

See no evil: ethics in an interventionist ICTD

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Research Article

See No Evil? Ethics in an Interventionist ICTD

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Abstract

This article considers some of the ethical questions that arise in conducting interventionist ICTD research, and it examines the ethical advice and guidance that are readily available to researchers. Recent years have seen a growing interest from technology researchers in applying their skills to address the needs and aspirations of people in developing regions. In contrast to much previous research in information and communication technologies for development (ICTD) that has sought to study and understand processes surrounding technologies, technology researchers are interested in finding ways to shape technologies to promote desirable social aims. These interventionist research encounters raise distinct ethical challenges. This article explores the discussions that have been presented in the major ICTD literature and major development studies journals and examines codes of conduct and ethical debates in related fields of research. Exploration of this literature shows that the quantity, quality, and detail of advice that directly addresses the issues arising in interventionist ICTD is limited. This article argues that there is an urgent need for the ICTD research community to investigate and debate this subject.

1. Introduction

Professor Kant, leader of the FairBanks project, was making his first visit to the project field site. With a commitment to building capacity by engaging local researchers, Kant had contacted the vice-chancellor of a university in the state capital and arranged to visit before travelling to the field site. The meeting went well, and the VC was particularly enthusiastic, because his family originated from the area where Kant's team was working.

The next night at the local guesthouse, Kant and Arun, the coordinator from the collaborating NGO, received an unexpected visitor. The town mayor (a cousin of the VC) arrived and invited them to attend a festival that evening. Kant was intrigued, and he welcomed a chance to witness a cultural event. He was visibly excited by the invitation and saw possible additional resources. However, Arun excused himself, saying that he needed sleep. It was not possible to explore Arun's reticence with the mayor present, so Kant accepted the invitation. When he arrived, he was surprised to be presented as the guest of honor, seated on stage with the mayor, receiving gifts and garlands.

The next morning, Kant asked Arun about his decision. Arun explained that the NGO had been here for five years and wanted to avoid associations with any faction or politician, because it might affect perceptions of their work or hamper their freedom of action. Therefore, they preferred to

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minimize contact. He was concerned that Kant's very public presence might have jeopardized this strategy.¹

"We don't want to work with 'hit-and-run researchers,'" was a comment from a development practitioner.

If researchers in ICT for development (ICT4D) can be said to share an ethic, i.e., "a set of moral principles, especially ones relating to or affirming a specified group, field, or form of conduct" (Ethic, 2010), then that ethic might include goals of beneficence, acting in the interests of the people and communities with whom they work, and nonmaleficence—to "do no harm." However, as outsiders in complex social situations, it is often difficult to identify the harms that might arise from our actions. This problem is compounded by the imbalance in financial and social power between typical ICTD researchers and the people with whom we work. For example, a family offering a visiting researcher a cool drink might be investing half a day's wages to make the researcher feel welcome. The description of "hit-and-run researchers" above reflects an experience where an NGO felt they had been used to achieve researchers' objectives, but insensitive actions in the field had damaged the relationships and social standing that the NGO had taken years to build.

Because we often work with and on behalf of people who are vulnerable, we must carefully examine our research ethics. However, as a relatively new and interdisciplinary field, we are faced with either a lack of guidance specific to ICTD research, or a surfeit of guidance from different traditions. Individual researchers may find it difficult to interpret and adapt such guidance for their particular project.

This article focuses specifically on interventionist ICTD research, a term explored below. In an effort to prompt debate, discussion, and reflection, this article reviews guidance from disciplines related to ICTD and considers implications for ethical interventionist ICTD research.

1.1 Structure of the Article

Section 2 explores the distinction between interventionist ICTD research and other types of ICTD research and practice. Section 3 presents a review of the major literature relating to ICTD research and

notes the low number of articles that deal with research ethics in the area. Section 4 examines codes of ethics from professional bodies concerned with ICT and explains their collective inadequacy as a guide for research ethics. Section 5 examines a range of ethical issues that interventionist ICTD researchers need to consider, informed by research ethics codes from related disciplines. Section 6 notes the limitations of this study, and section 7 outlines a way forward.

2. Is Interventionist ICTD Research Different?

ICTD research is multidisciplinary. Development studies itself draws on multiple disciplines, such as geography, economics, and social science. Further, development can involve specialist areas, such as agriculture, health, education, etc., with distinctive research traditions. ICTs can contribute in all of these domains. Is there anything different about interventionist ICTD research requiring special consideration?

"Non-interventionist" ICTD research may include reporting how people are appropriating and using ICTs; examining the implications of particular technologies for communities, regions, or countries; or evaluating ICT interventions by state, civil society, or private sector actors. It is possible to conduct some such research based on secondary data (e.g., policy documents and ICT uptake statistics), but often, it involves human participants. However, interactions with participants are typically limited to observation, surveys, and discussions.

A more recent phenomenon is technical researchers designing, implementing, and evaluating new technological tools (and new sociotechnical configurations) as they search for configurations that might contribute to development. Technology researchers introduce their own research practices. An interventionist ICTD research project might devise new technology for wireless connectivity in remote regions and conduct field tests themselves or with local people. Testing in situ without involving local residents may avoid some ethical issues, but a key question is whether solutions are usable and sustainable in context. This cannot be answered without involving local residents and organizations

1. This is a fictional account of a scenario, based on fact.

more actively. Projects such as StoryBank (Frohlich et al., 2009), Rural e-Services (Dearden, Matthews, & Rizvi, 2011; Dearden & Rizvi, 2009), MILLEE (Kam, Kumar, Jain, Mathur, & Canny, 2009), and VoiKiosk (Agrawal, Kumar, Nanavati, & Rajput, 2010) all involve direct intervention by a research team designing and applying technologies in collaboration with people and organizations in developing regions. As Anokwa et al. (2009) observe, participants' expectations of what an interventionist ICTD project might deliver may be very different from those of the researchers. There is considerable potential for unintended harm, not least from raising expectations that cannot be met. For this reason, interventionist ICTD deserves careful ethical scrutiny.

Interventionist ICTD research also differs from ICTD practice. There is a healthy dialogue between practice and research in ICTD, but they differ in the incentives applying to people in different institutions. University researchers are (usually) evaluated and rewarded for generating research outputs (e.g., publications, but also patents and spin-off companies). It is easy to imagine scenarios where an ICT researcher's incentives to adopt a novel approach or technology would conflict with community participants' interests in solutions that have been tried and tested elsewhere. There are also competing claims for resources. Interventionist ICTD research must balance costs for expensive researchers writing and presenting articles against expenditures on field activities. This is not only about personal career goals, but also reflects a sense of responsibility to funders, the wider research community, policy makers, and people elsewhere who may be facing similar challenges. Anokwa et al. (2009) characterize the relationship between research and development as "a central conflict" and a "dichotomy" (p. 113). In the next two sections, I review potential sources for ethical advice for interventionist ICTD researchers.

3. Ethics in ICTD Literature

As a first investigation of this area, the scope of this literature review has been set narrowly. The review

covers the 10 most-cited ICTD journals as ranked by Heeks (2010a) and the two major series of ICTD-related conferences with proceedings available online at the time of this writing, namely the ICTD conferences from 2007 to 2010, and the International Federation for Information Processing Working Group 9.4 conferences from 2007 to 2011. The ICTD 2006 conference was covered by means of the publication of the best articles in *ITID*. To set the discussion in context, the review also considers the eight most-cited development studies journals as ranked by Heeks² (2010b).

The search was a full text search for the following strings: *ethic*, *ethical*, *ethics* (*ethic** where wildcards were accepted), *research ethic*, *informed consent*, *ethic and research method*, *institutional review board* (or *irb*), *ethics committee*, *ethics review board*. Where small numbers of results were returned (fewer than 20), these were examined, so that book reviews, letters, and articles that mention *ethics* or *consent* only in the title of references were excluded from the counts. Where *research method* and *ethics* were mentioned together, the article was examined to identify whether an explicit link was made. Similarly, when *irb*, *ethics committee*, or *informed consent* were mentioned, the article was studied to check if it contained an explicit discussion of research ethics, or if it simply indicated that participants had consented and ethical governance had been applied.

The journal search was conducted using the publishers' standard journal archive sites. Where conference proceedings were available as pdf documents, the documents were searched using Adobe Acrobat Reader. Where conference proceedings were in separate files, they were searched using the Google search engine's advanced search. The Google engine was also used for the archives of the *African Journal of Information and Communication*. All searches were conducted June 6–28, 2011. Further verification was conducted July 6–22, 2011.

Table 1 shows the findings from ICTD journals.³ Only one article was found containing a discussion of research ethics, and this by authors who self-

2. The 9th and 10th most-cited development studies journals according to this ranking are *IT for Development and ITID*, which were already included in the review.

3. The sample sizes (*n*) given in Table 1 should be treated as indicative rather than absolute, as they represent the number of objects returned by a search using different search tools. The set of objects indexed varies among journal publishers (some index book reviews, conference calls, reports, correspondence, etc.), and the scope to filter the results by

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identify as students (Anokwa et al., 2009). In presenting their experiences, these authors also found a paucity of advice. They cite a number of books (e.g., Desai & Potter, 2006; Devereux & Hoddinott, 1993; Scheyvens & Storey, 2003) dealing with the ethics of fieldwork, but they recognize that these texts do not deal with the issues of introducing technologies into the field. Additionally, the authors refer to articles reflecting on field experience from technology projects, but they primarily cite these for guidance on promoting the success of research and sustainability of solutions, as opposed to the ethics of the research encounter.

Table 2 presents the findings from ICTD conferences. The number of articles is small. Two articles were found: One was concerned with informed consent procedures and practices (Sterling & Rangaswamy, 2010), and another questioned the low input from African scholarship to published ICTD research (Gitau, Plattiga, & Diga, 2010). A third article included a side comment about a deadlock between a university IRB and a group of schools, each of which refused to approve the research without written confirmation of approval from the other (Tewari et al., 2010).

Table 3 presents the findings from general development studies journals.⁴ Although the terms *ethics* or *ethical* are common, few articles are concerned with research ethics. Many discuss ethical trade. *Ethics* sometimes appears in the titles of references, though not in the main body of the article, and many articles critique the ethics of other development actors. The articles dealing explicitly with research ethics were an agenda arguing for establishing development ethics (Crocker, 1991), an editorial reflecting on personal behavior in development practice (Chambers, 1997), a discussion of the challenges of researching gender violence in schools (Leach, 2006), a reflection on participatory methods for compiling national statistics (Barahona & Levy, 2007), a discussion of tensions in combining qualitative and quantitative research (Kanbur & Shaffer, 2007), a reflexive discussion of ethical issues for a researcher in empirical economics (Jackson, 2009),

and a discussion of feminist epistemologies in development studies (Jackson, 2006).

Overall, the search found only 11 articles, consistent with Anokwa et al.'s (2009) observations. No article in the general development studies literature addressed the specific issues surrounding interventionist ICTD.

4. Ethical Codes from Elsewhere

Given that research ethics debates are rare in the ICTD or development studies literatures, it is valuable to explore other sources, such as codes of ethics. One possible historical starting point is to examine professional codes of ethics. Medicine traces its codes back to the Hippocratic oath (Hippocratic, n.d.) with its duties of beneficence, non-maleficence, confidentiality, professional probity, and limits of professional competence. Whereas medical ethics begins with a clear duty toward a primary client (the patient), the task of developing ICT systems involves multiple stakeholders. The major organizations of the computing profession each provide their own ethical codes (ACM, 1992; BCS, 2011; IEEE, 1963). The IEEE and ACM have approved a joint code of ethics for software engineering (ACM & IEEE, 1999), which includes duties to the public, the "client and employer," the profession, and colleagues, as well as various duties of "management." However, these codes set out limited duties of beneficence and nonmaleficence, focusing primarily on the potential harms that can arise directly from software products. None of these professional codes discuss harms that might arise in exploratory research.

It is important to understand the distinctions between codes guiding the delivery of professional services and those specific to guiding research. Research introduces extra issues not generally present in day-to-day professional practice. These distinctions include the following:

1. Research activities are not (usually) initiated at the request of the participants to address their needs, in contrast to the relationship of a client to a professional.

object type and date range also varies among publishers. Further, the *n* value was obtained during the revision process for this article, rather than when the original literature search was conducted, which may introduce still more uncertainties.

4. As with the figures in Table 1, the sample size figures found in Table 3 should be understood as indicative, rather than absolute.

Table 1. Papers Discussing Research Ethics in ICTD Journals.

Journal	Number of papers (n)	Ethic	Research ethic	Informed consent	Debate of informed consent in research	Ethic and research method	Explicit debate of ethics of methods	IRB or ethics committee	Debate of role of ethical review
ITID	202	21	0	0	0	3	1	1	1
<i>e-Journal of Information Systems in Developing Countries</i>	322	0	0	0	0	0	0	0	0
<i>40IT for Development</i>	427	19	0	1	0	6	0	0	0
<i>African Journal of Information & Communication</i>	83	1	0	0	0	0	0	0	0
<i>International Journal of Education & Development Using ICT</i>	306	15	0	6	0	0	0	2	0
<i>Asian Journal of Communication</i>	444	8	0	2	0	0	0	2	0
<i>Journal of Health Informatics in Developing Countries</i>	78	0	0	0	0	0	0	0	0
<i>Information Development</i>	1,304	89	0	0	0	5	0	0	0
<i>International Journal on Advances in ICT for Emerging Regions</i>	19	0	0	0	0	0	0	0	0
<i>African Journal of ICT</i>	60	1	0	0	0	0	0	0	0

Table 2. Articles on Research Ethics from ICTD Conferences.

Journal	Number of papers (n)	Ethic	Research ethic	Informed consent	Debate of informed consent in research	Ethic and research method	Explicit debate of ethics of methods	IRB or ethics committee	Debate of role of ethical review
ICTD 2010 posters	36	8	1	2	1	1	1	1	0
ICTD 2010 plenary	18	4	0	0	0	1	1	1	1
ICTD 2009	19	5	0	0	0	1	0	0	0
ICTD 2007	38	3	0	0	0	0	0	0	0
IFIP WG 9.4 2011	48	7	0	1	0	2	0	0	0
IFIP WG9.4 2009	35	6	0	0	0	1	0	0	0
IFIP WG 9.4 2007	57	2	0	0	0	1	0	0	0

Table 3. Research Ethics in Development Studies Journals.

Journal	Number of papers (n)	Ethic	Research ethic	Informed consent	Debate of informed consent in research	Ethic and research method	Explicit debate of ethics of methods	IRB or ethics committee	Debate of role of ethical review
World Development	4,760	280	1	0	0	9	3	5	1
Journal of Development Studies	2,084	12	0	1	0	0	0	0	0
Oxford Development Studies	345	2	0	1	0	0	0	0	0
Development Policy Review	1,038	45	0	0	0	3	0	0	0
Studies in Comparative International Development	576	15	0	0	0	0	0	0	0
Sustainable Development	550	163	0	0	0	15	0	1	0
European Journal of Development Research	681	48	0	1	0	1	1	0	0
Development and Change	1,830	197	0	4	0	13	1	0	0

2. Research usually means that information is shared with other stakeholders (e.g., other researchers, funders, policy makers), introducing particular risks of harm and raising issues of autonomy and consent.
3. Research implies some uncertainty about outcomes, and as such, it demands more careful analysis.
4. Research should be conducted and reported so as to promote the validity of findings that might constrain choices for actions in the field.

Various disciplines have established codes for research ethics. The American Sociological Association (ASA), the American Psychological Association (APA), the British Psychological Society (BPS), the World Medical Association (WMA), and the American Educational Research Association (AERA) all cover general principles, such as ensuring that participants in research are protected from harm and providing properly informed consent,⁵ but each association's code has particularities reflecting its particular discipline.

In a field that may be closely related to interventionist ICTD, the 2nd Community Informatics Research Network Conference⁶ (Cape Town, South Africa, August 23–26, 2005) identified a need for an ethical code. Averweg and O'Donnell (2007) developed a first draft, which they published in the *Journal of Community Informatics*, inviting discussion and comment. However, they received little feedback on the draft (Averweg, personal communication, September 3, 2012), and the code has not been formally adopted by any institutions. Thus, this code should not be interpreted as a completed effort.

An influential general framework for understanding research ethics was developed by Emanuel, Wendler, and Grady (2000) at the U.S. National Institutes of Health. The framework sets out seven broad areas of concern that may be applicable across disciplines: favorable risk-benefit ratio, fair subject selection, respect for potential and enrolled participants, informed consent, validity, value (social

and scientific), and independent review. The authors later presented an extended version of this framework for the specific case of health research in developing countries (Emanuel, Wendler, Killen, & Grady, 2004), adding a requirement to conduct such research as a collaborative partnership.

5. Some Challenges

In this section, I draw on both the ICTD literature identified above and the research ethics codes of related disciplines to highlight some key challenges that interventionist ICTD research ethics needs to consider. To structure the discussion, I draw on Emanuel et al.'s (2000, 2004) framework.

5.1 Risks and Benefits of Research

Most disciplines require that research participants should have an opportunity to benefit from the findings of research. For example, the AERA's code states that "researchers should communicate their findings and the practical significance of their research in clear, straightforward, and appropriate language to relevant research populations" (2000, Clause II: B:10).

Averweg and O'Donnell's (2007) draft code for community informatics recommends the following:

[T]he specific objectives of any research study should be negotiated with the subject communities so as to include both the objectives of the community and of the CI researchers; and that the research results should be communicated to the community in ways that meet their needs. (ibid., pp. 2–3)

Emphasizing benefits for research participants may reflect the influence of participatory action research traditions on community informatics (see, e.g., Bishop & Bruce, 2006). However, similar viewpoints are expressed in other (more conservative) disciplines when dealing with vulnerable groups. For example, the Helsinki Declaration on medical research requires the following:

Medical research involving a disadvantaged or vulnerable population or community is only justified if the research is responsive to the health needs

5. The APA and BPS codes of ethics admit the possibility of psychologists working with people who are legally incapable of providing informed consent, and the codes discuss appropriate behaviors in these circumstances.

6. There is clearly some relationship between the field of community informatics and interventionist ICTD research, but any precise description would require careful analysis of the multiple perspectives that exist within each field. A full discussion of the relationship is beyond the scope of this article.

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and priorities of this population or community and if there is a reasonable likelihood that this population or community stands to benefit from the results of the research. (WMA, 2008, clause 17)

This is a stronger injunction than simply ensuring that the findings are shared or co-owned, or that the research has potential value for people in similar circumstances. Rather, it states that it is not legitimate to involve vulnerable people in research unless the particular individuals have a realistic chance of actually receiving the benefits of the research outcomes. The concern is that risks and benefits should be fairly shared to avoid exploitation where vulnerable people are used as a means toward the researchers' (or some other stakeholders') ends.

This injunction has sparked considerable debate about health research in developing regions (Koshi & Nightingale, 2001; Shapiro & Meslin, 2001). Consider studies of antiretroviral drugs to reduce the rate of mother-to-child HIV transmission. Although treatments (then costing US\$800 per patient) were known to be effective in the 1990s, this was unaffordable for most people in developing countries, or for their governments, for that matter. Studies aimed to discover whether a lower dosage at cost \$X might be effective for some given X. Glantz, Annas, Grodin, and Mariner (1998) argue that such studies would only be ethical if, at the start of the study, the researchers presented a clear plan of how the countries involved would be funded to purchase national-scale quantities of the drugs at the specified \$X per patient. Glantz et al. elaborate the following:

The researchable issue arises from an economic circumstance. The only way such research could offer any benefit is by "curing" the economic problem . . . Absent knowledge of financial resources one might well be creating a new unaffordable, and therefore useless, intervention. (ibid., pp. 41–42)

On the other hand, the U.S. National Bioethics Advisory Commission (NBAC) argues that if vulnerable people are excluded completely from research, we "risk developing knowledge that helps only a subset of the population" (2001, p. 4).

Bhutta warns that narrow interpretations of the potential benefits of research might "effectively stop much-needed public health and epidemiological

research that often generates precisely the information that might influence future public health policy" (2002, p. 116). Bhutta (2002) further argues for a broader understanding of the benefits of participating in research, such as possible improvements in local health care systems and building local capacity, for example.

For interventionist ICTD research, similar issues arise around whether the technologies investigated will be sustainable in the context where the research is conducted. The falling price of ICTs may encourage research applying "cutting edge" tools, but Glantz et al.'s (1998) argument questions whether vulnerable groups should be encouraged to participate if they cannot immediately afford these technologies from their own resources. Creative uses of lower-cost, lower-tech solutions are easier to justify. In assessing affordability, we should consider who the people are that are being recruited as "subjects" or "participants" in our research. Creating technologies that enhance the capability of established and funded NGOs, private sector businesses, and government agencies may involve less risk to vulnerable people than working directly with smaller, community-based groups or individuals. Established institutions might also be better able to assess for themselves the affordability and risk-benefit trade-offs.

5.2 Fair Subject Selection

According to Emanuel et al. (2000), "fair subject selection requires that the goals of the research, not vulnerability, privilege or other factors unrelated to the purposes of the research, be the primary basis for determining which individuals or groups are recruited" (p. 2704). The WMA, APA, ASA, AERA, and BPS codes contain little direct discussion of how subjects are selected beyond demands for methodological validity and injunctions against discrimination. The same is true of Averweg and O'Donnell's (2007) draft code.

Fairness in selection arises particularly because of the potential benefits and harms of interventionist research (in either ICTD or medicine). Anokwa et al. (2009) discuss the tension between working with communities that may be less remote and, therefore, easier for the researcher to access, versus a desire to share the benefits of ICT with people who may be more disadvantaged. Ho, Smyth, Kam, and Dearden (2009) highlight the role of NGOs as "gate-

keepers” to research sites, restricting the choices that interventionist ICTD researchers might have when selecting sites. Emanuel et al. (2004) suggest that working with communities which are better able to both organize themselves in the research and represent their own interests is ethically preferable.

In ICTD intervention sites, there has been little discussion about recruitment fairness within studies. Emanuel et al. (2004) advise that researchers must be aware of the potential within communities for vulnerable individuals to be encouraged by others to take unreasonable risks. Guijt and Khan (1998) warn of “the myth of community” in participatory research, and Heeks (1999) explains how nominally “participatory” practices can mask coercive exercises of power.

One particular issue is incentives to engage in research. The ASA demands that “[s]ociologists do not offer excessive or inappropriate financial or other inducements . . . particularly when it might coerce participation” (2008, clause 13.03).

One way to ensure that participants directly benefit from interventionist ICTD research might be to guarantee sustained ICT funding after the research ends. However, Bhutta (2002) argues that similar guarantees in medicine can become coercive inducements. Given the high cost of ICTs, coercive incentives may be a particular risk for our field. Sambasivan, Rangaswamy, Toyama, and Nardi report that a “seemingly innocuous gift of a school bag for an informant’s child proved disproportionately valuable in relation to the family and the community’s income standards” (2009, p. 23).

ICTD researchers must consider not only the promises and rewards that they explicitly offer, but also the rewards and inducements that participants (incorrectly) project onto them (Anokwa et al., 2009). Sterling and Rangaswamy (2010) recommend that researchers explore the socioeconomic, political, and external factors that are in play in their field site before commencing work. This may help to frame a discussion about levels of compensation, but projects will rarely predict these matters with certainty prior to experience on-site.

5.3 Respect for Participants

Emanuel et al. (2000, 2004) argue that respect for participants underpins such matters as ensuring privacy and confidentiality, allowing participants to

change their minds, informing participants if new risks are identified during research, and reporting findings to participants. Jackson (2009) reflects on the relationship between herself as a white professional researcher and members of the community at her research site, highlighting the impossibility of a neutral research relationship with her participants:

Foreigners, usually white men, are seen as development experts associated with projects and in command of budgets, and as worthwhile patrons. . . . Researchers are seen as fair game for attempts to guilt trip them into paying for something. (ibid., pp. 777–778)

Jackson also recommends a reciprocal research relationship, reflecting substantial respect for her respondents. “Expecting a two-way process in which respondents also evaluate and ‘research’ researchers is a more realistic starting point than assuming ignorance, innocence and passivity” (ibid., p. 788).

Reflecting these principles, the code for community informatics suggests that, in establishing projects, “negotiation should include issues such as appropriate (and inappropriate) methods, rules for research conduct, ownership of data and the means by which this data may be disseminated and under what conditions” (Averweg & O’Donnell, 2007, p. 2). It goes further, requiring that “CI research entails an active involvement by research participants and ensures both that their interests are central to the project or study and that they will not be treated simply as objects” (ibid., p. 2).

Such a clear commitment to participatory research and explicit orientation to negotiating the goals of research might be viewed as unnecessarily restrictive for many interventionist ICTD research projects. For example, in ICTD interventions in health systems, the primary participants may be health professionals, but the central interests might belong to patients and users of the services.

5.4 Informed Consent

The draft code for community informatics suggests the following:

[R]esearch should commence only if participants have been given the opportunity to give free and informed consent about participation, this free and informed consent has been given and if and as [sic] it is maintained throughout their participa-

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tion in the research. (Averweg & O'Donnell, 2007, p. 2)

Sterling and Rangaswamy (2010) discuss informed consent in ICTD research, highlighting the difficulty of translating key ideas. For example, *research*, *investigation*, and *project* (even when translated into a local language) will commonly be understood by participants against a background composed almost exclusively of aid and development projects. Similarly, informed consent forms are rooted in a culture of individual decision making; these require effort to be translated for cultural settings where decisions are treated more socially and collectively.

Khanlou and Peter suggest that researchers "envison informed consent as a mutual negotiation process" (2005, p. 2337). Sterling and Rangaswamy (2010) argue that obtaining informed consent should be seen as an ongoing process that can be improved by stimulating open discussions mediated by local actors, exchanges where participants can actively identify and explore potential benefits and risks of the research.

5.5 Validity

Because of the risks in medical research and the cost of research resources, Emanuel et al. (2000) argue that research is only justified if it can be expected to deliver useful knowledge, and as such, that studies should be methodologically sound. Averweg and O'Donnell suggest that "[a]ppropriate research methods must be selected on the basis of informed professional expertise," and that "methodology and findings must be open for full discussion and peer review" (2007, p. 3). Different ICTD disciplines have different ontological and epistemological roots, and they differ in how they seek validity (Burrell & Toyama, 2009). All of the codes discuss accuracy of reporting, and Burrell and Toyama (from their different standpoints) concur that transparency about method and data are important. However, unlike medicine, which is (generally) approached as a biological phenomenon where realist ontologies and epistemologies predominate, development is a social phenomenon where multiple perspectives interact.

In development studies, Kanbur and Shaffer (2007) explore the implications of the different theo-

retical commitments that are typical of, although not inextricably mapped to, quantitative and qualitative research. They argue that quantitative methods are usually grounded by a commitment to "brute data," viewing knowledge as neutral, but typically treating data categories as unproblematic. On the other hand, qualitative and participatory studies are rooted in traditions such as critical hermeneutics, emphasizing dialogue among stakeholders to establish the meaning of categories (e.g., poverty, development, health, etc.) and seeking knowledge that can be emancipatory. Important aspects of poverty, such as a lack of respect or dignity, are difficult to operationalize in quantitative research. Kanbur and Shaffer refer to a study in the Republic of Guinea where women are shown not to suffer from greater poverty based on the quantitative metrics from national household surveys, but where participatory and qualitative data gathering in the same context shows almost universal agreement by participants (in single-sex groups) that women are worse off than men. The explanation that participants suggested for the discrepancy was a lack of attention in the quantitative approach to two important factors that disproportionately affect women: lack of decision-making authority and excessive workload. One of the principal questions raised by advocates of participatory methods in development studies is to ask, "Whose reality counts?" (Chambers, 1997). Choices about how such alternate findings are interpreted, understood, and emphasized have significant implications for both policy and assessments of whether the research method generates knowledge that is reliable and useful for development.

Crocker (1991) contests the notion of value neutrality in science and development, whether quantitative or qualitative,⁷ pointing out that research requires the allocation of limited resources, and that, therefore, decisions about what to study and what parameters to consider are fundamentally ethical and must be intertwined with choices about the ethics, direction, and aims of development itself. Instead, he draws attention to development activity as a continuum of "theory-practice":

Relatively pure theory is possible. Relatively pure practice is possible. But it is typical and, more importantly often desirable to have a "practice-

7. He also contests the suggestion that technologies are value neutral, a perspective widely acknowledged in ICT. For discussions, see Tavani (2011) and Wakanuma (2011).

theory" or a "theory practice" in which more or less abstract thought, site specific experience, and practical conduct are dialectically related. (ibid., p. 469)

Crocker refers to feminism as an exemplar of such a "theory-practice" combination, with its aims to develop theories to "understand as well as to end" (ibid.) women's oppression. Jackson (2006, 2009) also suggests that feminist perspectives provide useful insights for research ethics in development, and Bardzell and Bardzell (2011) make a similar recommendation for socially engaged human-computer interaction research.

5.6 Value

In health research, Emanuel et al. (2004) remind us that the quest for scientific validity is driven by the goal of generating knowledge that has social value for beneficiaries. However, as Barahona and Levy (2007) point out, the social value of research in development is not separated from the context. Power relationships between participants and the sponsors or users of research results must be considered. Exploring whether certain research methods will deliver sufficient social value to be ethically acceptable in a particular context, they note that research which "aims to influence policy at a higher level will only impact positively on the lives of the participants if policy makers use them to reduce poverty, increase livelihood opportunities or otherwise benefit the target populations" (ibid., pp. 336–337). The question of who holds knowledge and benefits from the learning generated by research is central to how that knowledge might contribute to development (van der Velden, 2005).

Morton (1999), an action researcher in information systems, warns of the problem of "role contamination" between the action researcher as consultant in a problem situation, and the researcher as someone developing knowledge for others outside the situation, highlighting a tension between "detached enquiry" and "help." Anokwa et al. (2009) and Ho et al. (2009) recognize a similar tension in interventionist ICTD research, but perhaps this is particularly acute precisely because researchers enter into interventionist ICTD research hoping that their work can have a positive developmental impact. The draft code for community informatics (Averweg & O'Donnell, 2007) offers a possible resolution by insisting that both the objectives set for

research and the methods selected should be negotiated to address both the researchers' goals and the locally agreed-upon priorities (p. 2).

5.7 Independent (Ethical) Review

According to Emmanuel et al. (2000), independent expert review of research plans is a key mechanism for ensuring ethical behavior, avoiding poor decisions, and providing social accountability. ICTD research is often supported by organizations and conducted by researchers with very different geographic, social, and cultural backgrounds from their research participants. In this situation, we can question how well-equipped ethics committees and IRBs in "developed" countries are to reason out the consequences of researchers' actions or to oversee actions in the field. Averweg and O'Donnell (2007) emphasize accountability and negotiation with research participants in situ, but they do not discuss expert ethical review. Emanuel et al. (2004) recommend that part of a collaborative partnership in health research in developing countries should be helping local organizations to establish their own systems of independent ethical review.

The challenges are further compounded because interventionist technology and design research are usually iterative in nature. This suggests parallels with action research. Khanlou and Peter (2005) argue that action research plans should be re-reviewed before each action cycle, but they also suggest that the burden of reviewing could be minimized by developing specialized guidelines and procedures for ethical review of action research. This might still be regarded as excessive and impractical for much interventionist ICTD research. Gelling and Munn-Giddings (2011) suggest that ethics committees make case-by-case decisions about whether action research projects should be required to submit successive amendments for each research cycle. Arguably, the changes in risks when exploring successive design iterations are less than one typically sees in medical research cycles, so more responsive oversight may be appropriate. Morton warns, for action research in information systems, that ethical decisions "will often be nonroutine and made under pressure" (1999, p. 221), and Morton argues that researchers need conceptual tools to support ethical decision making in the field. Ethical interventionist ICTD research may need a combination of these strategies.

5.8 Partnership

Emanuel et al. (2004) recommend that medical research in developing countries should be conceived as a collaborative partnership meant to give rise to fair benefits (Participants, 2002). Such a partnership would be characterized by shared responsibility for assessing research priorities, planning, and executing the study; mutual respect for values and culture (although not uncritical acceptance of oppressive or coercive practices); contributions to local capacity building; and fair sharing of benefits.

The Canadian Government's Tri-Council Panel on Research Ethics (TCPS) has developed specific guidelines for research with Aboriginal communities, which could be informative for ICTD settings. The initial guidelines encouraged researchers to "conceptualize and conduct research with Aboriginal group as a partnership" (Canadian, 1998, section 6). The second edition suggests that "[i]n geographic and organizational communities that have local governments or formal leadership, engagement prior to the recruitment of participants would normally take the form of review and approval of a research proposal by a designated body" (Canadian, 2010, article 9.2).

The policy also recommends building the community's own research capacity (*ibid.*, article 9.13). The TCPS recommendations are reflected in the code for community informatics, which includes a section on Aboriginal communities, recommending that "CI researchers must fully inform the community leadership or appropriate authorities and obtain prior approval from the community leadership or other appropriate authorities before research can be conducted in the community" (Averweg & O'Donnell, 2007, p. 4).

In interventionist ICTD research, questions may be asked about which institutions should be recognized as legitimate representatives of community interests. For Professor Kant, if the setting was interpreted as similar to researching in an Aboriginal community, one could argue that the mayor should automatically be consulted to gain approval. However, it might be argued that this would act against the interests of the community's marginalized people. Resolving these issues implies making (explicit or implicit) decisions about the moral legitimacy and authority of different institutions. For many interventionist ICTD projects, local NGOs have been treated as key gatekeepers (Anokwa et al., 2009; Ho et al., 2009; Sterling & Rangaswamy, 2010). Interventionist

ICTD needs to assess the degree to which particular NGOs or institutions have the legitimacy, as well as the organizational capabilities, to represent participants' interests during research. From a feminist perspective, interventionist ICTD researchers would benefit from clarifying their standpoint (Bardzell & Bardzell, 2011). A pragmatic and participatory dialogue might suggest that governance should be explicitly configured as a partnership among the research team, institutional review boards (or equivalent structures), and such locally based institutions as NGOs, community-based organizations, or public bodies.

5.9 Reflexivity

Emanuel et al. (2000, 2004) do not discuss reflexivity in research, nor do Averweg and O'Donnell (2007), but most development studies articles that discuss research ethics have some (explicit or implicit) reference to reflexivity. Both Leach (2006) and Jackson (2006) reflect on their personal roles and behaviors, as well as on how these interact with the reliability and truth criteria of their reports. Anokwa et al.'s (2009) article is a structured reflexive survey of the authors' experiences. Sterling and Rangaswamy (2010) draw both on a survey of other practitioners, and on the authors' own reflections. Barahona and Levy (2007) call for more debate and dialogue among researchers about the impact of their methods, and Crocker (1991) is disappointed that development professionals feel uncomfortable engaging in ethical reflection as part of their practice. It may be that reflexivity should be regarded as a core skill required of those who wish to undertake ethical interventionist ICTD research.

Chambers (1997) calls on development professionals to reflect more on their values and how these work in practice. He emphasizes personal behavior and attitudes, claiming that these have more significance in the effectiveness of development practice than other particular methods do. However, he observes that discussions of these personal orientations "have been absent from most professional training and from most agendas of development" (p. 1748).

6. Limitations

This review has limitations that should be recognized. First, the initial coverage of the review is narrow. A detailed study of the hundreds of articles in

development studies journals that include the string *ethic* (but do not mention ICT or other synonyms) might find more relevant material. For example, Muwanga-Zake (2007) provides a detailed discussion of how the communal values expressed by the concept of Ubuntu framed the ethics of his research, but this paper was not captured during the initial review. Relevant debates may be taking place in specialist ethics journals, such as the *Journal of Global Ethics*; *Research Ethics* (formerly *Research Ethics Review*); *Science, Technology and Human Values*; etc. On the other hand, an initial keyword search of these journals found no references to the typical acronyms *ICT4D* or *ICTD*; in fact, only one reference to even the broader *ICT* was found, in the *Journal of Global Ethics* (Youngs, 2005). The *International Review of Information Ethics* makes no reference to *ICTD*, but it did publish the proceedings of the first African Information Ethics Conference (*International Review of Information Ethics*, 2007). The journal *Ethics and Information Technology* recently published a special issue on ICT and the capabilities approach, with articles relating to *ICTD* (e.g., Oosterlaken & van den Hoven, 2011), but not specifically relating to research ethics and interventionist *ICTD*. The field of development ethics (Gasper, 2004) may also offer valuable insights.

Second, any set of specific search terms cannot be guaranteed to capture the full space of debate. For example, Crocker's (1991) identification of "theory-practice" is closely related to action research, and articles on action research and other participatory approaches will probably be relevant to this discussion. This article is not intended as a final word on the ethics of interventionist *ICTD*; rather, it is intended to stimulate debate.

7. A Way Ahead

Interventionist *ICTD* research has significant differences from its non-interventionist partner, and *ICTD research* differs from *ICTD actions* driven primarily by pragmatic development goals. This review reveals a disturbing lack of research ethics debate in our community's formal exchanges. One risk posed by this situation is that, lacking a clear internal debate, a field may be subjected to ethical review standards drawn from elsewhere that may be poorly matched to the specific situation and discipline (Singer & Vinson, 2002). Given interventionist *ICTD*'s need to respond dynamically to complex and

changing situations in the field, this is a significant risk.

Authors such as Dahlbom and Mathiassen (1994) and Schwenke (2007) argue that codes of ethics can be styled differently to serve different purposes, e.g., regulating and controlling action, articulating shared values, or serving as a methodological framework to promote effective practice. Schwenke suggests that codes of "conduct" emphasizing regulation and constraint can be counterproductive, recommending instead codes of "ethics" that motivate people by appealing "to their *aspirations* to achieve high moral ideals" (2007, p. 6, emphasis in original).

This article opened with the suggestion that *ICTD* researchers might share some general ethics or values, aspirations, and ideals. Dahlbom and Mathiassen (1994, 1995) discuss alternate visions of the computing professional, distinguishing visions that give primacy to engineering (focusing on technical efficiency); those emphasizing the engineer as a facilitator promoting an understanding of technology; and those highlighting engineers as participants in emancipation, concerned with issues of justice. In interventionist *ICTD* research there may be parallel positions emphasizing dispassionate rigor or technical efficiency; improved understandings and use of ICT in society; or viewing development as fundamentally about social change, including changing social and power relationships between people and institutions. As Dahlbom and Mathiassen (1995) observe, if we recognize these choices over our orientation, then it is naïve to suggest simple distinctions between our ethics and our politics. Recognizing that technologies themselves are value-laden (Tavani, 2011; Wakanuma, 2011), interventionist *ICTD* research must be alert to the ethical implications of technical design choices (Walton & DeRenzi, 2009), further entwining the process and content of interventionist *ICTD* research. Exploring these varied perspectives may clarify how different approaches to interventionist *ICTD* research relate to conceptions of development, and help to uncover areas where the ethics of interventionist *ICTD* researchers diverge.

In considering ethics as contributing to methodology, it may be helpful to examine other areas of study where relations among ethical, political, and epistemological positions have been debated. Bardzell and Bardzell (2011) contend that feminist epistemologies and research ethics are highly relevant to *ICTD*. They argue for approaches in which

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the experiences and understandings of marginal, rather than dominant, groups are the focus, and where marginal groups are actively engaged in setting the scientific agenda. As an important contribution from feminism, they highlight standpoint theory, which declares the researcher's position in the world leading to "limited knowledges that make explicit their positioning, their construction of power, and that seek to make visible the claims of the less powerful" (ibid., p. 680). Given the substantial feminist literature on development, this may represent a fruitful avenue.

I have argued elsewhere for the value of action research to interventionist ICTD research (Dearden & Rizvi, 2008, 2009). Morton (1999) argues that action researchers in information systems need resources to support dynamic ethical decision making in the field. The same arguments surely apply to interventionist ICTD researchers. A code of *ethics* (see Schwenke, 2007) would be one resource, which would also be valuable for ethics committees and IRBs, and Awerweg and O'Donnell's (2007) work is a useful starting point. However, codes are far from sufficient. Additional resources should include "stories from the field" (e.g., Anokwa et al., 2009) and "microethical" case studies (see Bittner & Hornecker, 2005). Broad frameworks highlighting relevant dimensions of ethical reasoning (e.g., Emanuel et al., 2000, 2004) and techniques for reasoning about ethics in technology (Walton & DeRenzi, 2009) will also be useful. Meanwhile we should promote more ethical analysis and debate in our core literature.

Finally, in promoting ethical interventionist ICTD research, we should consider how our behaviors as a research community impact the actions of field researchers. Some fields (e.g., medicine) demand that articles submitted for publication show evidence of reflection on ethical issues, or that the work has been subjected to review with appropriate stakeholders. As our field matures, it is timely to consider whether we need such processes. ■

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References

- Agarwal, S. K., Kumar, A., Nanavati, A., & Rajput, N. (2010). User-generated content creation and dissemination in rural areas. *Information Technologies & International Development*, 6(2), 21–37.
- Anokwa, Y., Smyth, T. N., Ramachandran, D., Sherwani, J., Schwartzman, Y., Luk, R., Ho, M., et al. (2009). Stories from the field: Reflections on HCI4D experiences. *Information Technologies & International Development*, 5(4), 101–116.
- American Educational Research Association (AERA). (2000). *Ethical standards of the American Educational Research Association*. Retrieved from http://www.aera.net/uploadedFiles/About_AERA/Ethical_Standards/EthicalStandards.pdf
- American Psychological Association (APA). (2010). *Ethical principles of psychologists and code of conduct*. Retrieved from <http://www.apa.org/ethics/code/index.aspx>
- American Sociological Association (ASA). (2008). *Code of ethics*. Retrieved from <http://www.asanet.org/images/asa/docs/pdf/CodeofEthics.pdf>
- Association for Computing Machinery (ACM). (1992). *ACM code of ethics and professional conduct*. Retrieved from <http://www.acm.org/about/code-of-ethics>
- Association for Computing Machinery and Institute of Electrical & Electronics Engineers (ACM & IEEE). (1999). *Software engineering code of ethics and professional practice (version 5.2)*. Retrieved from <http://www.acm.org/about/se-code>
- Averweg, U., & O'Donnell, S. (2007). Code of ethics for community informatics researchers. *Journal of Community Informatics*, 3(1). Retrieved from <http://www.ci-journal.net/index.php/ciej/issue/view/16>
- Barahona, C., & Levy, S. (2007). The best of both worlds: Producing national statistics using participatory methods. *World Development*, 35(2), 326–341.

- Bardzell, S., & Bardzell, J. (2011). Towards a feminist HCI methodology. *Proceedings of the 2011 Annual Conference on Human Factors in Computing Systems—CHI '11* (pp. 675–684). New York, NY: ACM Press.
- Bhutta, Z. A. (2002). Ethics in international health research: A perspective from the developing world. *Bulletin of the World Health Organization*, 80, 114–120.
- Bishop, A. P., & Bruce, B. C. (2006). Community informatics: Integrating action, research and learning. *Bulletin of the American Society for Information Science and Technology*, 31(6), 6–10.
- Bittner, P., & Hornecker, E. (2005). A micro-ethical view on computing practice. *Proceedings of the 4th Decennial Conference on Critical Computing Between Sense and Sensibility—CC '05* (pp. 69–78). New York, NY: ACM Press.
- British Computer Society (BCS). (2011). *Code of conduct for BCS members*. Retrieved from <http://www.bcs.org/upload/pdf/conduct.pdf>
- Burrell, J., & Toyama, K. (2009). What constitutes good ICTD research? *Information Technologies & International Development*, 5(3), 82–94.
- Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, and Social Sciences and Humanities Research Council of Canada. (1998). *Tri-council policy statement: Ethical conduct for research involving humans, 1998*. Retrieved from <http://www.pre.ethics.gc.ca/english/policystatement/section6.cfm>
- Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, and Social Sciences and Humanities Research Council of Canada. (2010, December). *Tri-council policy statement: Ethical conduct for research involving humans, December 2010*. Retrieved from http://pre.ethics.gc.ca/pdf/eng/tcps2/TCPS_2_FINAL_Web.pdf
- Chambers, R. (1997). Editorial: Responsible well-being—A personal agenda for development. *World Development*, 25(11), 1743–1754.
- Crocker, D. (1991). Toward development ethics. *World Development*, 19(5), 457–483.
- Dahlbom, B., & Mathiassen, L. (1994). A Scandinavian view on the ACM's code of ethics. *ACM SIGCAS Computers and Society*, 24(2), 14–20.
- Dahlbom, B., & Mathiassen, L. (1995). *Computers in context: The philosophy and practice of systems design*. Cambridge, MA: Blackwell.
- Dearden, A., Matthews, P., & Rizvi, H. (2011). Kheti: Mobile multimedia in an agricultural co-operative. *Personal and Ubiquitous Computing*, 15(6), 597–607.
- Dearden, A., & Rizvi, H. (2008). Participatory IT design and participatory development: A comparative review. *Proceedings of the Tenth Anniversary Conference on Participatory Design 2008* (pp. 81–91). Indianapolis, IN: Indiana University Press.
- Dearden, A., & Rizvi, S. M. (2009). A deeply embedded sociotechnical strategy for designing ICT for development. *International Journal of Sociotechnology and Knowledge Development*, 1(4), 52–70.
- Desai, V., & Potter, R. (2006). *Doing development research*. Thousand Oaks, CA: SAGE Publications.
- Devereux, S., & Hoddinott, J. (1993). *Fieldwork in developing countries*. Boulder, CO: Lynne Rienner Publishers.
- Emanuel, E. J., Wendler, D., & Grady, C. (2000). What makes clinical research ethical? *Journal of the American Medical Association*, 283(20), 2701–2711.
- Emanuel, E. J., Wendler, D., Killen, J., & Grady, C. (2004). What makes clinical research in developing countries ethical? The benchmarks of ethical research. *Journal of Infectious Diseases*, 189(5), 930–937.
- Ethic. (2010). *Oxford dictionary of English* (3rd ed.). Oxford, UK: Oxford University Press.
- Frohlich, D. M., Rachovides, D., Riga, K., Bhat, R., Frank, M., Edirisinghe, E., et al. (2009). StoryBank. In *Proceedings of the 27th International Conference on Human Factors in Computing Systems—CHI '09* (pp. 1761–1770). New York, NY: ACM Press.

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- Gasper, D. (2004). *The ethics of development: From economism to human development*. Edinburgh, UK: Edinburgh University Press.
- Gelling, L., & Munn-Giddings, C. (2011). Ethical review of action research: The challenges for researchers and research ethics committees. *Research Ethics*, 7(3), 100–106.
- Gitau, S., Plattiga, P., & Diga, K. (2010). ICTD research by Africans: Origins, interests, and impact. Presented at the *Fourth International Conference on Information and Communication Technologies and Development—ICTD 2010*. December 13–16, 2012, London, UK. Retrieved from <http://www.gg.rhul.ac.uk/ict4d/ictd2010/papers/ICTD2010%20Gitau%20et%20al%20A.pdf>
- Glantz, L. H., Annas, G. J., Grodin, M. A., & Mariner, W. K. (1998). Taking “benefit” seriously. *The Hastings Center Report*, 28(6), 38–42.
- Guijt, I., & Kaul, M. (Eds.). (1998). *The myth of community: Gender issues in participatory development*. Bourton on Dunsmore, UK: Practical Action.
- Heeks, R. (1999). *The tyranny of participation in information systems: Learning from development projects*. (Working Paper Series). Manchester, UK: Institute for Development Policy and Management, University of Manchester.
- Heeks, R. (2010a). An ICT4D journal ranking table. *Information Technologies & International Development*, 6(4), 71–75.
- Heeks, R. (2010b). Development studies journal ranking table. Retrieved from <http://ict4dblog.wordpress.com/2010/06/17/development-studies-journal-ranking-table>
- Hippocratic oath. (n.d.). National Library of Medicine. Retrieved from http://www.nlm.nih.gov/hmd/greek/greek_oath.html
- Ho, M. R., Smyth, T. N., Kam, M., & Dearden, A. (2009). Human-computer interaction for development: The past, present, and future. *Information Technologies & International Development*, 5(4), 1–18.
- Institute of Electrical & Electronics Engineers (IEEE). (1963). *IEEE code of ethics*. Retrieved from <http://www.ieee.org/about/corporate/governance/p7-8.html>
- International Review of Information Ethics. (2007, September). *Proceedings of the 1st Conference on African Information Ethics in the Context of the Global Information Society*, Volume 7.
- Jackson, C. (2006). Feminism spoken here: Epistemologies for interdisciplinary development research. *Development and Change*, 37(3), 525–547.
- Jackson, C. (2009). Researching the researched: Gender, reflexivity and actor-orientation in an experimental game. *European Journal of Development Research*, 21(5), 772–791.
- Kam, M., Kumar, A., Jain, S., Mathur, A., & Canny, J. (2009). Improving literacy in rural India: Cellphone games in an after-school program. In *Proceedings of the 3rd International Conference on Information and Communication Technologies and Development—ICTD 2009* (pp. 139–149). Piscataway, NJ: IEEE Press.
- Kanbur, R., & Shaffer, P. (2007). Epistemology, normative theory and poverty analysis: Implications for Q-squared in practice. *World Development*, 35(2), 183–196.
- Khanlou, N., & Peter, E. (2005). Participatory Action Research: Considerations for ethical review. *Social Science & Medicine*, 60(10), 2333–2340.
- Koshi, G., & Nightingale, S. L. (2001). Research involving human subjects in developing countries. *New England Journal of Medicine*, 345, 136–138.
- Leach, F. (2006). Researching gender violence in schools: Methodological and ethical considerations. *World Development*, 34(6), 1129–1147.
- Morton, A. (1999). Ethics in action research. *Systemic Practice and Action Research*, 12(2), 219–222.
- Muwanga-Zake, J. W. F. (2007). Introducing educational computer programmes through evaluation: A case in South African disadvantaged schools. *International Journal of Education and Development Using Information and Communication Technology*, 3(3), 41–49.

- National Bioethics Advisory Commission (NBAC). (2001). *Ethical and policy issues in research involving human participants summary*. Washington, DC: NBAC.
- Oosterlaken, I., & van den Hoven, J. (2011). Editorial: ICT and the capability approach. *Ethics and Information Technology*, 13(2), 65–67.
- Participants in the 2001 Conference on Ethical Aspects of Research in Developing Countries. (2002, December 13). Fair benefits for research in developing countries. *Science*, 298(5601), 2133–2134.
- Sambasivan, N., Rangaswamy, N., Toyama, K., & Nardi, B. (2009). Encountering development ethnographically. *Interactions*, 16(6), 20–23.
- Scheyvens, R., & Storey, S. (2003). *Development fieldwork: A practical guide*. Thousand Oaks, CA: SAGE Publications.
- Schwenke, C. (2007). *Formulating and implementing an effective code of ethics: Guidance manual for public institutions*. Washington, DC: Inter-American Development Bank.
- Shapiro, H. T., & Meslin, E. M. (2001). Ethical issues in the design and conduct of clinical trials in developing countries. *New England Journal of Medicine*, 345, 139–142.
- Singer, J., & Vinson, N. G. (2002). Ethical issues in empirical studies of software engineering. *IEEE Transactions on Software Engineering*, 28(12), 1171–1180.
- Sterling, S. R., & Rangaswamy, N. (2010). Constructing informed consent in ICT4D research. Presented at *the Fourth International Conference on Information and Communication Technologies and Development—ICTD 2010*. December 13–16, 2012, London, UK. Retrieved from <http://www.gg.rhul.ac.uk/ict4d/ictd2010/posters/ICTD2010%20Sterling%20et%20al.pdf>
- Tavani, H. T. (2010). *Ethics and technology*. Hoboken, NJ: Wiley.
- Tewari, A., Goyal, N., Chan, M. K., Yau, T., Canny, J., & Schroeder, U. (2010). SPRING: Speech and PRonunciation Improvement through Games, for Hispanic children. Presented at *the Fourth International Conference on Information and Communication Technologies and Development—ICTD 2010*. December 13–16, 2012, London, UK. Retrieved from <http://www.gg.rhul.ac.uk/ict4d/ictd2010/papers/ICTD2010%20Tewari%20et%20al.pdf>
- van der Velden, M. (2005). Programming for cognitive justice: Towards an ethical framework for democratic code. *Interacting with Computers*, 17(1), 105–120.
- Wakanuma, K. (Ed.). (2011). Emerging technology and ethics [Special issue]. *Journal of Information, Communication and Ethics in Society*, 9(3), 140–216.
- Walton, R., & DeRenzi, B. (2009). Value-sensitive design and health care in Africa. *IEEE Transactions on Professional Communication*, 52(4), 346–358.
- World Medical Association (WMA). (2008). *WMA declaration of Helsinki—Ethical principles for medical research involving human subjects*. Retrieved from <http://www.wma.net/en/30publications/10policies/b3>
- Youngs, G. (2005). Ethics of access: Globalization, feminism and information society. *Journal of Global Ethics*, 1(1), 69–84.

