



Swansea University
Prifysgol Abertawe



Cronfa - Swansea University Open Access Repository

This is an author produced version of a paper published in:

Methods in Ecology and Evolution

Cronfa URL for this paper:

<http://cronfa.swan.ac.uk/Record/cronfa49184>

Paper:

Moon, K., Blackman, D., Adams, V., Colvin, R., Davila, F., Evans, M., Januchowski-Hartley, S., Bennett, N., Dickinson, H., et. al. (2019). Expanding the role of social science in conservation through an engagement with philosophy, methodology, and methods. *Methods in Ecology and Evolution*, 10(3), 294-302.

<http://dx.doi.org/10.1111/2041-210X.13126>

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs License.

This item is brought to you by Swansea University. Any person downloading material is agreeing to abide by the terms of the repository licence. Copies of full text items may be used or reproduced in any format or medium, without prior permission for personal research or study, educational or non-commercial purposes only. The copyright for any work remains with the original author unless otherwise specified. The full-text must not be sold in any format or medium without the formal permission of the copyright holder.

Permission for multiple reproductions should be obtained from the original author.

Authors are personally responsible for adhering to copyright and publisher restrictions when uploading content to the repository.

<http://www.swansea.ac.uk/library/researchsupport/ris-support/>

Expanding the role of social science in conservation through an engagement with philosophy, methodology, and methods

Katie Moon^{1,2}  | Deborah A. Blackman¹ | Vanessa M. Adams³ | Rebecca M. Colvin⁴ | Federico Davila^{5,6} | Megan C. Evans^{7,8} | Stephanie R. Januchowski-Hartley⁹  | Nathan J. Bennett^{10,11}  | Helen Dickinson¹ | Chris Sandbrook¹²  | Kate Sherren¹³ | Freya A. V. St. John¹⁴ | Lorrae van Kerkhoff⁵ | Carina Wyborn^{15,16} 

¹Public Service Research Group, School of Business, University of New South Wales, Canberra, Australian Capital Territory, Australia; ²Institute for Applied Ecology, University of Canberra, Bruce, Australian Capital Territory, Australia; ³School of Technology, Environments & Design, University of Tasmania, Hobart, Tasmania, Australia; ⁴Climate Change Institute, Australian National University, Acton, Australian Capital Territory, Australia; ⁵Fenner School of Environment and Society, The Australian National University, Acton, Australian Capital Territory, Australia; ⁶Institute for Sustainable Futures, University of Technology Sydney, Ultimo, New South Wales, Australia; ⁷Centre for Biodiversity and Conservation Science, School of Earth and Environmental Sciences, The University of Queensland, Brisbane, Queensland, Australia; ⁸Centre for Policy Futures, The University of Queensland, Brisbane, Queensland, Australia; ⁹Department of Biosciences, Wallace Building, Swansea University, Singleton Park, Swansea, UK; ¹⁰Institute for Resources, Environment and Sustainability, University of British Columbia, Vancouver, British Columbia, Canada; ¹¹University of Nice Sophia Antipolis, Nice, France; ¹²Department of Geography, University of Cambridge, Cambridge, UK; ¹³School for Resource and Environmental Studies, Dalhousie University, Halifax, Nova Scotia, Canada; ¹⁴School of Environment, Natural Resources and Geography, Bangor University, Bangor, UK; ¹⁵IUCN Conservation Centre, Luc Hoffmann Institute, Gland, Switzerland and ¹⁶College of Forestry and Conservation, University of Montana, Missoula, Montana

Correspondence

Katie Moon
Email: katieamoon@gmail.com

Handling Editor: Aaron Ellison

Abstract

1. The Special Feature led by Sutherland, Dicks, Everard, and Geneletti (*Methods in Ecology and Evolution*, 9, 7–9, 2018) sought to highlight the importance of “qualitative methods” for conservation. The intention is welcome, and the collection makes many important contributions. Yet, the articles presented a limited perspective on the field, with a focus on objectivist and instrumental methods, omitting discussion of some broader philosophical and methodological considerations crucial to social science research. Consequently, the Special Feature risks narrowing the scope of social science research and, potentially, reducing its quality and usefulness. In this article, we seek to build on the strengths of the articles of the Special Feature by drawing in a discussion on social science research philosophy, methodology, and methods.
2. We start with a brief discussion on the value of thinking about *data* as being qualitative (i.e., text, image, or numeric) or quantitative (i.e., numeric), not *methods* or *research*. Thinking about methods as qualitative can obscure many important aspects of research design by implying that “qualitative methods” somehow embody a particular set of assumptions or principles. Researchers can bring similar, or very different, sets of assumptions to their research design, irrespective of whether they collect qualitative or quantitative data.

3. We clarify broad concepts, including philosophy, methodology, and methods, explaining their role in social science research design. Doing so provides us with an opportunity to examine some of the terms used across the articles of the Special Feature (e.g., bias), revealing that they are used in ways that could be interpreted as being inconsistent with their use in a number of applications of social science.
4. We provide worked examples of how social science research can be designed to collect qualitative data that not only understands decision-making processes, but also the unique social–ecological contexts in which it takes place. These examples demonstrate the importance of coherence between philosophy, methodology, and methods in research design, and the importance of reflexivity throughout the research process.
5. We conclude with encouragement for conservation social scientists to explore a wider range of qualitative research approaches, providing guidance for the selection and application of social science methods for ecology and conservation.

KEY WORDS

conservation social science, decision-making, focus groups, guideline, interviews, policymaking, qualitative data, surveys

1 | INTRODUCTION

In a Special Feature of this journal, Sutherland, Dicks, Everard, and Geneletti (2018) sought to highlight the importance of qualitative methods in ecology and conservation, and to review and provide guidance to conservation scientists on their use. While highly supportive of the aims and intent of this collection of papers, and agreeing with many of the conclusions reached, we are concerned that the authors have downplayed the broader value of social science for ecology and conservation science and practice. They offer a “how to” guide of select qualitative methods for conservation decision-making that, in some instances, mischaracterises the nature and intent of social science research. In particular, we consider that the articles overlooked critical points of philosophy that are central to the selection and use of social science methods. Examining the philosophical and theoretical assumptions of the methods presented in the Special Feature suggests that up to half might not, in fact, be considered as “qualitative methods” (Bennett, Roth, Klain, Chan, Christie, et al., 2017; Bennett, Roth, Klain, Chan, Clark, et al., 2017).

One way to conceptualise the problems we identified is to think about *data* as being qualitative (i.e., text, image, or numeric) or quantitative (i.e., numeric) (Biesta, 2010; Maxwell, 2010). Applying these terms directly to “methods” or “research” can obscure many important aspects of research design by implying that these terms, “qualitative methods” or “qualitative research,” somehow embody a particular set of assumptions or principles. Yet, the collection of any qualitative or quantitative social data is underpinned by a unique set of assumptions about the nature of social reality, the limits of knowledge, and the purpose of research (Babbie, 2010). Researchers can bring similar sets of assumptions to their research design,

irrespective of whether they collect qualitative or quantitative data. For example, researchers might assume that large amounts of either qualitative or quantitative data can be reduced to identify common themes that can apply universally. The term “social science methods” would have arguably been a better choice, because this term encapsulates the disciplinary foundations that inform social science research design and data collection.

We present this Forum Article as a complementary paper to the Special Feature by drawing attention to aspects of social science research philosophy and design (see also Crandall et al., 2018; Denzin & Lincoln, 2011). Whether undertaken inside a well-established discipline or by interdisciplinary individuals or teams, we emphasise that high-quality research—whether it be social or natural science—should be conducted with a fundamental understanding of the philosophies that ground specific methodologies and methods. Just as it is unlikely to be acceptable for a researcher to implement and interpret a linear regression model without a fundamental understanding of the central limit theorem, social science methods need to be applied consistent with their associated theoretical assumptions. As emphasised by St. John, Keane, Jones, and Milner-Gulland (2014, p. 1484): “...the philosophical and methodological foundations of [social science] methods are far removed from the disciplinary training of most applied ecologists [or conservation scientists], [so] even more care and attention is required when carrying out studies using these approaches.” We have written this article for *researchers* who want to understand the potential of social science methods to improve research quality and, by extension, conservation outcomes. We do recognise, however, a broad and valuable role for social science within conservation practice (see e.g., Bennett, Roth, Klain, Chan, Christie, et al., 2017; Bennett, Roth, Klain, Chan, Clark, et al., 2017; Sandbrook, Adams, Büscher, & Vira, 2013).

Our article is structured into three sections. The first section examines the influence of research philosophy on research design. The second section discusses methodology, its role in research design, and the implications for interpretation and application of methods. The third section examines methods, including a discussion of how different methods influence how concepts, such as bias, are treated in research design. We consider it crucial that social science methods in conservation are applied in a way that is consistent with existing social science practice; doing so will help to ensure high quality research outcomes that can support conservation (e.g., Bennett, Roth, Klain, Chan, Christie, et al., 2017; Bennett, Roth, Klain, Chan, Clark, et al., 2017; Moon & Blackman, 2014).

2 | RESEARCH PHILOSOPHY

Philosophy is concerned with the study of knowledge, reality, and existence; it includes general principles of theoretical thinking, methods of cognition, perspective, and self-awareness (Spirkin, 1983). How a researcher thinks about reality (i.e., ontology, what exists that we can acquire knowledge about) and knowledge (i.e., epistemology, how we create knowledge) influences how they design and conduct their research. The philosophical position of the researcher frames their theoretical perspective (i.e., the ideas, concepts, and assumptions the researcher brings to their research), influencing the kinds of questions they ask and how they seek to answer them. These elements inform which methodologies will best suit the philosophy, how theory and the desired research outcome/s are integrated, and the rationale for the chosen methods. While philosophy might not always appear to drive research, it will always implicitly underpin the choices made.

For example, one position a researcher could take is objectivism, which assumes that researchers can confirm their predictions empirically by examining objective reality (i.e., outside the human mind). A primary aim of this type of research is to make predictions about, and explain, people, a phenomenon or a system. When adopting this position, the researcher usually assumes that reality exists independent of the human mind and that an "objective truth" can be discovered. For example, a researcher might expect that they could predict the outcomes from implementing different policies on the social and economic circumstances of resource-dependent communities. The researcher typically seeks to remain detached from the subject of their research to reduce the influence of their own values and opinions when creating knowledge (Crotty, 1998; Flyvbjerg, 2001).

An alternative position could be constructionism, which is underpinned by a different set of assumptions. The aim of much constructionist research is to *understand* people, a phenomenon, or a system, with an assumption that "reality" is created through people's individual experiences of, and interactions with, the world (Crotty, 1998). Here, reality is not objective and outside the mind, but is intimately tied to the human mind and experience. According to this position, diverse and conflicting versions of reality can exist simultaneously,

and can be shared within, or move chaotically through, social groups (e.g., Crotty, 1998).

It is important that researchers consider the influence of their underlying philosophy on how they approach their research and interpret their data (e.g., Guba, 1990). For example, some statements across the Special Feature hinted at assumptions that one truth exists and that research goals and markers of quality are the same across fields. To illustrate, "Some authors highlighted that interviews had not allowed for *generalisations*, either statistical, contextual or because interviewees were not necessarily *representative*" (Young et al., 2018; p. 17, emphasis added and figures removed); and "As a data gathering process, focus group discussion relied on people's experiences and perceptions to generate *anecdotal data*" (Nyumba et al., p. 26, emphasis added). These statements are somewhat dismissive of the full set of rationales for collecting and analysing qualitative data, which may lie outside of generalisability or "truth" seeking. Instead, the purpose of social inquiry might be exploratory, helping to expose the range of ideas held by different actors on a topic. The view that qualitative data is "overwhelming" (see Mukherjee et al., p. 56) in its diversity or volume could guide a researcher towards more constraining methods for data collection and analysis over others, missing real opportunities for novel insights.

We do not suggest that one research philosophy is better than another—different approaches suit different fields and studies. It is important, however, that researchers remain aware of the assumptions embedded in the choices they make during the research process and, where possible, report and reflect on these choices in their research outputs.

3 | RESEARCH METHODOLOGY

The terms methodology and methods represent important and different aspects of research design in the social sciences. *Methodology* (etymologically, the "logic of method") provides a rationale and overarching framework for undertaking a programme of research; it explains why and how the research is being undertaken and guides the choice of methods (Creswell, 2009). *Methods* are tools of data collection and analysis. A chosen methodology captures the intention for the research and the traditions and philosophies that underpin it (Creswell, 2009; McCaslin & Scott, 2003). Methodologies shape the *design* phase where the researcher decides what it is that they want to do and how they want to do it, while methods represent the *doing* phase. It is the combination of, and logical connections between, methodology and methods that establishes quality in the social sciences, informing discussions about subjectivity and bias, recruitment and sampling, data analysis and interpretation, and reflexivity. Researchers should be encouraged to describe their methodology, because "method alone is not sufficient to allow us to make strong claims about what we have done" and why it has been appropriate (Wolcott, 1990, p. 93).

Across the Special Feature, the term methodology was used in ways that can be considered inconsistent with its use in the social sciences. For example, in the social sciences, focus groups and interviews are viewed as methods (Carter & Little, 2007) to which different methodological decisions are applied. Given the importance of the differences between methodology and methods, we discuss them here to support the design of quality social science for conservation.

Creswell (2009) argues that two methodologies dominate social science research that involves the collection of primarily quantitative data: experimental and non-experimental. Experimental methodologies seek to test whether a specific treatment affects an outcome by applying a treatment to one group (experimental) but not to another (control) (Creswell, 2009). Assignment to these groups, ideally, is random, or the approach can leverage from "natural experiments" or cohorts, particularly where experimentation would be unethical. Non-experimental methodologies provide numeric descriptions of, for example, social-demographic or social-psychological beliefs of a sample of a population that can potentially be used to make generalisations about that population (Creswell, 2009). Typically, the rationale for using these methodologies is implicit in the research aims. For example, an experimental methodology is needed to test for an effect of exposure to natural environments on mood. Understanding how gender, income, education, and other variables affect concern for climate change is non-experimental.

Social science research that involves the collection of primarily qualitative data offers a greater diversity of methodologies, because

of the complexity of studying people combined with, among other things, the philosophy of the researcher, what knowledge they are seeking to uncover or create, the research context and ethical considerations (e.g., Crotty, 1998; Patton, 2002). For instance, we might want to discover the meaning of one person's lived experience (biography); or the shared lived experiences of one quality or phenomenon by multiple people (phenomenology); what occurred and was experienced in a single lived event, context, institution, or domain of practice (case study); or develop theory for a single phenomenon as shared by individuals (grounded theory) (McCaslin & Scott, 2003). We might also want to understand a different culture by living or observing it (ethnography) or examining its cultural products, such as visual art or documents (content analysis), or to empower marginalised groups (action research) (McCaslin & Scott, 2003). Depending on the research objectives and approach, several methodological choices are available, and combining methodologies is also an option.

Different methodologies offer specific value to decision-making contexts. We offer some examples that illustrate how different methodologies can be used to generate qualitative data that could be used to support conservation deliberations and decision-making (Table 1). What these examples show is that these methodologies are particularly useful in making sense of the *where*, *when*, *how*, and *why* of conservation contexts and decision-making processes. Questions that can be asked include: how might the distinct history, culture, and worldviews be incorporated into conservation design and practice?; who is involved in decision-making and why?; how

TABLE 1 Examples of how common social science methodologies can be applied to conservation decision-making

Methodology	Research question	Broad application to decision-making context	Specific application to decision-making context
Biography	How can we integrate individuals' lived experiences to create a history of political decision-making and its outcomes in this location?	How might the history of this area influence resource users' willingness to participate in conservation decision-making processes?	How can we design conservation programmes that meet the needs of resources users and are sensitive to context?
Phenomenology	How do Pacific Islanders experience rising sea level?	How does the experience of rising sea levels influence individuals' and communities' perceptions of the importance of different conservation decisions and initiatives?	How does experiential and contextual knowledge influence prioritisation of local-, regional-, and global-scale conservation actions?
Case study	How are the livelihoods of farmers affected by changes to tree clearing legislation?	What structures and policy instruments are needed to support legislative change for vegetation management?	When, and how, should landholders be compensated for changes to their property rights?
Grounded theory	What is the theory of conservation intention and commitment?	Who are the types of people that have an intention to conserve and why?	What combination of policy instruments could stimulate conservation behaviour in a given social-political context?
Ethnography	What role do stories play in shaping decisions about "Country" among Indigenous Australians?	How compatible are rationales for traditional and Western "resource" practices?	Can decision-making processes engage with different ways of seeing and managing "resources" and if so, how?

does power influence who is 'in' or 'out' of decision processes?; and how and why will people's lives be affected by decisions?

These examples also show how social science research can offer unique insight into social, cultural, and political decision-making contexts, rather than just decision-making processes. For example, a social scientist might be interested in how Pacific Islanders experience sea level rise. The research might reveal that different perceptions of threats to livelihoods influence preferences to invest in particular technologies, initiatives, or infrastructure. While this data could be used to *inform* decision-making, a question that focused solely on decision-making (e.g., do you support x, y, z interventions) might not have revealed these important relationships between perceptions of threats and priorities, and how they influence decision-making or support for different policies. Being too focused on seeking an "instrumental outcome" can mean that we lose the capacity to recognise and understand the unexpected. It is often what we do *not* expect that explains why conservation succeeds or fails in a given context; qualitative data enables, and thus often leads to, unexpected discovery.

Discussions of methodological choices should be encouraged not only to those using qualitative methods (a point we expect the Special Feature authors would support) but also to all the research publications. We are cautious about insisting on an exhaustive discussion in publications of all choices made during the research process given the very tight word limits in some journals. As such, we encourage authors to publish details of their methodology in supplementary online material. Providing this information opens opportunities to repeat studies, teach novices, and assess the extent to which data can be transferred between contexts, noting here that repetition in social science is often not motivated by a search for generalisable results, but rather to enable comparative analysis across contexts. Providing methodological details also allows others to assess the quality of the research (see Moon, Brewer, Januchowski-Hartley, Adams, & Blackman, 2016; Teel et al., 2018; Tong & Dew, 2016; for discussions on quality in the social sciences).

4 | RESEARCH METHODS

The methodology a researcher adopts for a particular research project influences how they use methods to collect, analyse, and interpret data. Imagine the hypothetical situation in which a researcher developed the following research question: How do resource-dependent communities make decisions to reduce the negative social and ecological effects of logging practices while still maintaining a livelihood? The researcher could make explicit their assumption that community members' perceptions and behaviours will be influenced by history (e.g., previous experience with erosion, reduced water quality from logging, or government interventions) and livelihoods and/or cultural identity. As such, the researcher seeks to understand how community members "construct" their knowledge of logging practices on the basis of history and culture, alternative land uses, and the various and historical roles of stakeholders (e.g.,

other community members, NGOs, the government). This framing reflects a constructionist epistemology (philosophy). The researcher chooses only to "understand," not to change or liberate, and so they adopt an interpretivist (theoretical) perspective and conduct an ethnographic inquiry (methodology) that seeks to understand decision-making "against the backdrop of people's overall worldview or 'culture'" (Crotty, 1998, p. 7). Research participants would be invited to explain how history and culture influences their perceptions and decision-making. Interviews with, and observations of, community members (methods) could be used to generate the qualitative data necessary to answer the research question. While not a specific goal of the research, the data could be used to support decision-making processes that engages with cultural identity and livelihoods while meeting ecological, social, and economic goals. The research could also reveal the types of people who seek to be included in any decision-making processes and why. This example shows how the construction of a research question is imbued with researchers' values and assumptions, how perceptions of human communities drive choices of methodologies, and how the choice of methodology influences the types of methods that are used to collect data and how those data can be used. We have attempted, in presenting this example, to make clear the critical importance and interrelatedness of all of these elements of research design in social research.

Below, we discuss additional considerations in social science research design that require more description and discussion than was provided across the articles of the Special Feature: bias and data collection. These aspects of research design are important to examine because of how these choices influence the selected methods, type of data that is generated and how it is interpreted and applied (Adams & Sandbrook, 2013).

4.1 | "Bias"

Social scientists often acknowledge an interaction between researcher and research subject/s, and account for it in research design, practice, and interpretation (Barbour, 2008). For some social scientists, it is *only* possible to understand the meaning of a phenomenon by embedding oneself within the research context (e.g., Anderson, 2006; Ellis & Flaherty, 1992). Social scientists often consider that no clear divide exists between the researcher and the subject/s of the research, a view that is contrary to objectivist scientific philosophy and practice that typically infers a research "subject-object dualism" (Bryman, 2012). At the core of the subject-object dualism is the fundamental question of whether something being observed can be completely detached from whoever is doing the observing. Social scientists do not necessarily assume they could, or would even want to, remain detached from the research subjects (e.g., Drapeau, 2002; Morgan & Drury, 2003). They embrace the fact that the researcher is the instrument, because the trade-off of that subjectivity is worth it: it takes a human to understand one. To support effective decision-making, social scientists might be willing to accept invitations to become involved in community activities, increasing their ability to observe and understand how people within

the community manage resources and the reasons why. These experiences can allow the researcher to observe, for example, how different conservation interventions might affect a particular community in different ways. Experiencing daily life can reveal much about how an intervention may be experienced. Such experiences can also shed light on the roles that communities like to have in decision-making and implementation processes and what outcomes they expect or desire.

Social scientists, therefore, often acknowledge that their expertise, background, and theoretical perspectives are critical factors that shape the exploration and interpretation of their research findings (Babbie, 2010; Barbour, 2008; Bryman, 2012). Studies of the same phenomenon by researchers from different disciplinary backgrounds yield different insights, thus providing value in different ways (Easterby-Smith, Thorpe, & Jackson, 2008). Subjectivities of the researcher are not necessarily understood as something to be controlled for in the way experimental bias may be treated. Instead, the unique value brought to the research process by the researcher (e.g., Fontana & Frey, 2005) must be recognised and explicated throughout the research, from the methodological design through to communication of the findings (Babbie, 2010; Heyink & Tymstra, 1993; Patton, 2002).

Across the Special Feature, we observed a number of statements that appear to view bias as something problematic that should necessarily be controlled for. For instance, "...check that the interview length and language are suitable for the target population, and that useful results can be obtained *without bias*" (Sutherland et al., 2018; p. 8, emphasis added); "... facilitation is central to *unbiased data collection*" (Nyumba et al., p. 29, emphasis added); and "[Nominal Group Technique] method enables to reach consensus on complex issues, and *minimizes researcher bias*" (Hugé & Mukherjee, 2018, emphasis added).

While terminology differs, it can be helpful to differentiate between the inevitable "subjectivity" of research, which we may recognise, reflect on, and build strategies to challenge; and "bias" that is unrecognised and thus cannot be accounted for. Different strategies can be used to reduce the undesirable effects of subjectivity on research findings, such as member checking (asking participants for feedback on preliminary findings), and many researchers include reflexive practices in their research design. Reflexivity (i.e., a self-assessment of subjectivity) is essential for producing high-quality qualitative data that does not seek to control the social complexity of a given setting, but instead accepts it as an inherent part of the research process, including interpretation and communication of findings (Creswell & Miller, 2000). At times, reflexivity can involve allowing research participants (who are usually the subjects of the research) to influence the lines of inquiry and research approach (e.g., community-based participatory research) (Barbour, 2008; Guba & Lincoln, 2005).

4.2 | Data collection

As noted in the introduction, Biesta (2010, p. 98) argues that the "notions of qualitative research and quantitative research actually stand for

a whole cluster of assumptions," and that by employing this distinction we can "obscure those aspects that really matter in the discussion and can even create quasi-problems and oppositions, for example, when researchers who use numbers and researchers who use text assume that they have nothing to share, even if their research is actually informed by similar assumptions about the nature of social reality or driven by similar ambitions about knowledge creation." In other words, simply describing methods as "qualitative" does not tell us anything about the purposes of the research or the process of research design. In the Special Feature, for example, the discussion of multi-criteria decision analysis (MCDA) introduced views that described this method as "qualitative research" in a problematic way. Esmail and Geneletti (2018, p. 43) argued that MDCA uses "explicitly defined criteria that account for the most relevant aspects in a decision making process" allowing for "testing of robustness" in a "transparent and replicable fashion," where "a successful MCDA application should always include a sensitivity analysis to examine the *trustworthiness and robustness of its conclusions*" (Esmail & Geneletti, 2018, p. 51, emphasis added). Lacking across the articles was a discussion of the rationales for method selection that can assist in understanding why different types of methods are used and the types of data (e.g., quantitative and/or qualitative) they generate.

What seemed apparent to us when reading such perspectives was that most of the methods reviewed by the authors in the Special Feature were selected because they have the potential to *reduce qualitative data in some way*, indicating a desire to find "the answer," ideally a numerical one, rather than to explore the problem. For example, "Focus group discussion provides depth and insight, but *cannot produce useful numerical results*" (Nyumba, Wilson, Derrick, & Mukherjee, 2018, p. 28, emphasis added); and "Documenting the knowledge of practitioners is a *challenge* (let alone *quantifying it*)" (Mukherjee et al., 2018, p. 56; emphasis added). MCDA is presented as "replicable" despite the hidden subjectivities in associated scoring or ranking processes in complex settings. Social scientists often collect qualitative data to develop insights and create theories, but these outcomes are only possible where the chosen methodology and methods create the space for the unexpected to both emerge and be recognised. We acknowledge that these perspectives of qualitative data are not restricted to the articles of the Special Feature (e.g., Sullivan, 2011) or to the field of conservation (Sherren & Darnhofer, 2018) but consider that a deeper conversation needs to take place about what we mean by "qualitative methods."

5 | CLARIFYING ENGAGEMENT WITH SOCIAL RESEARCH IN ECOLOGY AND CONSERVATION SCIENCE

We believe that an expanded understanding of social science research is necessary to achieve conservation outcomes across the different stages of decision-making processes and within different decision-making contexts. We support the efforts of the authors of the Special Feature in bringing increased attention to the value of social science research, although we stress that it offers more than a means to arrive at a (supposed) consensus, or set of decisions. First,

TABLE 2 Qualitative research design criteria for conservation decision-making (adapted from Moon et al., 2016)

Research design criteria	Questions to ask
Philosophy	What ontology and epistemology is underpinning the research? What assumptions of the researcher's philosophy are embedded in the research design?
Theoretical perspective	What is the purpose of the research (e.g., to predict, to understand, to emancipate or liberate, to deconstruct, to use whatever methods are necessary)?
Strategy and design	What is the best research design suited to the research question and philosophy? What subjectivities are the researchers bringing to their research and how are they explaining its influence on the research design and findings?
Methods	Who is the researcher engaging in the research and why are those participants best suited to answer the research question/s? Why is each participant suitable to include in the research? Does the researcher clearly explain the reasons for the chosen methods? What type of data is the researcher collecting, how and why? Is the researcher culturally aware of their research context? Has the researcher been transparent in describing the data collection and analysis methods (e.g., provided the interview schedule or codebook)? Has the researcher undertaken a process of reflexivity throughout the research process and how did this process influence design and interpretation? Has the researcher described their sampling strategy (who is selected) and participant recruitment (how participants are selected)?

social science methods can generate qualitative data to derive insights into the social context within which conservation occurs, the perspectives of different people, the perceptions of stakeholders on past conservation governance practices, or the factors that enable or undermine the capacity of some communities to support conservation. In this way, the people involved in conservation can be understood, and potentially leveraged as experts, rather than immediately conceptualised as "problems to solve" (Sherren & Darnhofer, 2018). Second, social science methods that generate qualitative data can be critical in understanding conservation decision-making contexts. For example, one might examine questions such as: where does conflict exist?; how might conflict be resolved?; why is scientific evidence used (or not)?; who is considered an "expert"?; what ways of knowledge does this management regime include or exclude?; why are policies not always implemented as intended?; and how are behaviours expected to change and why? Third, social science research might be employed to help individuals or groups arrive at a decision (as discussed in the Special Feature) while also examining questions related to the "why" (the rationale for decisions) and "how" (the way that decisions should be made and actions pursued) of decision-making for conservation.

Social science, as a broad discipline, offers a rich set of philosophies, methodologies, and methods that can help us to understand the social context of conservation, to interrogate perceived solutions, and to seek diverse forms of 'evidence' that will guide decision-making processes. Important assumptions underpin each choice that is made, and consideration must be given to these assumptions in any research design. We strongly encourage readers to engage with a number of philosophical, theoretical, methodological, and methods-related questions during the research design process (Table 2), which will provide them with a clearer understanding of the role and value of social science research, its applications and why

it forms a legitimate approach to knowledge generation. A deeper understanding of the process of research design will contribute to high quality social science research that has greater potential to generate knowledge that can contribute to just decision-making in conservation and, ultimately, the attainment of conservation outcomes.

ACKNOWLEDGEMENTS

We acknowledge the helpful and insightful comments of two anonymous reviewers that were used to improve our response article. We also acknowledge the authors of the articles of the Special Feature, particularly those who contributed to the response, the original version of which we used to shape our revised response in important ways.

AUTHORS' CONTRIBUTIONS

Two groups of authors contributed to this article, led by K. M.: a core writing team (first group) and a critical revision team (second group). The first group of authors comprised: D. B., V. M. A., R. M. C., F. D., M. C. E., and S. R. J. All authors in the core writing team undertook an analysis of the articles of the Special Feature; contributed to the main arguments, content and structure of the article; developed and reviewed iterations of the article; provided feedback and sourced supporting material and references as required. The second group of authors comprised: N. J. B., H. D., C. S., KS, FSJ, LvK, and CW. All authors in this critical revision team reviewed the manuscript for intellectual content and completeness and provided improvements and additional material as necessary.

DATA ACCESSIBILITY

No data was used in the preparation of this manuscript.

ORCID

Katie Moon  <https://orcid.org/0000-0003-2538-9262>

Stephanie R. Januchowski-Hartley  <https://orcid.org/0000-0002-1661-917X>

Nathan J. Bennett  <https://orcid.org/0000-0003-4852-3401>

Chris Sandbrook  <https://orcid.org/0000-0002-9938-4934>

Carina Wyborn  <https://orcid.org/0000-0002-4314-347X>

REFERENCES

- Adams, W. M., & Sandbrook, C. (2013). Conservation, evidence and policy. *Oryx*, 47, 329–335.
- Anderson, L. (2006). Analytic autoethnography. *Journal of Contemporary Ethnography*, 35, 373–395.
- Babbie, E. (2010). *The Practice of social research*. Belmont, CA: Wadsworth/Thompson Learning.
- Barbour, R. (2008). The scope and contribution of qualitative research. In R. Barbour (Ed.), *Introducing qualitative research: A student guide to the craft of doing qualitative research* (pp. 9–31). Los Angeles, CA: Sage Publications.
- Bennett, N. J., Roth, R., Klain, S. C., Chan, K., Christie, P., Clark, D. A., ... Greenberg, A. (2017). Conservation social science: Understanding and integrating human dimensions to improve conservation. *Biological Conservation*, 205, 93–108.
- Bennett, N. J., Roth, R., Klain, S. C., Chan, K. M., Clark, D. A., Cullman, G., ... Teel, T. L. (2017). Mainstreaming the social sciences in conservation. *Conservation Biology*, 31(1), 56–66.
- Biesta, G. (2010). Pragmatism and the philosophical foundations of mixed methods research. In A. Tashakkori, & C. Teddlie (Eds.), *SAGE handbook of mixed methods in social & behavioural research* (pp. 95–117). Thousand Oaks, CA: Sage.
- Bryman, A. (2012). *Social research methods*. New York, NY: Oxford University Press.
- Carter, S. M., & Little, M. (2007). Justifying knowledge, justifying method, taking action: Epistemologies, methodologies, and methods in qualitative research. *Qualitative Health Research*, 17, 1316–1328.
- Crandall, S. G., Ohayon, J. L., de Wit, L. A., Hammond, J. E., Melanson, K. L., Moritsch, M. M., ... Parker, I. M. (2018). Best practices: Social research methods to inform biological conservation. *Australasian Journal of Environmental Management*, 25, 6–23.
- Creswell, J. W.. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches*. Los Angeles, CA: SAGE.
- Creswell, J. W., & Miller, D. L. (2000). Determining validity in qualitative inquiry. *Theory Into Practice*, 39, 124–130.
- Crotty, M. (1998). *The foundations of social research: Meaning and perspectives in the research process*. London, UK: SAGE.
- Denzin, N. K., & Lincoln, Y. S. (Eds.) (2011). *The Sage handbook of qualitative research*. Thousand Oaks, CA: Sage.
- Drapeau, M. (2002). Subjectivity in research: Why not? But.... *The Qualitative Report*, 7, 1–15.
- Easterby-Smith, M., Thorpe, R., & Jackson, P. R. (2008). The politics and ethics of management research. In M. Easterby-Smith, R. Thorpe & P. R. Jackson (Eds.), *Management research* (pp. 113–139). London, UK: Sage Publications.
- Ellis, C., & Flaherty, M. G. Eds. (1992). *Investigating subjectivity, research on lived experience*. Newbury Park, CA: Sage.
- Esmail, A. B., & Geneletti, D. (2018). Multi-criteria decision analysis for nature conservation: A review of 20 years of applications. *Methods in Ecology and Evolution*, 9, 42–53.
- Flyvbjerg, B. (2001). *Making social science matter: Why social science inquiry fails and how it can succeed again*. New York, NY: Cambridge University Press.
- Fontana, A., & Frey, J. H.. (2005). The interview: From neutral stance to political involvement. In N. K. Denzin & Y. S. Lincoln (Eds.) *The Sage handbook of qualitative research* (pp. 695–727). Thousand Oaks, CA: Sage.
- Guba, E. G. (1990). The alternative paradigm dialog. In E. G. Guba (Ed.), *The paradigm dialog* (pp. 17–30). Newbury Park, CA: Sage.
- Guba, E. G., & Lincoln, Y. S.. (2005). Paradigmatic controversies, contradictions and emerging confluences. In N. K. Denzin & Y. S. Lincoln (Eds.), *The Sage handbook of qualitative research* (pp. 191–215). Thousand Oaks, CA: Sage.
- Heyink, J. W., & Tymstra, T. J. (1993). The function of qualitative research. *Social Indicators Research*, 29, 291–305.
- Hugé, J., & Mukherjee, N. (2018). The nominal group technique in ecology & conservation: Application and challenges. *Methods in Ecology and Evolution*, 9, 33–41.
- Justine, L., Howden, S. M., Cvitanovic, C., & Dowd, A.-M. (2015). Informed adaptation: Ethical considerations for adaptation researchers and decision-makers. *Global Environmental Change*, 32, 200–210.
- Maxwell, J. A. (2010). Using numbers in qualitative research. *Qualitative Inquiry*, 16(6), 475–482.
- McCaslin, M. L., & Scott, K. W. (2003). The five-question method for framing a qualitative research study. *The Qualitative Report*, 8, 447–461.
- Moon, K., & Blackman, D. (2014). *A Guide to Understanding Social Science Research for Natural Scientists: Social Science for Natural Scientists*. *Conservation Biology*, 28, 1167–1177.
- Moon, K., Brewer, T. D., Januchowski-Hartley, S. R., Adams, V. M., & Blackman, D. A. (2016). A guideline to improve qualitative social science publishing in ecology and conservation journals. *Ecology and Society*, 21.
- Morgan, A. K., & Drury, V. B. (2003). Legitimising the subjectivity of human reality through qualitative research method. *The Qualitative Report*, 8, 70–80.
- Mukherjee, N., Zabala, A., Huge, J., Nyumba, T. O., Adem Esmail, B., & Sutherland, W. J. (2018). Comparison of techniques for eliciting views and judgements in decision-making. *Methods in Ecology and Evolution*, 9, 54–63.
- Nyumba, T. O., Wilson, K., Derrick, C. J., & Mukherjee, N. (2018). The use of focus group discussion methodology: Insights from two decades of application in conservation. *Methods in Ecology and Evolution*, 9, 20–32.
- Patton, M. Q. (2002). *Qualitative research & evaluation methods* (3rd ed.). Thousand Oaks, CA: SAGE.
- Sandbrook, C., Adams, W. M., Büscher, B., & Vira, B. (2013). Social research and biodiversity conservation. *Conservation Biology*, 27, 1487–1490.
- Sherren, K., & Darnhofer, I. (2018). Precondition for Integration. In *Support of Stand-alone Social Science in Rangeland and Silvopastoral Research*. *Rangeland Ecology & Management*, 71, 545–548.
- Spirkin, A. (1983). *Dialectical materialism*. Moscow, Russia: Progress Publishers.
- St. John, F. A. V., Keane, A. M., Jones, J. P. G., & Milner-Gulland, E. J. (2014). Robust study design is as important on the social as it is on the ecological side of applied ecological research. *Journal of Applied Ecology*, 51, 1479–1485.
- Sullivan, H. (2011). 'Truth' junkies: Using evaluation in UK public policy. *Policy & Politics*, 39, 499–512.
- Sutherland, W. J., Dicks, L. V., Everard, M., & Geneletti, D. (2018). Qualitative methods for ecologists and conservation scientists. *Methods Ecology and Evolution*, 9, 7–9.
- Teel, T. L., Anderson, C. B., Burgman, M. A., Cinner, J., Clark, D., Estévez, R. A., ... John, F. A. (2018). Publishing social science research in

- Conservation Biology to move beyond biology. *Conservation Biology*, 32, 6–8.
- Tong, A., & Dew, M. A. (2016). Qualitative research in transplantation: Ensuring relevance and rigor. *Transplantation*, 100, 710–712.
- Wolcott, H. F. (1990). *Writing up qualitative research (Sage qualitative research methods series, Vol. 20)*. Newbury Park, CA: Sage.
- Young, J. C., Rose, D. C., Mumby, H. S., Benitez-Capistras, F., Derrick, C. J., Finch, T., ... Mukherjee, N. (2018). A methodological guide to using and reporting on interviews in conservation science research. *Methods Ecology and Evolution*, 9, 10–19.

How to cite this article: Moon K, Blackman DA, Adams VM, et al. Expanding the role of social science in conservation through an engagement with philosophy, methodology, and methods. *Methods Ecol Evol*. 2019;10:294–302. <https://doi.org/10.1111/2041-210X.13126>