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REVIEW

Less is more: the potential of qualitative approaches in conservation research

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Abstract

Conservation researchers are aware of the need to work with social sciences to manage human–wildlife interactions for better conservation outcomes, but extending natural science research approaches to a social science domain can compromise data quality and validity. As part of the interdisciplinary exchange between the natural and social sciences, this review contrasts structured questionnaire-based surveys with qualitative approaches to collecting social data, and clarifies contexts in which particular qualitative methods might be more effective when investigating human behaviour in conservation research. Although well-designed questionnaire-based surveys may be useful for population-level generalizations, complementary use of qualitative approaches can significantly enhance understanding of research context, underpinning formulation of representative sampling frames and pertinent research questions, and permitting greater accuracy in interpretation and analysis of data. Good qualitative data are necessary to an accurate understanding of categories, processes, relationships and perceptions, particularly critical in a cross-cultural context, significantly strengthening the internal validity of subsequent structured work. Furthermore, stand-alone qualitative research can also constitute a valuable and valid approach to matters critical to conservation research and to designing successful conservation initiatives, which cannot be effectively researched in any other way.

Introduction

Conservation researchers are aware of the need to work with social sciences to manage human–wildlife interactions for better conservation outcomes (Phillipson, Lowe & Bullock, 2009). Conservation biology is rooted in quantitative science, and conservation-related research on people's behaviour, attitudes and perceptions has commonly sought large representative samples using standardized questions, allowing statistical analysis and broad generalizability (Manfredo, 2008; see, for example, Society for Conservation Biology Social Science Working Group Research Tools, http://www.conbio.org/workinggroups/SSWG/ResearchTools.cfm). But there are problems in simply extending natural science research approaches to a social science domain (Adams, 2007): paradoxically, the emphasis on quantification may compromise data quality and validity. Conservationists increasingly advocate use of qualitative data in monitoring wildlife populations, and understanding local attitudes, perceptions and beliefs regarding wildlife and conservation initiatives (e.g. Meine, Soule & Noss, 2006; Robinson, 2006; Jones *et al.*, 2008*b*). However, divergent concepts, terminology and types of knowledge mean the aims and scope of methods generating non-quantifiable results and analyses are sometimes misunderstood (Adams, 2007), with these methods often under-represented and/or poorly applied in conservation research. This can be compounded by mutual lack of respect between different academic traditions (Fox *et al.*, 2006).

This review contrasts questionnaire-based surveys with less structured approaches to collecting social data in conservation research (Lowe, Whitman & Phillipson, 2009), particularly in non-western settings. The central issue is that structured questionnaires attempt to reduce error variance in exploring variability in behaviour through using standardized categories and applying these across a sample designed to be representative of a wide population. Less structured methods generating qualitative data (e.g. interviews, focus groups, participant observation) seek rather to understand the nature and underlying characteristics of this variability, both within the research process and as a fundamental outcome. Qualitative methods thus make explicit the need for greater reflexive consideration of issues of meaning, bias and accuracy in the data collected.

Given the space restrictions of a review article we cannot discuss in detail all the qualitative approaches which have been, or could successfully be, used in conservation research. We refer, however, to examples of good practice, or research where either qualitative methods alone or broader mixed methods (Cresswell, 2009) have contributed to significant advances in understanding human behaviour in conservation contexts.

Conservation research, validity and bias

Validity, or whether data – and thereby the conclusions drawn from them – are representative, is fundamental to all scientific investigation and should never be taken for granted. Scientists distinguish between external and internal validity. External validity evaluates the contexts in which results can be applied, or the extent to which results are representative of a population and are therefore generalizable. An emphasis on statistical generalizability in natural science research predisposes natural scientists to focus on external validity, that is issues of representation that determine the generalizability of the data collected. Scientific validity, however, also requires that the data must be representative of the particular phenomena the researcher is trying to investigate, thus demonstrating internal validity. Internal validity refers to whether, through carefully defining concepts, constructing measures and conducting research, a study actually investigates what it claims to. While quantitative questionnaires facilitate large sample sizes and are therefore better suited to producing data that demonstrate external validity, qualitative data tend to be far better at representing the diversity of individuals and groups being analysed and examining complex concepts in ambiguous and complex contexts (demonstrating internal validity).

Failure to ensure each of these types of validity each carries its own potential bias. If the researcher does not sample appropriately, structured surveys cannot meet the requirement of external validity, as the results will be biased towards one or other part of the study population while systematically under-representing others. Conservation researchers commonly approach valid representation through random sampling, and/or stratifying by appropriate criteria such as wealth, occupation, location etc., but they are often less aware of biases which inevitably arise from site-specific historical, political and cultural issues and tensions which have shaped different individuals' and sub-groups' perceptions and attitudes. Surveys constructed without such prior understanding commonly ask questions that fail to capture locally important categories, priorities, complexities and ambiguities. Such questions may appear inappropriate or meaningless to some of those interviewed and, without attention to internal validity, the correspondingly poor data generated are all too often taken at face value without reflexive consideration of the personal and political context, of the interaction of researcher and subject, and of the diverse ways of speaking about conservation issues.

Structured quantitative surveys

Research investigating what people feel, think, plan and do commonly depends on asking respondents about their views or actions. Structured questionnaires simplify and speed up research and analysis, making large samples and broad generalizations possible where sampling frames are representative. The internal validity of such data, however, cannot be taken for granted. Many questionnaire surveys investigating attitudes towards conservation issues in Africa, for example, do not adequately define the concepts being measured, pilot or test internal reliability of measures used, or discuss the theory behind their choice of methods, jeopardizing their internal validity (Browne-Nunez & Jonker, 2008). Yet the numerical data structured quantitative surveys generate are often accepted uncritically with potential biases neglected in analysis and interpretation (Hammersley & Gomm, 1997).

Many questionnaires are open to the criticism that they impose artificial categories and lack the sensitivity to explore difference, inconsistency and meaning (Burton, 2000). Structured questionnaires create 'grids' through which our understanding of social process becomes distorted, because they are hypothetical situations reflecting the perspective and preoccupations of the researcher (Cicourel, 2004). Rather than producing objective knowledge about reality, questionnaires produce a reflection of the researcher's ideology; accepting and using that perspective can advance particular interests (De Vaus, 1996). This is immensely important when researchers using a western conservation paradigm seek to understand, work with and ultimately influence the perceptions, priorities and behaviour of people with very different values and preoccupations.

Qualitative approaches

Qualitative approaches place emphasis on the quality of data associated with each unit observed rather than on the number of units observed, recognizing that statistical generalization is but one means by which research design can seek to represent the population (Patterson & Williams, 2002). These approaches are not generally designed to make broad claims about a population, but instead seek in-depth understanding of particular sub-groups and of the underlying processes, values, dilemmas, emotions, conflicts and relationships which give rise to specific outcomes. It is the forms these take, and the issues that arise, that are transferable to other contexts, not their quantitative patterns and statistical relationships. Through this openness, qualitative research methods can explore domains that are intrinsically 'fuzzy' (Antoine, Lelièvre & groupe de réflexion sur l'approche biographique, 2009).

Natural scientists accustomed to concentrating on external validity may perceive samples of respondents in qualitative studies as too small or inadequately selected to represent wider populations. But the fact that one cannot make statistical statements based on qualitative data does not render the findings invalid. Conversely, a large sample, with

all informants receiving the same standardized research tool, does not automatically yield good data if that tool or sample is poorly designed or applied. For example inadequate understanding of socio-cultural complexity precludes formulation both of meaningful questions and of truly representative samples upon which structured surveys depend, thus compromising internal and external validity respectively of the resulting data.

The emphasis on the quantitative paradigm in conservation research and a lack of rigorous social science in training conservation scientists results in a pressure for those incorporating qualitative data collection into their research design to quantify these findings. This risks misplaced standardization and extrapolation, even when it is known that the sample was designed specifically to seek internal validity by focusing in-depth on fewer informants. Such an approach serves to misrepresent the aims and scope of methods generating qualitative data.

What do we mean by qualitative methods?

Alongside the classic compendium (Bernard, 2006), Martin (2004), Lynam *et al*. (2007) and others review many qualitative methods and their potential in conservation contexts. However, two qualitative methods that could contribute significantly to conservation research are participant observation and interviewing. The key to these methods is that they are not numeric, or quantifiable: the majority use words as the main medium of research although context in terms of space, place, time and people are critical in order to situate the importance and meaning of those words. Here we focus on the main strengths of each: for guidance as to how each can best be used see Bernard (2006).

Participant observation involves establishing rapport with the study population to observe and document their lives in a low-key way, minimizing the chances of subjects disguising attitudes or behaviour in the researcher's presence, and enabling exploration of rare but significant activities, conflicts, illegal activities and sensitive issues, which cannot otherwise be investigated (Bernard, 2006). The strengths of participant observation are the method's ability to identify the unexpected and previously unknown – issues, tensions and perceptions which could not have been foreseen through other research routes – enabling the researcher to distinguish between what people say they do and what they actually do. Although time-consuming and requiring knowledge of local language(s), participant observation can be undertaken alongside other methods during fieldwork, generating nuanced understanding of conservation issues, even when not deliberately scheduled as a research method (Jones, Andriamarovololona & Hockley, 2008*a*).

Interviews are a valuable opportunity for the researcher to explore topics based on respondents' own experience and worldviews (Weiss, 1994). At one end of the spectrum there are structured methods involving a limited, structured set of questions (cf. Jones *et al*., 2008*b*). In contrast, semi-structured interviews are usually based around an interview guide (Bernard, 2006) and are particularly valuable in situations where researchers have only one opportunity to converse with a respondent. Semi-structured interviews have been used to research perceptions of wildlife and conservation actions (e.g. Sandbrook, 2006; Drury, 2009). Unstructured interviews are central to cultural anthropology and to research on social institutions, policy and practice (Bernard, 2006: e.g. from conservation-related studies in Maasailand see Goldman, 2003; Sachedina, 2008; Nelson *et al*., 2009; Sachedina & Trench, 2009).

By encouraging respondents to elaborate upon thoughts as desired and in their own words, and to dictate the importance of particular issues in the data produced, interviews not only constitute an important means of data collection in their own right, but also help in determining research themes and constructing meaningful wording of questionnaires. Because respondents have some power over the directions and content of data, it becomes possible to identify spheres of ambiguity and uncertainty. Time and care must be taken, however, to evaluate and cross-check the weight and authority of people's statements; the value of interviews is compromised by uncritical acceptance of information given, and they need to be analysed not only in terms of what people say but also how they say it and how the narrative evolves. For example, throughout the course of an interview, or a series of encounters, respondents' attitudes or statements may change but this is not necessarily an indication that the method lacks rigour: it is better interpreted as a sign that the issue is contentious, has not been considered previously or is imbued with dilemma, ambiguity and indecision, and that trying to establish closed categories for these issues would be misleading. By demanding this kind of reflexive consideration, qualitative approaches can facilitate in-depth analysis of the origins and interconnectedness of the complex factors that impact an individual's attitudes and behaviour. On the downside, interviews are time-consuming to complete and analyse, vulnerable to interviewer bias and the varying eloquence of respondents, and require skill and care to conduct, interpret and critically evaluate.

Applying qualitative approaches

Qualitative research approaches can benefit social science conservation research programmes in different ways and at different stages of research design, depending on research questions and context. One powerful way of investigating key issues, such as attitudes, values and belief systems, in a particular context, is to combine both qualitative and quantitative phases in research design: a preliminary qualitative phase might, for example, inform appropriate concepts and sampling in a well-designed survey, strengthening both internal and external validity, respectively, of subsequent quantitative work. Although qualitative research may not represent the wider population in terms of quantitative distribution of outcomes, its exploration of meaning,

heterogeneity and contradiction offers greater potential for understanding, and for improving internal validity of structured approaches, producing quantitative data through more meaningful and relevant representation of local issues for local people. For certain research questions and contexts, however, qualitative approaches alone may be the only realistic way to generate valid data and thus understanding.

Researching complex, sensitive and hard-to-reach concepts

Conservation researchers are often keen to use quantitative techniques with strong external validity to gather complex social information, summarized as numerical indices open to statistical analysis alongside measures of conservation interventions or environmental change (e.g. perceptions of livelihood security: Malleret-King, 2000). But attempting to quantify, on a linear scale, concepts as multi-faceted and transient as attitudes or perceptions of well-being is difficult even within the researcher's own cultural context.

By comparison, less structured, more open and flexible qualitative approaches better enable analysis, and offer greater opportunity for reflexivity, in terms of the complex relationships between attitudes, values and characteristics, particularly in understanding how attitudes are formed, the underlying values upon which they are based, the contradictions between what respondents say and what they do, and how these may vary with context. These approaches are thus more likely to generate data capturing the complexity of the research subject and demonstrating internal validity. This understanding can ultimately contribute more to knowledge of attitude formation and potential transformation than can quantifying scale.

Research subjects' responses to research are shaped by their feelings about what may comprise sensitive information. Individuals may withhold certain information from outsiders (e.g. productive fishing areas: Hilborn & Parrish, 2006). There may be important cultural influences not spoken about with strangers but which nevertheless have a powerful impact on attitudes and behaviours, which, without broad literature review and unstructured observation, researchers might easily miss. Responses that could risk someone losing face, or expose illegal, politically charged or socially unacceptable activities may be avoided. In demography, another quantitative discipline where qualitative research has now demonstrated its power to reach groups and issues previously considered almost impossible to research, qualitative approaches have recently contributed substantially to understanding groups such as sex workers, sexually active adolescents and topics such as illegal abortion clandestine contraceptive use and men's sexual networks. Informal, low-key, unstructured methods such as participant observation, semi-structured interviews or life-history narratives are less threatening than questionnaires, and therefore often more fruitful, in terms of investigating sensitive issues, and thus accessing data of robust internal validity to inform the design of effective conservation actions; they can also give more power to respondents to explain, in their words, their own understanding around the issues being researched.

Accounting for inequalities, power relations and vested interests

Competition and inequality feature both between (Painter, Sumberg & Price, 1994), and within communities, particularly where there are marked social hierarchies. 'Community-based' and 'participatory' conservation research and intervention processes are readily co-opted and have commonly played into the hands of local elites, further dispossessing the poorer members of the community (Menzies, 2004; Blaikie, 2006; Kaswamila & Songorwa, 2009; Ribot, 2009).

Even if care is taken to achieve external validity through careful sampling, significant groups may remain invisible. The poorest may be excluded from the sample frame because they are dispersed as dependents in wealthy households, homeless hangers-on in small rural trading centres, urban migrants (Homewood, Thompson & Coast, 2004), or just not considered socially important enough locally to merit inclusion. Ways of classifying people as community residents may exclude particular clans, former slaves, migrants or ethnic minorities (e.g. Painter *et al*., 1994). Yet all these groups are potential users of natural resources and their understanding and resource use may be very different from that of the majority. A World Bank-funded programme in Burkina Faso, for example, consulted and engaged settled farming communities over devolution of control for sustainable management, but failed to access mobile pastoralist communities who were centuries-old users of the same spaces (Painter *et al*., 1994). Perhaps unsurprisingly, farming communities did not point out the omission. On the other hand, elites may be physically absent, living in urban areas or overseas, but their influence may prevail locally and have a disproportionate effect on resource use and environmental issues. Basing a sampling frame on resident households therefore may risk excluding one or both tails of the socioeconomic distribution (Homewood, Kristjanson & Trench, 2009).

Vested interests inevitably colour different people's responses, and professionals and politicians may not represent the diversity of local voices well, nor be open about local conflicts. Rose (2001), for example, highlights the relationship between politicians and logging entrepreneurs in Cameroon, where mutual benefit over-rides consideration of negative impacts on local people and environment (see also Ribot, 2009). There may be people who genuinely feel conservation represents positive possibilities, whose personal philosophy is closely aligned to western conservation values, and who express their views straightforwardly. Others pay lipservice to conservation values while behaving in ways that undermine them (Hodgkinson, 2009). Others may feel conservation initiatives have restricted access to important resources, disappointed expectations or broken

promises, but find it dangerous or impolitic to say so outright. Elite interests threatened by conservation measures may manoeuvre to thwart them while avoiding open confrontation. Ensuring local hierarchies, vested interests and institutions responsible for negotiating and allocating conservation costs and benefits are all taken into account is fundamental to adequately representing the distribution of views present.

The examples above highlight the need for preliminary qualitative work to first understand hierarchies, social heterogeneity and their implications for whose voice and knowledge is heard in order to inform representative sampling frames and achieve genuinely rather than superficially representative samples. Less structured and informal approaches facilitate mapping of the range of local views to understand better who and what is being sampled and the issues being addressed in subsequent quantitative work. These examples also highlight that qualitative methods are important in their own right in terms of improving understanding of the power relations and interests shaping different individuals' and sub-groups' perceptions, attitudes and behaviour, and thus informing effective conservation strategies.

Formulating meaningful questions

Framing questions in such a way as to fully explore conflicting interests, power relations and inequalities, and, ultimately, to reach conclusions genuinely reflecting what is actually going on, requires in-depth understanding of these issues, knowledge only accessible through qualitative approaches.

If research begins with questionnaires, there is no way of knowing whether closed questions are being responded to at face value, and accessing genuine issues underlying respondents' attitudes and behaviour, or are simply perpetuating the worldview of the questionnaire designers. Policy based on structured but poorly grounded approaches may backfire. Preliminary qualitative approaches allow researchers to identify the issues of importance to respondents, rather than imposing those considered central to the researcher, and so formulate better survey questions eliciting meaningful answers (Bright & Manfredo, 1996).

Closed questions rely on exclusive and exhaustive categories sorting responses into appropriate groupings. To achieve internal validity, these must reflect respondent rather than investigator choice, requiring prior understanding of local classifications and concepts only accessible through qualitative approaches (including knowledge of local languages). Translation very rarely confers complete correspondence in meaning, particularly with increasing cultural distance, and researchers must consider this when both designing and interpreting their work. In Uganda, for example, Sandbrook (2006) found persistent confusion between local people and researchers in distinguishing between the forest as resource or ecosystem, and the forest conservation authority as a management body.

Grounding the research

Fundamental to achieving internal validity, and a vital prerequisite to all forms of research design, is a good knowledge of local concepts gained from an extensive literature review, grounding research within local social, cultural and political contexts. Deeply ingrained theoretical frameworks underpinning methodological approaches shape the investigator's approach and influence the results that emerge but, in contrast to qualitative approaches which demand that researchers reflect on the resulting biases, these are rarely explicit in the published results based on research using structured questionnaire data collection (Browne-Nunez & Jonker, 2008). Comprehensive literature review is also crucial in contextualizing and interpreting results effectively, helping to ensure that key findings are not misinterpreted or even overlooked. In a study of wild animal consumption in Hanoi, for example, the importance of 'face' and the social roles of food and commodities in contemporary Vietnamese urban consumption are key to interpretation of otherwise inexplicable findings (Drury, 2009), but this only emerges from detailed review of anthropological literature from many domains largely unrelated to conservation, both before and following the data collection phase, rarely consulted in depth by conservation researchers.

Underlying assumptions differ between cultures, resulting in potential for misunderstanding local perceptions, priorities and actions. This includes many areas of local knowledge alien to and discounted by western scientists. Some forms of local ecological knowledge are congruent with western science, and have shaped the evolution and emergence of more robust scientific models and concepts, e.g. disequilibrium theory of drylands dynamics (Vetter, 2005); fire ecology (Bird *et al.*, 2008). Other belief in witchcraft, sorcery or alternative medical systems remain strongly rooted in many non-western societies and underlie people's perceptions, behaviour and wildlife-use decisions, but are rarely examined in conservation research. Certain beliefs may not be discussed with outsiders, being considered too sensitive, too dangerous, or too likely to be dismissed out of hand, but may nonetheless cut across the issues conservation researchers attempt to explore, in ways which are all the more unfathomable for being unspoken. Gaps between the worldview of the researcher and informants crystallize into translation difficulties with far-reaching implications and mismatching not only of specific terminologies, but of broader meanings and constructs which on the one hand shape the formulation of research areas and questions by researchers, and on the other, underpin local people's ideals, aspirations and interpretations of the research agenda.

These powerful invisible factors shape researchers' formulation of research questions, and of tools such as questionnaires, while equally significant but divergent 'unknown unknowns' shape interviewees' responses in ways that are poorly grasped and rarely factored into analysis, articulated or researched: they 'go without

saying, because they come without saying' (Bourdieu, 1977: p. 167).

Conclusions

Qualitative data are necessary to develop an accurate understanding of categories, processes, relationships and perceptions, and are particularly important in a cross-cultural context. Although quantitative data allow analysis of scale and extent of patterns and effects, and of the relative importance of different explanatory factors, extending natural science research approaches to a social science domain can compromise data quality and validity. Qualitative methods applied by trained researchers, with knowledge of local language(s) and concepts, consulting a range of literature, examining socio-cultural complexity and subtle heterogeneity within populations, and using a transparent and reflexive approach, can provide a basis for better-formulated subsequent quantitative work. More importantly, they can constitute valuable valid research findings on matters critical to conservation research and to designing successful conservation initiatives, which cannot be effectively researched in any other way.

Qualitative research is not a panacea. A fundamental problem in social science research is that the research process itself involves human relationships similar to those under investigation, generating complexities inherent to both qualitative and quantitative data collection. Whereas much quantitative research tries to address these problems through standardization, the benefits of a more qualitative approach are that these issues are actively explored and confronted and constitute part of both research process and findings ('thinking like a human': Adams, 2007). Good qualitative research is openly reflexive about distortions, power relations and inherent biases of different actors in the research process and takes these into account during analysis.

There are strong arguments for complementing quantitative research methods with qualitative approaches when conducting conservation research involving humans. Well-designed surveys can be useful for population level generalizations but complementary use of qualitative approaches can significantly aid understanding of the research context, formulation of pertinent research questions, and accurate interpretation and analysis for design of appropriate interventions. Conservation researchers need to think carefully not only about how to adopt qualitative methods, but also about the inevitable limitations of apparently rigorous quantitative research. We must consider the cultural specificity and acceptability of different research methods. Whereas questionnaires are highly acceptable in most Western populations and thus may be epitomized as 'proper social research', this is as culturally specific as the inappropriateness of focus groups as a research tool amongst solitary sub-groups, or of private interviews among some communally living populations. The research process should include investigation of which methods are best suited not only to the research topic, but also to the cultural and physical context.

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