Applying ethics to the practice, research, and teaching of Human Computer Interaction

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TWO SENTENCE SUMMARY

The discipline of ethics provides an important critical perspective that can positively influence the research, practice and teaching of Human Computer Interaction. We review research protocols (such as IRB) and practical design techniques (such as participatory design), and then present concrete examples of our own work teaching students to develop a nuanced picture of the gap between idealized attempts to follow ethical imperatives and actual practice.

INTRODUCTION

Ethics is a rarely mentioned, yet core component of how many of us approach our life and work, including the practice of Human Computer Interaction (HCI). This paper asks how ethical theory can inform the field of HCI, including practice, teaching and research. Many pages could be written about different ramifications of applying ethical theory to HCI. How do ethics currently play out in the field? What are the difficulties and problems in practicing HCI ethically? What ethical principals should be applied when practicing HCI and how should they be applied? And so on. In order to ground this paper in a concrete application of ethics to HCI, we focus in particular on the teaching of applied ethics.

We argue that HCI already includes examples of design that can benefit from an ethically-based interrogation. For example, participatory design is a design practice that emphasizes democracy, inclusion and customer centered design (see [10] for a number of articles on the topic of participatory design). Thus, it represents an answer to ethical imperatives such as Respect for Persons and Justice (e.g. consider the names of projects such as

ETHICS [11] and UTOPIA [13], p. 59). However, in practice, it is not always obvious how best to embody such imperatives. For example, Schuler and Namioka (Ibid.) reviewing several participatory design projects including UTOPIA, and then concluding that: "A participatory approach to the design process is not sufficient in the context of democratization at work (Ibid., p. 60) " – specific mechanisms had to be put in place to enable participants (specifically, a trade union) to conduct a "parallel, independent investigation (Ibid, p. 56)" in one project. Ethical theory can inform a critical examination of participatory design, and other aspects of HCI, by helping to identify or predict situations in which the ideal may fall short of reality.

The remainder of this paper starts with a background section that considers the role that ethics has and can play in the practice of HCI, followed by concrete examples in the author's own work.

BACKGROUND

The confluence of ethics and science has spawned much discourse. In particular, it has been argued that value-free science is a fallacy, particularly in the case of applied science (See Scriven [14]), of which HCI is a prime example. To solve a problem of applied science, a scientist must decide among multiple approaches some of which may violate ethical imperatives. This decision process involves weighing the relative importance of different aspects of a problem specification. For example, while continuous video monitoring might be one possible way for an employer to determine employee hours, it may conflict with employee values regarding privacy. The implication of this argument (set forth in Scriven's essay [14]) is that an understanding of ethical imperatives must be a part of the scientific process of finding a solution to applied scientific problems.

Ethics and science are and should be intertwined. In fact, it has been argued that the scientific method can be applied to the process of deciding moral problems, and to understanding how values play out

in a person or group of people [4]. But what critical role does ethical theory play in HCI in particular?

Practice and research Professional codes of conduct (e.g. the ACM Code of Ethics) reflect a very practical impact of ethics on what is done in the field. A classic example is the use of human subjects in HCI research. Institutional Review Boards (IRB) are now required across the country to help provide a second look at any experiments that might have ethical implications. Much of the structure of IRB guidelines is set out in the Belmont Report [2].

Teaching and learning Ethics also plays an explicit role in teaching and learning, as evidenced by its inclusion in various curricula (see the ACM Curricular Recommendations [1]).

IRB and HCI methods Although IRB sets out guidelines for human subjects research, these are subject to interperetation, and there is an active history of thought on the subject of how to interperet them (see Hudson and Bruckman [6] for a review of some of this work). Among other things, theory, case studies, and the scientific method (and, particularly, HCI methods) can be used to better understand the impact of HCI research on human subjects For example, Hudson and Bruckman [5] compared the response of chatroom members in four conditions providing varying options and levels of information about the fact that they were being studied. The atuhors conclude that, when studying chatrooms, "a waiver of consent is appropriate in most cases as obtaining consent is impracticable."

Addressing user values One area for consideration is to broaden the HCI design process to address the values of users. Given that much of HCI is about building systems that reflect the needs and wants of end users, and basing this on input from users, it makes sense that we should include values among the many things we observe and address in system design. For example, Shneiderman proposes the use of a "Social Impact Statement (SIS), similar to an Environmental Impact Statement ... for large complex systems that affect the lives of many people." He goes on to lay out what such an SIS might contain, and gives an example. Friedman's work in "Value Sensitive Design [3]" helped to establish a design process for creating systems that reflect the values other than those traditionally included in HCI (efficiency, productivity, and so on). Participatory design, mentioned above, is another example of the confluence of ethics and design. Although the role of ethical theory is not generally made explicit in participatory design, a recent workshop focused specifically on how participatory design could help practitioners live up to specific "ethical codes" [7].

Dealing with conflicting ethical imperatives Clearly, processes exist that help to support the ethical practice of HCI. Social impact statements help to make the values represented in a system more transparent. Value sensitive design aims to include more stakeholders, and to explicate and address a wide variety of stakeholder values. Participatory design helps to democratize the design process, encouraging inclusion and representation of client and stakeholder perspectives. But different ethical imperatives may be in conflict. The study of ethics can help with the negotiation of such conflict, although there is rarely a simple solution to any given instance of conflict.

The implications of computer agency In another application of ethical theory to HCI, Friedman and Kahn [3] raise two particular issues that should be considered during the design of any computing system. First, computers may be given inappropriate control over situations that involve ethical decision making. In particular, they argued that computers may lead end-users to "consider themselves to be largely unaccountable for the consequences of their computer use." This can be mitigated by ensuring that decision making and instruction of students are not delegated to computers. Second, computers may be seen as morally responsible for actions that they take (Ibid.). When a system is particularly anthropomorphic, the illusion is created that it is capable of moral decision making. Friedman and Kahn suggest avoiding the creation of anthropomorphic systems.

Understanding specific ethical imperatives Beyond the processes described above, specific ethical imperatives have been studied at length in the field of HCI. For example, the right to privacy is an area that has received much attention in recent years.

Normative, applied ethics is generally grounded in the ethical imperatives of a specific era and society. Three ethical imperatives that are highly relevant to the field of Human Computer Interaction are those already in place for guiding research involving human subjects [2]: Beneficence (looking out for the interests of students, clients, and so on), Respect for Persons (respecting the choices and freedom to choose of those same persons), and Justice ("look[ing] past both art and client to take responsibility for the effect of professional practice in the society as a whole [12]").

Below, I consider how those three principals play a role in teaching HCI.

CONCRETE EXAMPLES: JUSTICE, INCLUSION, AND LEARNING

As stated above, Beneficence, Respect for Persons, and Justice are three ethical imperatives that are highly relevant to HCI. I argue that two of the three are adequately, if implicitly, addressed in teaching and learning simply due to the nature of the field of HCI. In particular, as service providers, there is a natural tendency to both help the customer know what is the best way to meet there goals (Beneficence), and give them final say and freedom of choice in the solutions we hand them (Respect for Persons). Thus, the standard curriculum implicitly addresses those issues. But Justice can easily fall by the wayside in this simple model of practitioner-customer interaction. In particular, the ethical imperative of Justice leads to issues of inclusion, specifically fairness or equity in access to technology.

Example: Accessibility One particular instance of this is the accessibility of technology to people with disabilities. Students must learn to understand that, as designers, they have a huge amount of control over who has access to the technology they produce. For example, a website design that does not support basic accessibility guidelines cannot be used by those who are blind, and potentially other groups of people with disabilities. In contrast, a design that goes above and beyond the basic web accessibility guidelines might make a site that enables access for a wider range of people, including not only those who are blind but also the aging population, and so on. Thus, practitioners (in the context of the organizations they work for and its constraints) effectively define who is disabled with respect to their product. I try to teach this lesson both through lectures and assignments in class.

One difficulty, though, is the limited time that can be spent on this lesson. In a graduate course focused specifically on assistive technology, I spend weeks of class time helping students to develop a nuanced understanding of the hidden biases and assumptions they bring to the table with respect to the disability community. Abstracting this into a single lesson may just encourage activity that furthers such biases. Not all forms of inclusion are just, they may just lead to inequality at a different level. For example, simply testing a web site with blind users may seem like an appropriately inclusive act. However, if the developer does not prepare appropriately, the test is likely to fail so early

on that little is learned, and no substantive changes are made in the software (see Mankoff *et al.'s* [8] study of the effectiveness of different techniques for finding web accessibility problems). This raises the question of how we can imbue a course that may be the only HCI training students receive with ethical issues without diluting them to the point where they become no more than misguided ideals.

Example: Designing for oneself A second instance of justice facing students arises in the tendency to seek out those who are like oneself as designers. This can lead to a bias that has been commented on and attacked by many existing evaluation techniques (*e.g.* contextual inquiry). Another variation on this issue is the choice of what to work on and who to work for. Many students are not aware of the broad range of applications of HCI that they can pursue once they graduate. My main approach to teaching this lesson is to apply service learning in my classes. In particular, I ask the students in my classes to seek out nonprofit organizations serving the local community, work for them on as volunteers at non-HCI tasks, observe them, and eventually help to design or re-design a system that they need. Unlike the single lecture above, this results in a wholesale change to the content of the course, including multiple assignments and ongoing involvement with community members. Despite this, without careful planning, reporting requirements, and time spent on reflection, it is still difficult to ensure that the right lessons are learned (see Mankoff for a longer discussion of these issues [9]).

CONCLUSIONS

To conclude, I am arguing that the discipline of ethics provides an important critical perspective that can positively influence both research, practice and teaching of HCI. While examples of ethical design have existed for many years (including participatory design, value sensitive design and so on), they can benefit from the critical perspective that the field of ethics can provide. Similarly, the code of ethics and curriculum modules regarding ethics would benefit from the nuanced perspective of applied ethics. In my case study, I discuss some of the difficulties of teaching one particular ethical imperative, Justice.

Although this essay represents a beginning take on the connection between ethics and HCI, much work remains to be done. One particular open question I am interested in is the role of ethics in selecting problems. Should, or can, ethics guide the choice of what to research and design? To what extent do we have an obligation to address humanitarian and environmental causes? How can we address them

in a way that also has research value? Is there a set of humanistic goals that can or should guide us as we move forward? What are the ethical imperatives that should lead us in our work?

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