

Data collection and analysis differences in two educational research projects

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Introduction

This research paper will focus on the data collection and analysis of two distinct educational research studies. The first of these studies deals with the ethical, political, and intercultural nature of environmental education research, while the second has to do with the ethics and politics of collaborative research. Without doubt, there are both quantitative and qualitative differences between these two studies. The former study, which directly addresses the whaling debate, is firmly ensconced in the international arena; whereas the latter study, which addresses at-risk or marginalized learners in one specific institution, is set in rural Queensland, Australia. The former study has been authored by one primary researcher, whereas the latter study was authored by two co-authors who closely collaborated with thirteen school-based, active researchers.

These two research projects, however, are not devoid of common ground. For instance, they both delineate the trials, tribulations, potential pitfalls, and successes of gathering primary data. They both deal with the very real political exigencies of engaging in educational research. As well, both studies will be scrutinized from the perspective of the four following topics: data collection techniques; data analysis techniques; reliability, validity, credibility, and trustworthiness; and, drawing inferences and reaching conclusions. In the process, it will be revealed that these four topics are not isolated from one another, and that there is at least some theoretical overlap between them.

Moralizing risky environments: The ethical and political nature of environmental education research

This question-raising research project is underpinned by three theories of moral responsibility to the natural environment: environmental anthropocentrism, animal rights, and eco-centrism (Danaher, 2004). These three theories constitute the chapter's seismically-reinforced, theoretical foundation. Now, the data analysis stage of an environmental research project will, either overtly or covertly, be at least partially influenced by whichever of these three theories the primary researchers feel most closely aligned to (Danaher, 2004). And, although most well-intentioned researchers strive for objectivity, they need to be continuously aware of their own ideological preferences, and biases, when engaging in data analysis.

Moreover, Danaher also perceptively acknowledges that any conclusions reached about the whaling debate are tentative, and are directly influenced by *the cultural contexts* of the various stakeholders (Danaher, 2004). This is directly linked to the issue of drawing inferences and reaching conclusions, in that any conclusions made by those who would study the whaling debate should be seen as provisional, given that intercultural factors are involved. Such intercultural factors generally tend to be fluid, or variable, rather than fixed, given that they involve human beings with different worldviews. Note that this has a bearing on data analysis, as well, given that such analysis is also influenced by the researchers' own, variegated, cultural grounding. As Danaher himself has written, debates about environmental issues, such as whaling, are situated within the cultural and ideological *geographies and histories* of their respective countries (Danaher, 2004).

As one example of such divergent *geographies and histories*, Danaher cites Komatsu, who has asserted that the Japanese government's whaling policy is that whales are simply one more food source from the sea, which it claims to have the right to sustainably exploit (Komatsu, 2001). Clearly, this perspective differs dramatically from that of Australian Prime Minister Kevin Rudd's cabinet. Danaher goes on to acknowledge that Japan would now like the IWC (International Whaling Commission) global moratorium on whaling to be lifted (Danaher, 2004). He has noted that Norway has simply ignored this IWC moratorium, given

that it is not legally enforceable (Danaher, 2004). Once again, there appears to be a pronounced intercultural difference here between Australia on the one hand, and Japan and Norway on the other.

More precisely, in Japan whaling is a *cultural tradition*, and represents Japan's dependence on seafood as its main source of protein (Danaher, 2004). As such, Japan is not eager to allow foreign governments, or NGOs for that matter, to erode this symbol of its cultural self-determination- perhaps even at the risk of international criticism (Danaher, 2004). In this light, then, even a lay person blindly unaware of the main issues, and overt and covert agendas, might naturally expect that any data analysis done by Japanese whaling researchers would be at least minimally different from that of Australian whaling researchers. This line of thought harkens back to the notion of *cui bono?*, or identifying the beneficiaries of any given research project. However, it must be noted that objective data analysis is easier with empirical or quantitative studies than with qualitative ones, although the practitioners of both research approaches would, presumably, pay at least lip service to the goal of objectivity.

Next, Danaher astutely observes that the moral basis of the whaling dispute falls between two poles on the "conservation continuum," namely sustainable utilization and total preservation (Danaher, 2004). As an example of the latter, he cites Singer's definition of speciesism, which some claim is a vice similar to racism (Singer, 1998). Speciesism attempts to construct a moral divide in a way that is not justified on any basis other than a preference for "us" versus "them" (Singer, 1998).

In terms of reliability and credibility, Danaher explicitly acknowledges that environmental research ultimately reflects researchers' own values (Danaher, 2004). Obviously, this assertion is potentially detrimental to the reliability of a study, assuming that the ultimate goal of accurate data is for it to be generalized to various, diverse environments; even ones which might espouse values that are diametrically opposed to those of the researcher. Moreover, Danaher's assertion that researchers' individual values will be reflected in their studies is also of interest to interculturalists. After all, few informed sources

would dispute that there is a quantifiable link between one's cultural background and one's value system.

Now, if researchers' individual values are to be reflected in their research studies, it follows that Danaher believes that there are no absolute truths in the whaling debate (Danaher, 2004). After all, if a person's values are relative to her/his unique culture, then conceptions of truth should, by extension, be similarly relative. While this statement certainly rings true for researchers with a secular worldview, researchers who subscribe to a particular religion's worldview may well find this assertion to be a premature one. However, in the very same paragraph Danaher writes that educational researchers must be aware of all the dimensions of their area of specialization, otherwise they run the risk of producing biased research (Danaher, 2004). But, if environmental research ultimately reflects the researchers' own, unique, values, just how realistic is it to expect bias-free research? No matter how one chooses to answer this question, which will be briefly addressed at the end of the next paragraph, there can be little doubt that the issue at hand directly relates to the reliability, validity, credibility, and trustworthiness of any given study.

This research project explicitly queries if being disrespectful to other cultures is permissible when one is striving to protect nature, and the physical environment (Danaher, 2004). This is a vital, yet extremely difficult question, and is related to the previously discussed issue of drawing inferences and reaching conclusions. That is, a well-intentioned researcher may initially be strongly compelled to save the whales, or to otherwise protect nature, but at the same time, said individual may be equally keen to avoid the pitfalls of ethnocentrism and cultural bias, or even discrimination. In such cases, arriving at a clearly defined, unambiguous conclusion may not always be possible. Again, there is some theoretical overlap here with the issue of credibility and trustworthiness, just seen in the previous paragraph. As Danaher has also noted, hermeneutics has shown that human researchers infuse their studies with their own value-laden, subjective worldviews (Danaher,

2004). Without doubt, the degree to which they can objectively deal with this will have a direct bearing on their projects' overall reliability and validity.

This research study defines agency as “*resistance in the face of marginalization*” (Danaher, 2004, p. 123). The first example of agency that readers are offered consists of researchers' need to exercise agency when consciously trying to conduct, and report upon, research in ways that do not marginalize the anti-whaling lobby (Danaher, 2004). The link here to data collection techniques is unmistakable, in the sense that data collection must be carried out in a manner that refrains from marginalizing the whaling lobby. If researchers are not successful in this, they will end up marginalizing the very thing they initially wanted to protect, thereby calling into question the overall validity, credibility, and trustworthiness of their research.

Moreover, as this research study has astutely observed, not only do researchers themselves need to exercise agency, but so do the research participants, meaning the respondents whose survey answers often comprise the raw data analyzed by educational researchers (Danaher, 2004). Such respondents exercise agency in deciding whether or not to participate in the research project, the terms by which they agree to do so, and the procedures by which they will monitor the data collection stage (Danaher, 2004). Once again, the issue of data collection is explicitly referred to. Further, this ties in rather neatly with the issue of sampling and selecting participants, given that ethical researchers need to provide for respondents' rights to exercise their own agency.

Danaher convincingly posits that the potential arbitrator between marginalization and agency, in terms of *researcher-researched* relationships, is ambivalence (Danaher, 2004). He claims to be continually ambivalent about his research into the anti-whaling movement: about its purposes, its conduct, its outcomes, about researching the key individuals involved, and about how others will interpret and utilize his research findings (Danaher, 2004). He opines that this ambivalence allows him to steer clear of bias, presumably enhancing the overall validity and credibility of his work. Thus, he claims to have counterbalanced the values-laden

nature of environmental research by being ambivalent. Is this claim credible? To be sure, answering this highly complex question is beyond the scope of this humble research paper!

Towards the end of this research report, there is an entire subsection entitled “Whaling as an Intercultural Moral Conflict” (Danaher, 2004). This title is surely guaranteed to warm the heart of anyone even remotely interested in ICC (intercultural communication). Right from the start, Danaher reveals a level of intercultural understanding that one would not automatically assume to be omnipresent in the whaling debate: “*There is the risk of being ethnocentric in one’s research, especially if one is located at the eco-centric or animal rights end of the moral continuum, as I am*” (Danaher, 2004, p. 125). In terms of the validity and credibility of an individual research project, then, professional researchers need to be constantly aware that if their project succumbs to the temptation of ethnocentrism, the project’s credibility, and perhaps even the validity of its data, may be called into question in locales other than one’s own, emic culture. In fact, future research that I myself hope to engage in will, at least to some extent, examine the degree to which a Western ICC paradigm can be applied to a Japanese national university setting.

The research report then proceeds to discuss the concept of cultural relativism, which lies at the opposite end of the ICC spectrum from ethnocentrism (Danaher, 2004). Cultural relativists, unlike ethnocentrists, generally refrain from judging other cultures (Danaher, 2004). Even cultural relativists, however, are not afraid to speak out against any perceived *non-acceptable practices* (Danaher, 2004). In other words, cultural relativism is equivalent to ethical relativism (Brinkmann, 2002). Although Danaher does not delineate just what constitutes an unacceptable practice, one might assume that he is referring to crimes against humanity; or, myopic, wanton acts of environmental destruction. But, this is only an assumption.

Ethical relativism posits that there is no value-free, universal morality, and therefore no way of ranking moral views and behavior as more or less good, interculturally speaking (Danaher, 2004). One imagines, then, that ethical relativists may entertain more of a secular

worldview, and less of a faith-based one! At this point, Danaher cites the work of Pring, who has convincingly argued that educational researchers should always strive to tell the truth, even when doing so is painful (Pring, 2002). This focus on candor, no matter how agonizing, directly relates to the issue of validity, credibility and trustworthiness in that there are few, if any, things more trustworthy than the truth. It also relates to the issue of data collection, in that if researchers give ultimate priority to the truth, even when doing so goes against their own values, the accrued data will be one step closer to objectivity. At the risk of stating the obvious, such objective data collection techniques are widely regarded as the apogee of data collection.

The whaling debate can be perceived as an intercultural moral conflict (Danaher, 2004). This is because cultures like Japan and Norway believe whaling is morally justifiable, whereas other cultures, such as Australia and Canada, have now found whaling to be morally reprehensible, at least in non-indigenous societies (Danaher, 2004). Given that many environmental problems are increasingly global, it is no surprise that intercultural challenges, like whaling, will be present in research projects (Danaher, 2004). Once again, it is imperative in today's globalized world for morally-upright researchers to be continuously vigilant against the mellifluous "Siren's song" of ethnocentrism. Woe betide those researchers who succumb to this "song," as their project's credibility, and perhaps even the validity of its data, may be called into question in locales other than their own.

Danaher, for one, has clearly not been hoodwinked by any mythological Greek enchantresses, as he asks a crucially important, culturally relative, question: can traditional whaling be defended for cultural reasons, even if this becomes an argument against the international moratorium on whaling (Danaher, 2004)? Should local or global stakeholders assume primacy in such intercultural moral conflicts? This is a highly complex, multi-faceted, question. Attempting an even moderately adequate answer here would require an in-depth, multi-layered discussion; one far beyond the scope of this data collection and data analysis comparison.

From a purely ICC perspective, Danaher distinguishes himself again, in observing that when scientific uncertainty is combined with ethical considerations, it is prudent to err on the side of caution (Danaher, 2004). He notes that this is especially true when it comes to the *fundamental message* of one's research (Danaher, 2004). Clearly, this is related to drawing inferences and reaching conclusions. That is, when making a conclusion based on one's own data analysis, it is usually prudent to avoid sweeping generalizations, hyperbole, and to proceed with caution. More recently, this notion has been propagated by an environmental journalist with a leading American newspaper (Revkin, 2009). Andrew C. Revkin has lamented the use of hyperbole on both sides of the climate change debate, and his article quotes Matthew C. Nisbet, a professor of communications at American University (Revkin, 2009). Nisbet believes that Al Gore's approach to climate change could actually be detrimental to the former Vice President's own objectives (Revkin, 2009). Nisbet attributes this to Gore's predilection for *crisis and catastrophe* (Revkin, 2009). Revkin's article provides a striking example of the theoretical overlap between the two educational research issues of "drawing inferences and reaching conclusions," and "reliability, validity and trustworthiness." Finally, to emphasize the significance of educational researchers erring on the side of caution, Danaher reiterates this suggestion in his chapter's conclusion. Presumably, Danaher felt that it was not necessary to explicitly reiterate the link between this embracing of caution and the overall credibility of any given research project.

Without straying too far from the recommendations of the preceding paragraph, Danaher has sagaciously opted to give voice to the other side of the whaling debate, namely the Japanese side (Danaher, 2004). Thus, the most important point of the whaling debate is, apparently, to be objective and to use empirical evidence supported by science (Komatsu, 2001). "*This is because cultural values and preferences differ so greatly that no subjectively-based decision-making could succeed*" (Danaher, 2004, p. 127). Obviously, this quotation is related to data analysis techniques, given that such analysis should be carried out as objectively as possible. The researcher's own set of biases and culturally-informed values

need to be set on the proverbial back-burner when analyzing data, as Komatsu has lucidly opined (Komatsu, 2001). According to some, Al Gore has yet to become cognizant of this.

Doing research with teachers, parents and students: The ethics and politics of collaborative research

As the title of this study implies, Mills and Gale collected their raw data from teachers, parents, and students, all of whom were stakeholders in one small, rural, Australian high school (Mills & Gale, 2004). This school, with an enrollment of approximately two hundred learners, was in a Queensland town, one with several low-income families and a sizeable indigenous population (Mills & Gale, 2004). One of the principal objectives of this research project was to identify at-risk learners, learners whose prospects for scholastic success were compromised not only by the school they attended, but also by sundry social, cultural, economic, and geographic factors (Mills & Gale, 2004). The research design of this project employed a horizontal paradigm, one in which data would be collected in tandem **with** the three categories of respondents, rather than collected **from** them (Mills & Gale, 2004). All too often in the past, educational research, not to mention that of other disciplines, has been carried out only after the researcher has been isolated from the denizens of the research *milieu*. Such a researcher would then report upon the respondents at arm's length, implying and potentially even reifying a vertical hierarchy (Mills & Gale, 2004).

Chapter seven's research question, as well as its methodology, strove to avoid simply blaming the students and their respective families (Mills & Gale, 2004). Instead, the researchers attempted to focus on social justice, and previously unused ways of framing the complex relationships between schools and their various stakeholders (Mills & Gale, 2004). Given this professed interest in social justice, it is not terribly surprising that Mills and Gale aimed to conduct their study in truly collaborative ways in tandem with the three categories of respondents (Mills & Gale, 2004). Clearly, this has a bearing on the issue of data collection techniques, in that, theoretically at least, data is to be collected in a collaborative manner, one devoid of a top-down, vertical power divide. As such, this may also impinge

upon the issue of reliability, validity, and trustworthiness, since a collaborative approach to data collection might mean that the human subjects of the research study may feel more inclined to provide more truthful, or accurate, answers to questions, given that they might well perceive themselves to be a more equal part of the research methodology, and perhaps even a beneficiary of it. As an example of this collaborative approach to data collection, Mills and Gale encouraged the active involvement (in all stages of their research) of their in-school, active researchers (Mills & Gale, 2004).

More specifically, the co-authors have based their study on the work of Michelle Fine, who has convincingly argued that a collaborative approach to research, that is writing with the respondents instead of writing for, or about them, can lead to research that is more socially just, and more ethical (Fine, 1994).

Accordingly, chapter seven's data collection was conducted by all three groups of stakeholders in the secondary school under examination, together with the two co-authors of the chapter. Thus, chapter seven differs fundamentally from chapter nine, given that the former's research team included thirteen school-based researchers (Mills & Gale, 2004). More precisely, these thirteen were comprised of four teachers, four parents, and five students (Mills & Gale, 2004).

Although it is probably not a surprise, this collaborative research team periodically experienced difficulties gaining permission from prospective participants during the data collection phase of the project (Mills & Gale, 2004). Mills and Gale have written that this caused their team some ethical discomfort:

“As partners in the research, we too felt some unease at the thought of the researched being cajoled into participation. In raising these issues within the research team, it became clear that our respective dilemmas centred around understandings of research as product and as process” (Mills & Gale, 2004, p. 93).

With respect to data collection techniques, this chapter's data came from five main sources: questionnaires; structured interviews; semi-structured interviews; journals; and, photographs (Mills & Gale, 2004). Educators interviewed their colleagues, parents

interviewed other legal guardians, and students interviewed their classmates (Mills & Gale, 2004). However, this was not always a smooth process. For instance, the research team faced difficulty with *implied consent* (Mills & Gale, 2004). Some respondents, including students, parents, and teachers, were reluctant to have their comments recorded, out of fear of recognition, and possible reprisal (Mills & Gale, 2004). Some respondents were also anxious over the issue of confidentiality, as it related to data management. Consequently, these respondents were informed that the audio interviews were kept in the principal's office, which, of course, was locked (Mills & Gale, 2004). Not all respondents were placated by this, however. Such participants felt the administration might listen to the recordings before they were forwarded to the university (Mills & Gale, 2004). During the interview process, some teachers would speak to teacher interviewers, but not to university interviewers. This led to the researcher's apprehension that, depending on which collaborative researcher conducted the interviews, the respondents might provide different responses (Mills & Gale, 2004). This is a visceral example of the theoretical overlap between data collection techniques and the reliability, credibility, and trustworthiness of any given research project.

The research team, comprising the thirteen school-based researchers in addition to the two university faculty members, were, apparently, equal partners in developing and modifying the research instruments; in handing out and analyzing questionnaires; in carrying out follow-up interviews; and, in participating in the data analysis phase (Mills & Gale, 2004). Clearly, this is an especially lucid delineation of the data collection techniques utilized in chapter seven.

With respect to reliability, validity, credibility and trustworthiness, Mills and Gale's monograph is largely qualitative (Mills & Gale, 2004). And, as Somekh and Lewin have argued, it can be more challenging to prove the validity of qualitative research than for quantitative research (Somekh & Lewin, 2004). On the other hand, it would appear that the fifteen-member collaborative research team completed most of its research project *en masse*. This includes agreeing upon a methodology; agreeing upon specific research instruments;

selecting a representative sample; collecting the data; troubleshooting; mediation; and, analyzing the data. Given this, then, one could make the argument, as the Japanese often tend to, that this actually strengthens a policy-making process, in the sense that many minds can, presumably, approach an issue with a broader overall vision than just one or two minds. Seen from this angle, then, the argument could be made that the data from this research project might be more credible than that of the research project which dealt with whaling . Perhaps this argument would be stronger if both projects described purely quantitative research projects.

Finally, one conspicuous question here relates to the amount of conscious or unconscious mentoring, or *primus inter pares* (ie. “first among equals”) clout, the two university-based researchers exerted over the thirteen school-based researchers. To be sure, Mills and Gale were explicitly influenced by the socially just work of Schultz and Fine, but it would nevertheless eliminate this nagging question if the specific contributions made by the thirteen local researchers were transparently addressed. After all, if the collaborative research team was truly collaborative, then why doesn't the list of authors include fifteen names? Why do only two of the fifteen researchers get the publishing credit?

Conclusion

In conclusion, the preceding pages have analyzed two educational research studies from the perspective of four themes: data collection techniques; data analysis techniques; reliability, validity, credibility, and trustworthiness; and, drawing inferences and reaching conclusions. In the process, some serious ethical questions have been raised.

With specific reference to the first article discussed above, that is to say the one dealing with environmental research and the whaling debate, perhaps the key ethical question that arose concerned the issue of ethnocentrism. When dealing with international environmental issues how can researchers be true to their ethical ideals without falling into the trap of ethnocentrism? Similarly, should local or global stakeholders assume primacy in

intercultural moral conflicts? Unfortunately, there is not always an instant, or universally applicable, “band-aid solution” to these kinds of ethical dilemmas.

With respect to the second article discussed above, the collaborative one which focused upon the single, rural, Queensland secondary school, some of the key ethical questions here related to gaining permission from prospective participants; confidentiality and data storage; and perhaps most importantly, a horizontal research paradigm. As seen above, the latter is one in which data is collected in tandem **with** the respondents, rather than collected **from** them. It was also seen how such a horizontal paradigm is connected to the ethically-pertinent issue of social justice.

Finally, in both articles the researchers took risks, ethically, psychologically, and politically, as they faced *strategic uncertainties* (Stronach & MacLure, 1997). It does not require a great leap of faith to imagine that researchers will continue to face such risks for the foreseeable future!

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