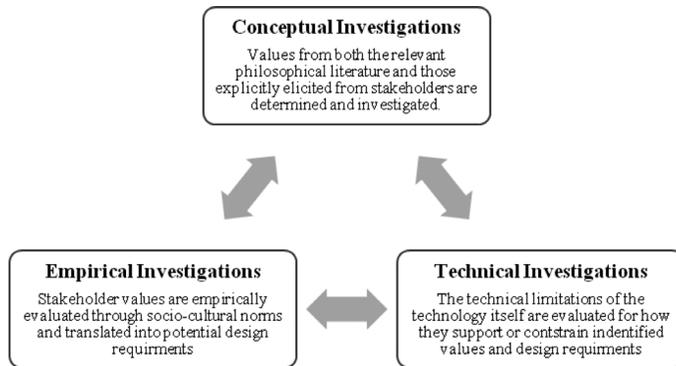


Figure 1. The recursive VSD tripartite framework employed in this study<sup>7</sup>.

4 A. Correljé *et al.*, *Responsible Innovation in Energy Projects. Values in the Design of Technologies, Institutions and Stakeholder Interactions*, in “Responsible Innovation 2”, ed. by B.J. Koops *et al.*, Springer International Publishing, 2015, pp. 183-200, [https://link.springer.com/chapter/10.1007%2F978-3-319-17308-5\\_10](https://link.springer.com/chapter/10.1007%2F978-3-319-17308-5_10).

5 F. Longo, A. Padovano, S. Umbrello, *Value-Oriented and Ethical Technology Engineering in Industry 5.0. A Human-Centric Perspective for the Design of the Factory of the Future*, in “Applied Sciences”, X (2020), no. 12, 4182, pp. 1-25 <https://doi.org/10.3390/app10124182>; L. Gazzaneo, A. Padovano, S. Umbrello, *Designing Smart Operator 4.0 for Human Values. A Value Sensitive Design Approach*, in *International Conference on Industry 4.0 and Smart Manufacturing (ISM 2019)* in “Procedia Manufacturing”, XLII (2020), pp. 219-226, <https://doi.org/10.1016/j.promfg.2020.02.073>.

6 S. Umbrello, *Beneficial Artificial Intelligence Coordination by Means of a Value Sensitive Design Approach*, in “Big Data and Cognitive Computing”, III (2019), 3, 5, pp. 1-13, <https://doi.org/10.3390/bdcc3010005>; S. Umbrello, A. F. De Bellis, *A Value-Sensitive Design Approach to Intelligent Agents*, in *Artificial Intelligence Safety and Security*, ed. by R. V. Yampolskiy, CRC Press, 2018, pp. 395-410, <https://doi.org/10.13140/RG.2.2.17162.77762>.

7 S. Umbrello, *Meaningful Human Control over Smart Home Systems. A Value Sensitive Design Approach*, in “HUMANA.MENTE Journal of Philosophical Studies”, XII (2020), no. 37,

In a recent article Reijers and Gordijn<sup>8</sup> argue that the VSD approach is incomplete, and its ethical underpinnings insufficiently grounded in normative moral theory and instead depart from VSD's heuristic toolkit in favor of a foundation built on virtue ethics in practice. They build their virtuous practice design (VPD) on previous critiques of VSD and its reliance on heuristics rather than a commitment to a moral theory(ies) for grounding its methodologies<sup>9</sup>. They argue that the current technological mediated condition that describes human-technology relations is more aptly accounted for by a heuristic of virtues rather than the heuristic of values that VSD is predicated on<sup>10</sup>. Although I agree with the authors that the emphasis on a heuristic of values at the opportunity cost of those of virtues in practice leaves a gap in grounding VSD practice to a certain extent, I disagree with the authors on at least two points: (1) that the argument they make for VPD excludes VSD and (2) the implicit assumption that VSD in itself excludes moral grounding because of its use of a heuristic of values.

To this end, this paper aims to show at least three things: (1) showing how VPD is not exclusive of VSD. To do this I will argue that Reijers and Gordijn treat VSD as monolithic whereas it is far more dynamic and has recently been described by its founders as being characterized by at least fourteen different VSD methods<sup>11</sup>, (2) that the moral intuitions that underly virtuous practices as described in their approach are problematic particularly with emerging technologies and stakeholder elicitation<sup>12</sup>, and (3) that their approach fundamentally lacks a principled and clear directive that designers and engineers can *explicitly* adopt and integrate into their design programs in order to responsibly innovate.

In order to do this, this paper is organized as follows. The following section will steel-man the VPD approach, outlining Reijers and Gordijn's framework and how it differs from VSD. Section 3 tackles the VPD approach in greater detail, critiquing it as well as discusses some of the critiques of earlier conceptions of VSD that the VPD approach springboards from. Section 4 aims to critique the first of the tripartite phases of the VPD approach, namely, narrative practices. The fifth section discusses a critique of their second phase and the focus on a heuristic of virtue rather than value. The sixth section proposes a critique of their prescriptions for technical practice and draws parallels to VSD's technical investigations. The final section concludes this paper.

pp. 40-65.

8 W. Reijers, B. Gordijn, *Moving from value sensitive design to virtuous practice design*, in "Journal of Information, Communication and Ethics in Society", XVII (2019), no. 2, pp. 196-209, <http://doi.org/10.1108/JICES-10-2018-0080>.

9 C. A. Le Dantec, E. S. Poole, S. P. Wyche, *Values As Lived Experience. Evolving Value Sensitive Design in Support of Value Discovery*, in *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems, CHI '09*, ACM, New York (NY), 2009, pp. 1141-1150. <https://doi.org/10.1145/1518701.1518875>; N. Manders-Huits, *What Values in Design? The Challenge of Incorporating Moral Values into Design*, in "Science and Engineering Ethics", XVII (2011), no. 2, pp. 271-287, <https://doi.org/10.1007/s11948-010-9198-2>.

10 W. Reijers, B. Gordijn, *op. cit.*

11 B. Friedman, D. G. Hendry, *op. cit.*

12 S. Umbrello, *The Moral Psychology of Value Sensitive Design. The Methodological Issues of Moral Intuitions for Responsible Innovation*, in "Journal of Responsible Innovation", V (2018), no. 2, pp. 186-200, <https://doi.org/10.1080/23299460.2018.1457401>.

## 2. Understanding Virtuous Practice Design

As mentioned above, Reijers and Gordijn's development of VPD is motivated by what they believe to be an insufficient heuristic in design practice for RI, more poignantly, a heuristic of values rather than a heuristic of virtuous practice does not capture the "the contemporary, technologically mediated human condition"<sup>13</sup>. They build on the already existent works of Le Dantec *et al.*<sup>14</sup> and Manders-Huits<sup>15</sup> whom advanced substantial critiques against VSD's value heuristics. From here, they adopt and combine two approaches to form their VPD approach: (1) a heuristic of virtue from Vallor<sup>16</sup> and (2) a theory of technical practice from MacIntyre<sup>17</sup>.

In taking this approach, the authors argue that VPD shifts the focus of design away from artefacts and technical design requirements (as is the central concern of VSD) and towards design practices, policy and professional training and education as well as the (legal) regulation of these practices. In doing so, they frame their VPD approach in a similarly tripartite structure like that of VSD saying that the three elements of VPD are:

- (1) investigating narratives;
- (2) reflecting on the practices captured by these narratives using a heuristic of virtues;
- and
- (3) prescribing aspects of relevant practices to enhance the extent to which they cultivate the virtues.<sup>18</sup>

To promote their approach as potentially substitutive of VSD, they argue that the vapidness of the latter approach is fundamentally predicated on its lack of contributing directly to normative ethics. Instead VSD is argued to contribute by informing us when, who, and to what technical artifacts normative ethics can be applied to. They thus forward two claims that form their critique of VSD and offer VPD as a solution:

- (1) that the notion of "value" as operationalized by VSD runs the risk of either dealing with mere preferences or constituting an arbitrary heuristic; and
- (2) that the exclusive focus on values embedded in the design of artefacts and systems leads to a narrow understanding of the potential impacts of technologies.<sup>19</sup>

13 W. Reijers, B. Gordijn, *op. cit.*, p. 197.

14 C. A. Le Dantec, E. S. Poole, S. P. Wyche, *Values As Lived Experience. Evolving Value Sensitive Design in Support of Value Discovery*, cit.

15 N. Manders-Huits, *What Values in Design? The Challenge of Incorporating Moral Values into Design*, cit.

16 S. Vallor, *Technology and the virtues. A philosophical guide for a future worth wanting*, Oxford, Oxford University Press, 2016.

17 A. MacIntyre, *Whose Justice? Which Rationality?*, London, University of Notre Dame Press, 1988.

18 W. Reijers, B. Gordijn, *op. cit.*, p. 197.

19 *Ibidem*, p. 198.

The first of the two criticisms is built on the previous critiques of the heuristics of values by Le Dantec *et al.* and Manders-Huits. Le Dantec *et al.* argue that formulating a pre-determined list of implicated values runs the risk of ignoring important values that can be elicited from any given empirical case by mapping those value a priori. Manders-Huits instead takes on the concept of 'values' itself with VSD as the central issue. She argues that the traditional VSD definition of values as "what a person or group of people consider important in life"<sup>20</sup> is nebulous and runs the risk of conflating stakeholders preferences with moral values.

Reijers and Gordijn's second critique of VSD argues that the VSD approach is fundamentally predicated on a dynamic of control, that is, control of social outcomes through design interventions. They draw on a foundational study of the VSD approach in action to illustrate how the language of design interventions are explicitly directed towards achieving designated social outcomes<sup>21</sup>. They argue that this emphasis, although important, should be accompanied by a broader understanding of the impacts of technologies by accounting for "education, training, teambuilding, laws, codes of conduct, ethical oaths, etc"<sup>22</sup>. This critique is extended to their criticism that VSD generally sidelines the technical practices of design, human development and regulation and the broader ethics of technology.

They then propose VPD as an alternative to VSD arguing that it differs in at least the following two ways:

- (1) it offers a way to ground the heuristic of values in a normative theory (thereby turning to a heuristic of the virtues); and
- (2) it broadens up VSD's narrow and exclusive focus on technology design by including technical practices in which artefacts and systems are involved.<sup>23</sup>

Towards these ends, the authors take a similar strategy to who grounded VSD in care ethics<sup>24</sup>, but instead aim to move forward by using virtue ethics as the axiological theory grounding their approach. Similar to how 'values' are treated in VSD, VPD argues that the heuristic of virtues – they use 'courage' for example – is grounded in everyday 'common belief'. Not only this, but each of the virtues that populate what is called common belief has a particular 'philosophical anthropology' to trace its relations and meaning. Because of this it confronts the first of the two critiques of VSD because:

20 Friedman *et al.*, *Value Sensitive Design and Information Systems*, in *Early engagement and new technologies: Opening up the laboratory*, ed. by N. Doorn, D. Schuurbijs, I. van de Poel, M. E. Gorman, Dordrecht, Springer Netherlands, 2013, p. 70.

21 *Ibidem.*

22 W. Reijers, B. Gordijn, *op. cit.*, p. 200.

23 *Ibidem.*

24 A. van Wynsberghe, *op. cit.*

- (1) on the one hand, the heuristic of the virtues is not arbitrary because it is supported by a normative theory; and
- (2) on the other hand, the heuristic remains responsive to stakeholder engagement because the relevant virtues can be derived from the expressions of standards of excellence and life plans that relate to a certain technical practice.<sup>25</sup>

Their second argument for adopting virtue ethics as an axiology is that it centralizes practice, hence framing technical practice as of human-technology interaction as central. In doing so, they argue that virtue ethics provides a clear and explicit conception of human practices, making it ideal and more comprehensive as an approach to technological development. In doing so, it confronts the second of the two critiques of VSD because:

- (1) the scope of concern and intervention in VPD is significantly broadened, focusing on technical practices; and
- (2) it includes prescriptive interventions that go beyond technology design and include considerations of human development and regulation.<sup>26</sup>

Formalizing their approach, they propose a tripartite approach that is modeled after VSD:

- (1) *Investigation of Narratives*: understanding relevant practices by gathering and investigating narratives that recount-related standards of excellence and life plans. These narratives can be gathered from interactions with relevant stakeholders, which can be people making, using or governing a certain technology.<sup>27</sup>
- (2) *Reflection based on the virtues*: moving from the descriptive and interpretative account of a practice to a normative reflection of that practice, which is based on a heuristic of the virtues that is developed by.<sup>28</sup>
- (3) *Prescriptions for technical practices*: prescribing certain aspects of the technical practice, which could relate to aspects of the design of the technology used not only in the practice but also to a variety of other aspects, such as training, education and regulation of the practice.<sup>29</sup>

Each of the three parts are then applied to the example of military drones. This paper forgoes recounting their example, as their paper does so in a salient and clear way and hence the reader should refer to their account as authoritative. Nonetheless, this section aimed to sum up their VPD approach, which they admit is an initial attempt at integrating virtue ethics within the R&I discourse. The following section will tangle with the critiques of VSD that Reijers and Gordijn work from as well as engage with the apparent strengths and weaknesses of the VPD approach.

25 W. Reijers, B. Gordijn, *op. cit.*, p. 201.

26 *Ibidem*, p. 202.

27 *Ibidem*.

28 S. Vallor, *op. cit.*; W. Reijers, B. Gordijn, *op. cit.*, p. 204.

29 *Ibidem*, p. 206.

### 3. Critiques of VSD and VPD

To reiterate what was already mentioned in the introduction, the motivation behind this paper is not exclusively to provide a critique of VPD, but rather to show its non-exclusionary and symbiotic structure in relation to VSD. Although the authors, in the onset of their paper claim VPD as a potential alternative to VSD, they simultaneously call for VSD to account for virtues. It is not always clear whether or not they are offering an alternative or an augmentation of the VSD approach. Either way, the VPD approach has its merits, which warrants taking it under serious consideration, and this often means highlighting potential weaknesses and blind spots in order to adjust it towards optimal robustness.

To begin, the two pronged critique of VSD that the authors work from are treated overly simplistically and does not take into account the literature that has followed those critiques, justified and reasonable as they are given the literature on VSD up to those dates of publications.

- (1) that the notion of “value” as operationalized by VSD runs the risk of either dealing with mere preferences or constituting an arbitrary heuristic; and
- (2) that the exclusive focus on values embedded in the design of artefacts and systems leads to a narrow understanding of the potential impacts of technologies.

The issues of potentially conflating preferences with moral values is a real issue that presents itself within VSD theory. This is often the argument levied in support of adopting a moral theory as a ground for VSD. However, VSD does not a priori make any such commitments to any given moral theory, and that in many ways presents itself as its strength. VSD is and has always been proposed as a methodology that is able to be adopted, adapted and augmented to any given socio-cultural context, forming itself always already around the existing practices, norms and institutions of design programs. What this means is that VSD is methodologically open to modulation of any chosen moral theory or theories. Just war theory for example was used by<sup>30</sup> for the design of the user interface for missile systems, while care ethics, a substantially practice-oriented moral theory was adopted by van Wynsberghe<sup>31</sup> in designing and weighing design options for care robots for the elderly, and framed as a distinctively normative. Admittedly, Reijers and Gordijn do admit that van Wynsberghe has pushed VSD the furthest in this regard, yet they criticise the approach for being particily nebulous and unclear as to exactly what distinguishes practices and actions within the context of care ethics rather than any thoughts or actions more generally. Although this may be true in van Wynsberghe’s presentation, the practices, institutions, regulations and norms within the social

30 M. Cummings, *Integrating ethics in design through the value-sensitive design approach*, in “Science and Engineering Ethics”, XII (2006), no. 4, pp. 701-715, <http://doi.org/10.1007/s11948-006-0065-0>.

31 A. van Wynsberghe, *Designing Robots for Care: Care Centered Value-Sensitive Design*, in “Science and Engineering Ethics” XIX (2013), no. 2., pp. 407-433, <https://doi.org/10.1007/s11948-011-9343-6>.

contexts in which care ethics is practiced is quite delineated and regulated in the same way that Reijers and Gordijn argue VPD aims towards.

Likewise, the framing that the authors take of VSD often present the approach as being neutral in light of its persistence to not make moral commitments. As is true with any artefact, VSD as a tool is itself not value neutral, and can be used towards various moral ends. Regarding the question of universal values, that is in itself dubious and continually under contention within the philosophical discourse at large, VSD rightly does not contribute to this debate in any substantive way as would be seen by moral theorists. That being said, VSD does make a universal commitment to certain values that it *does* argue are universal values, those being *human well-being, justice and dignity*<sup>32</sup>. Reijers and Gordijn's approach engages with a less-developed theoretical construct of VSD, primarily from the criticisms of the approach that have since been addressed by multiple scholars and led to evolutions of how VSD is understood and its more recent emphasis on practice<sup>33</sup>, institutions and regulation<sup>34</sup>, as well as the socio-structural aspects of design contexts<sup>35</sup>. These universal values are considered through the more recently effectuated commitments that the founders of VSD have laid out:

- (1) to define human values by what is important in their lives, with a focus on ethics and morality
- (2) to consider and legitimate both direct and indirect stakeholders
- (3) to represent and address value tensions by appropriate means, and;
- (4) to consider the co-evolution of technology and socio-cultural; aspects of the design situation.<sup>36</sup>

Reijers and Gordijn make a similar critique of the approach taken by<sup>37</sup> approach of grounding VSD's value heuristic saying:

[van de Poel] offers another way to ground VSD's value heuristic, namely by offering a "value hierarchy", consisting of moral values, norms and specific design requirements. In this hierarchy, a moral value such as democracy could lead to the norm "1

32 B. Friedman, D. G. Hendry, *op. cit.*, p. 173.

33 J. van den Hoven. I. van de Poel, *Engineering Design Practice*, in *Value Sensitive Design: Shaping Technology with Moral Imagination*, ed. by B. Friedman, D. G. Hendry, Boston (MA), MIT Press, 2019, pp. 157-162.

34 S. Umbrello, *Conceptualizing Policy in Value Sensitive Design: A Machine Ethics Approach*, in *Machine Law, Ethics, and Morality in the Age of Artificial Intelligence*, ed. by S. Thompson, Hershey (PA), IGI Global, 2021, Ch. 7.

35 L. P. Nathan, *Envisioning Criteria*, in *Value Sensitive Design. Shaping Technology with Moral Imagination*, ed. B. Friedman, D. G. Hendry, Boston (MA), MIT Press, 2019, pp. 162-164; S. Umbrello, *Imaginative Value Sensitive Design. Using Moral Imagination Theory to Inform Responsible Technology Design*, in "Science and Engineering Ethics", XXVI (2020), no. 2, pp. 575-595, <https://doi.org/10.1007/s11948-019-00104-4>.

36 B. Friedman, D. G. Hendry, *op. cit.*, p. 173.

37 I. van de Poel, *Translating Values into Design Requirements*, in *Philosophy and Engineering: Reflections on Practice, Principles and Process*, ed. by D. P. Michelfelder, N. McCarthy, D. E. Goldberg, Dordrecht, Springer Netherlands, 2013, pp. 253-266.

man 1 vote” and the related design requirement “one voting pass for each voter”. Moral values are considered as values for the sake of which norms are implemented and design requirements are followed. Nevertheless, the problem with Van de Poel’s value hierarchy is that it does not account for reasons why norms are followed. For instance, in the abovementioned example, his framework does not explain why democracy is a value of moral importance that ought to be followed. The only reason for it to be posited appears to be that stakeholders prefer democracy as a value.<sup>38</sup>

Although an interesting critique, it does not appear valid. Van de Poel<sup>39</sup> at several points highlights the importance of taking reasons into account (i.e., p. 260, 261, 263). Also the point that “his framework does not explain why democracy is a value of moral importance that ought to be followed” is already almost literally addressed in the original paper (see page 261). Although it is true that van de Poel does not propose a substantive normative theory, he does stress that the issues mentioned by Reijers and Gordijn should be taken into account rather than just relying on what stakeholders find important. Still, Reijers and Gordijn do not necessary forward a direct critique of van de Poel’s value hierarchy as they claim, given that van de Poel’s framework is substantively methodological in its approach. At best, Reijers and Gordijn’s speaks past that van de Poel’s methodological approach through the framing of normative moral theory.

To this end, the two critiques that form Reijers and Gordijn’s motivation for proposing VPD seems to be based on some fundamental mischaracterizations of contemporary VSD, propogated from earlier critiques of VSD that have since been tangled with, most saliently VSD’s overt empahsis on the practices of designers, institutional and regulatory vectors as well as the situatedness of design practices in sociocultural contexts that influence those other vectors. For VPD to be a sufficiently viable alternative to VSD, as the authors propose, it has to face these issues headon and demonstrate its preferability, particularly given the increasing attention that VSD has attracted in recent years<sup>40</sup>. Still, these issues does not leave VPD vacuous, there are admirable components that VPD proposes that are aligned with VSD principles and would, if adopted as part of the general framework, strengthen VSD practices in general.

#### 4. Moral Narrativity and Narrative as Method

Reijers and Gordijn are explicit the the intelligibility of understanding practices in design contexts are made manesft viz. narrative. The authors predict this on analysis that practioners rationalize their practice through *narrative modes* that are

<sup>38</sup> W. Reijers, B.Gordijn, *op. cit.*, p. 201.

<sup>39</sup> I. van de Poel, *op. cit.*

<sup>40</sup> T. Winkler, S. Spiekermann, *Twenty Years of Value Sensitive Design. A Review of Methodological Practices in VSD Projects*, in “Ethics and Information Technology”, (2018), <https://doi.org/10.1007/s10676-018-9476-2>.

fundamentality embedded in a moral tradition<sup>41</sup>. The first of the tripartite methodology that they propose is *investigating narratives*. Their example of the military drone employs the tool of narrative interviews to elicit narratives from stakeholders to understand practices in context and permit more salient design. This is a particularly potent approach to design given that moral development and expression are fundamentally predicted on narrative modalities<sup>42</sup>. That being said, the difficulty that presents itself here is plural (1) it is contestable that such a proposition is original to VPD and (2) that narrative as a fundamental tool in stakeholder elicitation is already present as a viable VSD method.

The authors argue that in investigating narratives:

multiple distinct practices can be identified in relation to this particular technology: the practices of designing, producing and marketing the technology, of operating and maintaining the technology, and of regulating, monitoring and protesting against the technology. Each of these practices will have its particular standards of excellence that link to particular life plans, and will point at a distinct type or group of stakeholder(s).<sup>43</sup>

Umbrello<sup>44</sup> already argues for the inextricable role of narrative *as* moral practice by stakeholders in direct contribution to VSD whereas various other existent VSD empirical methods make use of stakeholder narratives, implicitly or explicitly, as a means of stakeholder identification, elicitation, and value discovery in a functionally similar manner to that of VPD narrative investigations. Stakeholder tokens used for identifying stakeholders, understanding their relationships and interactions as well as distinguishing peripheral from core stakeholders is a proven method<sup>45</sup>. More explicitly, value scenarios use narratives, “comprising stories of use, intended to surface human and technical aspects of technology and context”<sup>46</sup> has been widely used in VSD applications and conceptualizations as a means of understanding stakeholder implications, their relations to key values and the wide-spread and long-term use and impact that Reijers and Gordijn explicitly argue to be lacking from VSD<sup>47</sup>. Along-

41 A. MacIntyre, *op. cit.*

42 M. C. Nussbaum, *The Fragility of Goodness: Luck and Ethics in Greek Tragedy and Philosophy*, 2nd ed., Cambridge, UK, Cambridge University Press, 2001, <http://www.cambridge.org/gb/academic/subjects/philosophy/ethics/fragility-goodness-luck-and-ethics-greek-tragedy-and-philosophy-2nd-edition#ZSWphmvlMH11Ollq.99>.

43 W. Reijers, B. Gordijn, *op. cit.*, pp. 203-204.

44 S. Umbrello, *The Moral Psychology of Value Sensitive Desig. The Methodological Issues of Moral Intuitions for Responsible Innovation*, *cit.*; S. Umbrello, *Imaginative Value Sensitive Design. Using Moral Imagination Theory to Inform Responsible Technology Design*, *cit.*

45 D. Yoo, *Stakeholder Tokens. A Constructive Method for Value Sensitive Design Stakeholder Analysis*, in “Ethics and Information Technology”, (2018), pp. 1-5.

46 B. Friedman, D. G. Hendry, *op. cit.*, p. 61.

47 See A. Czeskis *et al.*, *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”, (2010), pp. 1-15; L. P. Nathan *et al.*, *Value Scenarios. A Technique for Envisioning Systemic Effects of New Technologies*, in “CHI ‘07 Extended Abstracts on Human Factors in Computing Systems” (2007), pp. 2585-2590; J. Woelfer *et al.*, *Improving the Safety of*

side these tools, value sketches<sup>48</sup>, value-oriented semi-structured interviews<sup>49</sup>, ethnographically informed inquiry on values and technology<sup>50</sup> as well as multi-lifespan co-design<sup>51</sup> and Envisioning Cards<sup>52</sup> are some methods among others that are central to VSD empirical investigations, each of which have narrative elements and tools central to their function.

## 5. A Heuristic of Virtue

In their second investigation in the application of VPD, Reijers and Gordijn provide the normative grounding for the practices described and intereted in the preceding investigation. Given that in the previous section it was shown how the role of narrative is neither comparatively unique nor exclusive to VPD, this particular normative grounding can methodologically be applied to the narrative practices outlined by any one of the given method(s) outlined above. The heuristic of virtues that they adopt from Vallor<sup>53</sup>, although not fully spelled out, is partially used in terms of three virtues: *perspective*, *empathy* and *justice*. The authors describe them as follows:

- *Perspective*: Related to the need for a better understanding of the impacts of emerging technologies.
- *Empathy*: Related to the need to deal with the influence of digital culture on our interpersonal relations.
- *Justice*: Related to the need to address the increasing unjust distribution of resources and power through technological communication channels.<sup>54</sup>

*Homeless Young People with Mobile Phones. Values, Form and Function*, in “Proceedings of the SIGCHI Conference on Human Factors in Computing Systems”, (2011), pp. 1707-1716; D. Yoo *et al.*, *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”, (2013), pp. 419-428.

48 B. Friedman, P. H. Kahn Jr, *Human Values, Ethics, and Design*, in *The Human-Computer Interaction Handbook*, Boca Raton, CRC Press, (2007), 1209-1233.

49 A. Borning *et al.*, *Informing Public Deliberation. Value Sensitive Design of Indicators for a Large-Scale Urban Simulation*, in “ECSCW 2005: Proceedings of the Ninth European Conference on Computer-Supported Cooperative Work”, Springer, (2005), pp. 449-468.

50 L. P. Nathan, *Sustainable Information Practice. An Ethnographic Investigation*, “Journal of the American Society for Information Science and Technology”, LX111 (2012), no. 11, pp. 2254-2268.

51 D. Yoo *et al.*, *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”, ACM, 2016, pp. 4423-4434.

52 B. Friedman *et al.*, *Envisioning Cards*, University of Washington, Value Sensitive Design Research Lab, 2017, <http://envisioningcards.com>.

53 S. Vallor, *op. cit.*

54 W. Reijers, B. Gordijn, *op. cit.*, p. 203-204.

Although *perspective*, *empathy* and *justice* are undoubtedly virtues, particularly within an axiology of virtue ethics, they are not exclusive to it, and not comparatively unique from VSD which is explicit in its dedication to all three, among others, and not exclusively framed as ‘values’ per se as Reijers and Gordijn may be wont to contend. Beginning with *perspective*, as directed towards understanding the impacts of technologies, VSD makes a similar methodological commitment through its plurality of empirical methods. More saliently, Envisioning Cards are one such method that is built on four criteria – *stakeholders*, *time*, *values*, and *pervasiveness* – that are used from “ideation, co-design, heuristic critique, evaluation, and other purposes”<sup>55</sup>. Here the *time* criterion is most equivocal to the function of the *perspective* virtue of VPD in that *time* cards are:

inspired by the long-term perspective of urban planning, the Time criterion helps guide designers to consider the longer term implications of their work – implications that will only emerge after the technology has moved through initial phases of novelty to later phases of appropriation and integration into society.<sup>56</sup>

To this end, the Envisioning Cards are designed to help designers tease out the long-term ethical implications of their work. Both *justice* and *empathy* are also considered in the Envisioning Cards set (in the Values criterion) however they are also central to VSD as a principled approach to technology design. As mentioned, more recent conceptions of VSD address the older critiques of VSD on which VPD is built by *making* the moral commitment to at least three universal values, those being a tendency towards design that emphasizes *human wellbeing*, *justice* and *dignity*<sup>57</sup>. The Envisioning Cards coupled with other methods like multi-lifespan timelines and multi-lifespan co-design make prescient the more specific understandings of *empathy* and *justice* as Reijers and Gordijn describe above in relation to military drones<sup>58</sup>.

The potential boons of applying a virtue like *perspective* to any given stakeholder narrative is undeniable, given that by doing so it can actually augment value representation and analysis. However, by a similar token, the framing of such an application through virtue ethics has the potential to stifle non-axiological understandings of any given narrative even within its moral tradition as a result of value dynamism over time and exacerbated by the cognitive biases that are similarly exacerbated when considering transformative technologies<sup>59</sup>. The ample de-biasing heuristics al-

55 B. Friedman, D. G. Hendry, *op. cit.*, p. 85.

56 B. Friedman *et al.*, *The Envisioning Criteria. Envisioning Cards*, available at: [https://www.envisioningcards.com/?page\\_id=2#5](https://www.envisioningcards.com/?page_id=2#5) (accessed June 16, 2020).

57B. Friedman, D. G. Hendry, *op. cit.*, p. 173.

58 B. Friedman *et al.*, *op. cit.*

59 L. Caviola *et al.*, *Cognitive biases can affect moral intuitions about cognitive enhancement*, in “Frontiers in Systems Neuroscience”, XVIII (2014), pp. 1-5; M. Ćirković, *Small Theories and Large Risks – Is Risk Analysis Relevant for Epistemology?*, in “Risk Analysis”, XXXII (2011), no. 11, pp. 1-17; S. Umbrello, *Imaginative Value Sensitive Design: How Moral Imagination Exceeds Moral Law Theories in Informing Responsible Innovation*, Edinburgh, University of Edinburgh, 2018.

ready present in VSD methodology makes avoiding such pitfalls easier by clarifying them methodologically, something that is not clear in VPD, although that does not necessarily entail that such is not possible within the VPD framework.

## 6. Technical Investigations and Technical Practice

The final phase of the VPD tripartite methodology is making prescriptions for technical practice. They outline this phase as the one that:

looks at a practice in its entirety and not only at the technical design but also of a particular technology. As such, this stage is concerned with prescribing certain aspects of the technical practice, which could relate to aspects of the design of the technology used not only in the practice but also to a variety of other aspects, such as training, education and regulation of the practice. We can categorise these different types of prescriptions according to human development, design and regulation.<sup>60</sup>

Here Reijers and Gordijn provide what would be akin to providing ‘design requirements’ and analyzing technical investigations in VSD. However, their analysis is burdened by some obscurity as to exactly how to proceed in a practical way. Although they do make some discrete suggestions in the case of drones such as “the creation of mobile control centres that would operate in vehicles deployed within the zones of combat”<sup>61</sup>, they fail to provide the more specific directions that are needed by designers who would consider adopting VPD. In essence, Reijers and Gordijn provide very general suggestions as to the ‘prescriptions for technical practice’ without more explicitly demonstrating the potential efficacy of VPD. Similarly, in their prescriptions for technical practice with regards to regulation, they ambiguously suggest:

a regulatory framework could accommodate conscientious objection to a certain aspect of the operation or to the practice of drone operation in its entirety. In practical terms, this means that pilots of military drones should have the legal option to object to certain orders, provided that they have to take responsibility for such objections and justify them in court. For such a practice of justification, particular standards of excellence could be established (e.g. a pilot could be expected to provide reasons that are not arbitrary but related to a conception of justice that can be supported by circumstantial evidence – such as the absence of sufficiently clear information to distinguish civilian from military targets).<sup>62</sup>

Although their analysis follows from the premises of their axiology, it fails to provide any real ways for this to *actually* be undertaken by engineers and leave the burden of more specific design questions regarding requirements and specifications up to the engineers to discover and implement. In doing so, it leaves a lot left

60 W. Reijers, B. Gordijn, *op. cit.*, p. 205-206.

61 *Ibidem*, p. 206.

62 *Ibidem*.

wanting with regards to incentives for adoption, particularly when put up against the more established VSD approach which does provide technical design requirements that make the translation of value tangible for the designer.

## 7. Conclusions

Virtuous Practice Design is an approach that builds on the philosophical critique that VSD requires moral commitments and a moral axiology in order to more saliently design sociotechnical systems. Similarly, Reijers and Gordijn argue that VSD's emphasis on the technical design of artefacts comes at the opportunity cost of avoiding the long-term impacts of technologies on societies. What I have tried to show here is that there are some fatal flaws in the foundations motivating the VPD approach as well as some mischaracterizations of VSD which fundamentally hurt the merits that are potentially fruitful in VPD.

The now decade long critique that VSD does not have a moral foundation or axiology, although true in the sense that it does not adhere to any given discrete moral law theory, it does nonetheless make a commitment to at least three moral values that it argues to be universal, albeit expressed in varied ways as a result of sociocultural distinctions. Likewise, much of the boons that VPD proposes such as a focus on narrative, practices, regulations and education – that the authors argue to be lacking in VSD – are not only present in VSD, but fundamentally predicate the VSD approach. Imaginative VSD<sup>63</sup>, Envisioning Cards<sup>64</sup>, value sketches and scenarios<sup>65</sup> as well as multi-lifespan co-design<sup>66</sup> are all examples of established VSD methods that are grounded on an emphasis on stakeholder narratives, practices, regulation, education and the long-term impacts of sociotechnical systems.

Although VPD may prove to provide salient design results if adopted by design teams, its proponents need to show how and what exactly it offers to the growing body of literature on responsible innovation that VSD currently does not. As it stands, its presentation is based on a since addressed methodological issue in VSD and some mischaracterizations of the internal plurality of methodological tools available at VSD's disposal. VPD in the future may prove to be a useful method used within VSD, and perhaps, if expounded in significant detail and demonstrating its originality, offer itself as a reasonable alternative to VSD. However, as it has currently been proposed, VPD does not do those things.

63 S. Umbrello, *Imaginative Value Sensitive Design. Using Moral Imagination Theory to Inform Responsible Technology Design*, cit.

64 B. Friedman *et al.*, *Envisioning Cards*, *op. cit.*

65 B. Friedman, D. G. Hendry, A. Borning, *A Survey of Value Sensitive Design Methods*, in "Foundations and Trends in Human-Computer Interaction", XI (2017), no. 2, pp. 63-125, <https://doi.org/10.1561/11000000015>.

66 B. Friedman, L. P. Nathan, D. Yoo, *Multi-Lifespan Information System Design in Support of Transitional Justice. Evolving Situated Design Principles for the Long(er) Term*, in "Interacting with Computers", XXIX (2017), no. 1, pp. 80-96. <https://doi.org/10.1093/iwc/iwv045>.

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