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Values and Ethics in Human-Computer Interaction

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Contents

Values and Ethics in Human-Computer Interaction

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ABSTRACT

An important public discussion is underway on the values and ethics of digital technologies as designers work to prevent misinformation campaigns, online harassment, exclusionary tools, and biased algorithms. This monograph reviews 30 years of research on theories and methods for surfacing values and ethics in technology design. It maps the history of values research, beginning with critique of design from related disciplines and responses in Human-Computer Interaction (HCI) research. The review then explores ongoing controversies in values-oriented design, including disagreements around terms, expressions and indicators of values and ethics, and whose values to consider. Next, the monograph describes frameworks that attempt to move values-oriented design into everyday design settings. These frameworks suggest open challenges and opportunities for the next 30 years of values in HCI research.

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1

Introduction

Recent news has brought *values and ethics in technology design* to the forefront of public debate: questions about the goals and politics of human-designed devices, and whether the social interactions of those devices are good, fair, or just. For example, reporters have surfaced the role of social media platforms such as Facebook in the 2016 U.S. election (Doubek, 2017; Rosenberg *et al.*, 2018). Designers have spoken out about the psychological tricks phone apps use to hog user attention (Lewis, 2017). *Weapons of Math Destruction* (O'Neil, 2017), an overview of problems of bias in mathematical modeling, was a *New York Times* bestseller and long-listed for the National Book Award. *Technically Wrong: Sexist Aps, Biased Algorithms, and Other Threats of Toxic Tech* accused "an insular industry" of creating alienating and harmful technologies (Wachter-Boettcher, 2017, p. 9). High-profile university computing programs are reporting increased demand for ethics courses (Singer, 2018).

How to avoid biased practices, and instead conduct ethical, just design has been a topic of investigation and conversation within human–computer interaction (HCI) for more than 30 years. Long the province of academic debate, it is edifying to see news and industry sources

paying close attention to bias and unfairness in the complex network of designers, technological systems, users, and indirect stakeholders that make up our sociotechnical world. This complex sociotechnical network, however, also explains why this discussion has gone on so long, and why it is so challenging. Avoiding bias and unfairness when people and systems are thoroughly entangled is a wicked problem. Technologies may have unpredictable effects, and users may have unpredictable reactions. Direct and indirect stakeholders of technologies are difficult to enumerate. Our design practices may impact people beyond our users, whether through the collection and use of information about people during design, through secondary unintended consequences, or because of the natural resources our technologies use.

If there were clear rules to follow, HCI would have long ago demonstrated how to avoid biased design. Instead, we have rich debates over what constitutes a "value" or an "ethic"; ontological dilemmas over where such entities or actions might reside in people, technology, or their interaction; questions of agency and intention in design; and reflective, almost artisanal design practices designed to bring all of these questions to the forefront of development.

The good news is that more people are engaging with the wicked problem of values and ethics in design. For example, Borning and Muller (2012) note the large increase in papers in the ACM Digital Library mentioning "human values," from 20 in 2000 to 113 in 2010. By this measure, attention has only increased: the number of papers mentioning "human values" has nearly doubled again (to more than 210) by 2017.[1] Adding "ethics" and restricting the search to abstracts expands the number exponentially, to more than 4,000, with most of those papers authored after 2000. At CHI 2017, workshop participants authored the "Denver Manifesto" to "unequivocally state that values play key roles in the design, development and deployment of technologies and that there is a need for discussion and action on the topic" (Ferrario, 2017). In an introduction to an edited collection on design and ethics,

[1] Scholarly publication in general is estimated to grow 8–9% per year (Bornmann and Mutz, 2015). Human values research well outpaced that growth between 2000 and 2010, although not between 2010 and 2017.

Zelenko and Felton (2012) describe "an 'ethical turn' occurring in . . . the design fields." Van den Hoven similarly describes both "a value turn in engineering design and on the other hand a design turn in thinking about values" (van den Hoven, 2017, p. 66).

An ethical turn hardly seems new to HCI, a field long concerned with accessibility, usability, and participation. This review monograph considers accumulated wisdom about how to design just, ethical systems in HCI and cognate areas such as philosophy of technology, science and technology studies (STS), and information studies. Section 2 describes these interdisciplinary approaches within the literature on values and ethics in design. It maps the roots of values-oriented design in philosophy of technology and describes critical traditions that sensitized academics and designers to the ethical issues in their work. It then describes movements within HCI that seek to take ethical action using design methods.

Section 3 dives into controversies within these literatures. It tackles meaning and ontology, describing why different literatures use "values," "ethics," or other terms, and what is signaled by this terminology. It then discusses the problem of recognizing and locating values and ethics, including scholarship that positions values as attributes of people, features of technology, or elements of practice. The section also explores controversies centered on the power and agency of designers, including questions of *whose* values matter to design, and to what degree designers influence the values associated with a technology.

Section 4 departs from controversies to build a practice-oriented way forward for ethical technology design. It discusses workplace approaches to ethical technology design motivated and informed by the HCI literature.

Section 5 explores the limits of values-oriented design by exploring critical issues that design methods struggle to address, and the new research areas and opportunities opened by these limits. The conclusion, Section 6, offers some thoughts on moving forward as a field in a particularly challenging time for ethics in design.

In their monograph "Values as Hypotheses: Design, Inquiry, and the Service of Values," wisely encourage values scholarship "to integrate stories from concrete situations of design practice" (JafariNaimi *et*

al., 2015, p. 102) to keep values scholarship grounded in real-world contexts. Responding to this call, this monograph draws from my own research observations of design teams to illustrate controversies, values-oriented design methods, and open challenges in values-oriented design. By illustrating the broad values and ethics literature, controversies, methods, and open challenges, my hope is to help values scholars plan the next 30 years of designing just, equitable technologies.

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