Ethical dilemmas during field studies of emerging and disruptive technologies – is our current state of knowledge adequate?

A report under the SSHRC Knowledge Synthesis Grant on: How can emerging technologies be leveraged to benefit Canadians?

24 October 2016

Authors

Cosmin Munteanu

Assistant Professor
Institute of Communication, Culture, Information and Technology
University of Toronto Mississauga

Stephanie Sadownik

PhD Candidate
Ontario Institute for Studies in Education
University of Toronto

With contributions from:

Zhenhua Xu

PhD Candidate
Ontario Institute for Studies in Education
University of Toronto

Preamble and key messages

Ethics has long been an essential part of the planning process for techno-centric research with human participants. Canada is one of the two countries which have implemented a single, trans-disciplinary national policy with respect to the ethical conduct of research with human participants – an approach that helps ensure a high degree of consistency in the application of ethical principles. This takes the form of the Tri-Council Policy Statement (TCPS2, 2014), which applies to all research with human participants that is conducted at publicly-funded research institutions such as universities. These institutions are then responsible for implementing and enforcing the guidelines set in the TCPS2; a process most researchers are accustomed to in the form of applications for approval of research protocols by their institutional Research Ethics Boards (REB).

In recent years however, the process of formal ethics review has become more difficult within fields that study humans' interaction with emerging technologies. Researchers in fields such as Human-Computer Interaction (HCI) are increasingly conducting research outside the controlled environment of laboratory studies, or with vulnerable user groups, which pose new "ethical dilemmas". This is only expected to increase and diversify, as new technologies are emerging such as mobile devices, intelligent personal assistants, or interactive assistive applications. Not only such technologies are evolving rapidly, but their contexts of use and their users (especially marginalized populations) are constantly being redefined.

In the synthesis work reported here we aimed to analyze if existing ethics policies such as the TCPS2 can provide guidance that is still relevant to the particularities of new field-based techno-centric evaluations, qualitative studies, challenging lab-based evaluations, and ethnographic observations of emerging digital technologies as used by vulnerable or under-assessed user groups. We report on various yet complementary perspectives for viewing ethics and detail the intricacies of each of these focal points. We describe research with human participants and with the use of novel technologies. Beyond this we detail dilemmas that arise within each of those categories in the emerging field of HCI as researchers attempt to leave their laboratories in search of participants in the "wild". In particular, we present bibliographic evidence to the following key points:

KP 1. HCI researchers are venturing into unknown contexts and physical spaces with emerging technologies in fieldwork where they lack path dependency and cannot draw on a large resource of literature from their colleagues

KP 2. HCI researchers are attempting to test their research in areas that require multi-disciplinary collaborators and either have difficulty coordinating research interests or lack participating collaborators

KP 3. HCI combines the world of working with humans and working with computing devices, an environment that combines both the uncontrolled and the controlled variables; however, many researchers are methodologically more accustomed to controlled experiments and thus prefer to conduct these within laboratory settings

KP 4. Many HCI researchers have a training that prepares them for controlled experiments in computer science or hard sciences but subsequently leaves them unprepared to deal with the challenges of multidisciplinary research in the social sciences or soft science research due to the potential for subjectivity, and uncontrolled variables

KP 5. Very little evidence exists of Canadian HCI researchers studying the ethical challenges of techno-centric fieldwork, especially outside lab settings or with vulnerable users

Executive summary

The process of formal ethics review, which was once a formality, has become more challenging for techno-centric Human Computer Interaction (HCI) researchers who are venturing into unknown contexts and physical spaces while conducting fieldwork with emerging and disruptive technologies. Historically, HCI research has held an ergonomics and cognitive focus, and this has lead to the use of controlled experiments as a frequently-employed method of empirical investigation. The emergence of new interactive technologies (mobile devices, intelligent digital assistants, wearable computing, 3D printing, etc.) and the use of such technologies in new contexts (e.g. marginalizes users, developing countries, accessibility, literacy) poses new ethical challenges, with HCI researchers today **lacking path dependency** to address such challenges [*KP 1*]. This historical ontology contributes to the reason why HCI researchers are often unable to draw on a large resource of literature from their colleagues within or outside the field to inform their research or guide their ethics application.

Existing ethical guidelines (such as the Canadian Tri-Council Policy on Ethical Conduct of Research) have allowed many HCI researchers to gain permission to conduct research in the field; however, the often unexpected and unpredictable realities of conducting fieldwork combined with the exploration of emerging technologies has lead to the realization of existing "ethical vacuums"([1]). Where researchers would typically estimate possible harm for participants based on empirical measurements and past experience, many HCI researchers are left to "rely on anecdotal evidence or simply guessing" what potentially may occur in the field([2]; [3]). Furthermore, HCI researchers are also expected to problem solve potential ethical dilemmas as they are occurring in the course of their fieldwork ([4]; [5]; [6]; [7]). While the unpredictable nature of fieldwork may be a common occurrence in the social sciences ([8]; [9]), HCI researchers have been, until recently, largely spared of difficult ethical situations.

HCI researchers who have left the comfort of their lab settings to commence fieldwork have reported various **challenges** that were **caused by uncontrolled variables** and due to the location of the research ([10]; [11]; [12]) [*KP 3*]. Variables that were noted as being uncontrollable in the course of field work included indirect breaches of privacy ([13]) and potential infringements of anonymity ([14]; [15]; [16]; [17]).

The venture into unknown contexts can also be linked to individual institutions drive for research grants and marketing or publications. The potential to gain worldwide recognition has allowed many HCI researchers to explore, for example, the development of assistive technology that is also sponsored and advertised by industry. For many HCI researchers, this push to be recognized and acknowledged in the media has caused potential ethical dilemmas such as in the case of the Google Glass trials ([18]) and new technology based interventions in mental health ([19];[20]).

It could be suggested that one solution to rising ethical dilemmas for HCI researchers in the field would be the assistance of **multi-disciplinary collaborators** [*KP 2*]. Baker & Warburton (2015) suggest drawing

---

[1] Buchanan, 2015
[2] Busch, et al, 2016
[3] Taherian, Davies, & Owens, 2015
[4] Kazemian, Munteanu, & Penn, 2016
[5] Slegers, Duysburgh, & Hendriks, 2015
[6] Vines, et al, 2016
[7] Waycott, et al, 2015
[8] Baker & Warburton, 2015
[9] Phillips, 2014
[10] Davis & Waycott, 2015
[11] Gora, 2015
[12] Hughes, et al, 2015
[13] Hughes, et al, 2015
[14] Busch, et al, 2016
[15] Davis & Waycott, 2015
[16] Gora, 2015
[17] Hughes, et al, 2015
[18] McNaney & Vines, 2015
[19] Estrada, Wadley & Lederman, 2015
[20] Orlowski, et al, 2015

on techniques from the field of sociology. Alternatively, the addition of medical collaborators, care workers or clinicians could be seen as useful for research located within hospitals ([21]; [22]) or care homes ([23]; [24]), or when developing 'health' or 'wellbeing' apps of various forms ([25]; [26]). Educational psychologists could be useful in assisting researchers working with vulnerable students ([27]; [28]; [29]) or when the potential for exposing vulnerability exists ([30]).

However, the addition of multi-disciplinary collaborators can also create ethical dilemmas for researchers ([31]; [32]; [33]; [34]) who find themselves dependent on staff for access to residents ([35]) or proxies for participants ([36]; [37]; [38]). Some researchers are faced with ethical dilemmas when collaborators have access to the findings of their research such as phishing studies conducted for employers ([39]) and when participants and their care workers or family are present at the same time as sensitive material is revealed ([40]). Ethical dilemmas may also include the identification of non professional or substandard levels of care by hospital staff ([41]) or when employees are found to place the security of their employer at risk ([42]) and finally when employees are not in the proper condition to be working ([43]). Finally, some researchers may even face ethical dilemmas when they choose not to collaborate with law enforcement when illegal activities are revealed ([44]; [45]; [46]; [47]; [48]). While the decision to work strictly within one discipline or with research-oriented practitioners may assist with feasibility, it could be argued that it is not representative of real world situations ([49]).

The methodology training many HCI researchers have undergone prepares them for controlled experiments in computer science or hard sciences but subsequently leaves them **unprepared to deal with the challenges of multidisciplinary research in the social sciences** ([50]; [51]; [52]; [53]; [54]; [55]; [56]; [57]) [*KP 4*]. In particular, HCI researchers have noted the impact of witnessing sensitive discussions on their well being ([58]; [59]; [60]) and their concern for their participants at the recognition of publishing sensitive stories ([61]; [62]; [63]). Many HCI researchers required an exit strategy for their own well being at the end of the study to deal with issues of guilt ([64]; [65]).

We conclude this summary with an observation on the relative scarcity of Canadian-lead research within the field of ethics as pertaining to techno-centric fieldwork (by way of little bibliographic evidence). In

[21] Buchanan, 2015
[22] Hughes, et al, 2015
[23] Dee & Hanson, 2016
[24] Ramos, & van den Hoven, 2015
[25] Buchanan, 2015
[26] Estrada, Wadley & Lederman, 2015
[27] Andalibi & Forte, 2016
[28] Gora, 2015
[29] Ng, 2015
[30] Gerling, et al, 2015
[31] Buchanan, 2015
[32] Davis & Waycott, 2015
[33] Dee & Hanson, 2016
[34] Gora, 2015
[35] Dee & Hanson, 2016
[36] Estrada, Wadley & Lederman, 2015
[37] Gora, 2015
[38] Taherian, Davies, & Owens, 2015
[39] Busch, et al, 2016
[40] Davis & Waycott, 2015
[41] Buchanan, 2015
[42] Busch, et al, 2016
[43] Wadley, et al, 2015
[44] Gora, 2015
[45] Prichard, Spiranovic, & Lueg, 2015
[46] Steinberger, Schroeder, & Lindner, 2015
[47] Strohmayer, & Comber, 2015
[48] Yoo, Nathan, & Friedman, 2016
[49] Orlowski, et al, 2015
[50] Andalibi & Forte, 2016
[51] Bica & Anderson, 2016
[52] Davis & Waycott, 2015
[53] Dee & Hanson, 2016
[54] Di Fiore & D'Andrea, 2016
[55] Estrada, Wadley & Lederman, 2015
[56] Gora, 2015
[57] Kazemian, Munteanu, & Penn, 2016
[58] Andalibi & Forte, 2016
[59] Stevenson, & Taylor, 2015
[60] Strohmayer, & Comber, 2015
[61] Bica & Anderson, 2016
[62] Davis & Waycott, 2015
[63] McKay, & Buchanan, 2015
[64] Dee & Hanson, 2016
[65] Di Fiore & D'Andrea, 2016

our main report we have included a detailed policy analysis of the current version of the Tri-Council Policy Statement (TCPS2, 2014) and showed its applicability to solving ethical dilemmas within fields such as HCI. While TCPS2 may benefit from being updated to reflect new realities of techno-centric fieldwork, an extensive careful interpretation of relevant articles in TCPS2 demonstrated that it can still provide guidance to such research studies. Therefore, our key point [*KP 5*] serves as a call to action for Canadian HCI researchers to become actively engaged in research on the ethical issues surround techno-centric fieldwork – the synthesis captured in this report suggests that this is strongly needed.

NOTE: All references included in this executive summary can be found in the bibliography included with the main report.