Article:
Schulz, C and Martin-Ortega, J orcid.org/0000-0003-0002-6772 (2018) Quantifying relational values - why not? Current Opinion in Environmental Sustainability, 35. pp. 15-21. ISSN 1877-3435

https://doi.org/10.1016/j.cosust.2018.10.015

Quantifying relational values – why not?

Christopher Schulz [a, b] and Julia Martin-Ortega [c]

[a] School of GeoSciences, The University of Edinburgh, Drummond Street, Edinburgh EH8 9XP, United Kingdom

[b] Land Economy, Environment and Society Research Group, Scotland's Rural College (SRUC), Peter Wilson Building, Nicholas Kemmer Road, Edinburgh EH9 3FH, United Kingdom

[c] Sustainability Research Institute, School of Earth and Environment, University of Leeds, Leeds LS2 9JT, United Kingdom; J.MartinOrtega@leeds.ac.uk

Corresponding author contact information (present address)

Christopher Schulz:

Department of Geography, University of Cambridge, Downing Place, Cambridge CB2 3EN, United Kingdom

cs998@cam.ac.uk

Abstract

Relational values have recently emerged as a novel concept for research on human-environment relationships, seeking to understand ethical principles that may foster environmental stewardship, coupled with a recognition of nature's contributions to people. At present, most empirical research on relational values uses qualitative methods. Here we review some of the reasons that may have contributed to the lack of quantitative research, besides noting that a lot of existing quantitative empirical research on human-environment relationships already deals with relational values, even if it does not use that terminology. We suggest that incorporating quantitative approaches into the methodological toolkit of relational values research has a number of benefits: First, it contributes to the empirical evidence base testing hypotheses and assumptions emerging from qualitative and conceptual work. Second, it may help identifying core relational values shared across cultures, and this way improve communication and cooperation across different cultures. Third, it may improve the political legitimacy of environmental decision-making via statistically representative measurements of public views. Complementing qualitative with quantitative approaches for relational values research is also in the spirit of integrated valuation and value pluralism.

Introduction

Relational values have been defined as "preferences, principles, and virtues associated with relationships, both interpersonal and as articulated by policies and social norms" [1] (p.1462). In the environmental realm these are being coupled with an acknowledgement of 'nature's contributions to people' and culturally specific understandings of what 'leading a good life' means, as outlined by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) framework [2–4]. While the concept has its roots in environmental ethics as an alternative to the traditional

intrinsic/instrumental value dichotomy [1,5,6] (see also [7–9]), it is not tied to a particular discipline, and is currently in the process of establishing itself in the environmental academic discourse.

At present, quantitative approaches are underrepresented in the empirical literature on relational values, which we here define as any publications making reference to the terminology of 'relational values' in the sense proposed by the most prominent publications on the topic [1,2,4]. Although IPBES considers quantitative methods for studying components of a good life, such as health and well-being, sustainability and resilience [3], some authors have suggested that relational values are generally to be studied with qualitative methods such as interviews, focus groups, deliberative workshops, discourse analysis, ethnography, etc. [10]. Indeed we are aware of only two survey-based quantitative studies explicitly referencing the conceptual framework of relational values [11,12], with further empirical work using predominantly qualitative research methods (e.g. [13–19]). This risks ignoring insights from existing quantitative empirical research that does not (yet) use the term relational values but might still be valuable. It also restricts the potential for gathering further evidence to enhance the global dialogue on relational values and to support environmental decision-making.

Here we discuss some of the reasons that may have contributed to this lack of quantitative empirical research in the relational values literature. Furthermore, we show how quantitative empirical research on human-environment relationships that gives us insights about relational values already exists, even if it does not use that terminology. Finally, we illustrate some benefits of using quantitative methods for empirical research on relational values, not least their potential to inform and enhance the political legitimacy of environmental decision-making.

Relational values, quantitative, and qualitative research

Relational values are, by definition, about relating entities, e.g. people and nature. Quantitative empirical researchers have developed a rich variety of methods precisely to study such relations [20,21], ranging from simple correlations to regression analysis (e.g. [22–25]), factor analysis and structural equation modelling (e.g. [26–29]), choice modelling (e.g. [30–33]), or Q methodology (e.g. [34–37]). Such methods can tell us something about the strength of association between two or more concepts, e.g. between approving certain governance principles and supporting certain environmental policies [26], and this way, provide empirical evidence for assumptions and hypotheses originating from conceptual considerations and qualitative research. Relational values could easily be incorporated in such quantitative analyses, either as predictors of support for certain policies (i.e. as independent variables), or as mediating or moderating variables [20,38] that affect the relationship between human activities and environmental impacts. Basic research might also investigate relational values as dependent variables (e.g. in relation to socio-demographic variables).

While the term relational values is relatively new to the environmental social science literature [1,2,4], we would argue that there is already substantial quantitative (and qualitative) research that implicitly deals with relational values, but uses different terminologies (as noted also in other contributions to this special issue [39–41]). For example, work on human-nature relationships and on place attachment, which fits very well into the conceptual framework of relational values, often relies on quantitative empirical methods [42–45], which are the focus of the present paper. It is important to note, though, that any such method relies on good qualitative research in one way or another. Qualitative and quantitative research methods are almost always complementary [46] and it is good practice to develop close-ended surveys following previous qualitative research (e.g. [47,48]) or to develop locally appropriate quantitative surveys e.g. via qualitative cognitive interviews [49]. Qualitative approaches

can also complement quantitative methods where certain concepts (e.g. a specific relational value) are particularly challenging to quantify and might otherwise be overlooked [50]. Doing an exhaustive review of quantitative studies is beyond the scope of this paper, but we believe the cases below serve as illustrations to support our argument that a lot of existing quantitative research implicitly deals with relational values.

Within environmental psychology, Braito et al. [47], e.g., suggest that human-nature relationships consist of worldviews, values, beliefs, attitudes, norms, and environmental behaviour, among others, which may vary between individuals and members of different cultures [51]. These variables could be understood as (elements of) relational values, with environmental behaviour being an important variable to assess their practical relevance. They propose a list of partially overlapping narratives ('master', 'steward', 'partner', 'participant', 'user', 'apathy', and 'nature distant guardian') which capture varying degrees of feeling attached to nature and subscribing to various human-environment ethical principles [47] (i.e. relational values). A large sample of survey respondents was asked to rate the degree to which they identified with these narratives. Using psychometric scales and statistical correlations they show how certain narratives such as 'steward' or 'participant', which in our view are examples of relational values, are correlated with a higher likelihood to perform pro-environmental behaviour. A similar research approach could be applied to the seven human-nature relational models identified by Muradian and Pascual [52].

Structural equation modelling is another suitable quantitative tool for relational values research. It is frequently used to study the relationship between people's values and their environmental behaviour (e.g. [27,53–55]) or policy preferences (e.g. [26,56–58]). Tonge et al. [29] show how place-based and localised relational values captured in survey statements such as 'I feel that Ningaloo [Marine Park, Australia] is part of me' (framed in their paper as part of the variable 'place identity', which could be reconceptualised as a type of relational value), are statistically related with behavioural intentions such as 'not to feed the wildlife' (in turn indicative of the relational value of environmental stewardship or care, see also [59,60]).

Q methodology also provides a quantifiable way of assessing relational values. E.g. Vugteveen et al. [37] use it to link communicated expressions of value to three basic universal value types (ethical, affective and cognitive) to understand the differentiated value orientations amongst stakeholders towards integrated water management. An example of affective and ethical-laden statements in their study are, respectively, "I feel connected to water, it is part of me" and "dealing with nature in a respectful way is important to me", which can again be interpreted as operationalisations of the relational value of environmental stewardship for the purposes of quantitative empirical research.

We should also consider that many concerns about quantitative research methods are actually about monetary valuation, which represents a very specific branch among quantitative methods [61]. Related to that, some authors have suggested that monetary valuation methods are not or much less suitable for the study of relational values than other quantitative (and qualitative) socio-cultural valuation methods [62,63]. Monetary valuation of the environment is also often decried as a stepping stone for the commodification of formerly public goods [64], while politically, it is associated with neoliberalism [65]. However, as Kallis et al. [65] have shown, monetary valuation of the environment can under certain circumstances also lead to positive social and environmental outcomes and in this way strengthen relational values such as environmental stewardship. An example of empirical research on relational values using monetary valuation methods has been published by Brock et al. [30]. These authors found that interaction with everyday wildlife, partially quantified as willingness to pay to engage with wild birds through a feeding activity, contributes to people's wellbeing by letting them take a warden-like role, i.e. they identify a similar connection between leading a good life and

the relational value of environmental stewardship, as proposed by the IPBES conceptual framework [2,4].

Finally, while quantitative research methods have been employed in questionable ways as reported e.g. by West [66], this should not lead us to conclude that this must always be the case. Wyly's [67] comments on the risk of conflating political positions (e.g. against neoliberalism) with certain research methods and/or epistemologies may apply here, too.

Simplification, human nature and the nature of (relational) values

Some relational values researchers seem uncomfortable with attempts to 'box' rich and diverse values and worldviews into narrow, often externally defined categories (e.g. [10,14]; see also [66,68]), as might be necessary in quantitative empirical research. These may fail to recognise local alternatives to the dominant Western nature/culture divide, and may not only reproduce unequal power relations originating from colonial times, but also 'generify' local values [69]. That is, local values may be at risk of inappropriate simplification via translation into hegemonic national and international terms, and subsequent appropriation by external actors [14,66,69].

While we sympathise with concerns about unequal power relations and the desire to conserve local knowledge systems and worldviews, we believe that some form of simplification, as a result of translating local views to outsiders, also represents a benefit of quantitative methods. A certain degree of simplification is in fact essential if we are to have a meaningful debate about relational values across cultures. Consider, e.g., that researchers from many different countries and cultural backgrounds have come together to advance the study of relational values, with the explicit intent to recognise alternative knowledge systems in the process [2,4]. Simplification of value concepts, a necessary step in the application of many quantitative research methods, thus allows fruitful cooperation across cultures, and conveys the positive message that we may share values, even if our local metaphors and narratives are very different [70].

This is possible because values can be described at different levels of abstraction. The definition of relational values cited at the beginning of this paper is very abstract, while the description of indigenous management principles is often very concrete and rich in detail (e.g. [66,68]). In between these two extremes there is a wide range of levels of abstraction that a researcher or policy-maker can choose from. Evidently, in some cases (e.g. [14]), simplification and abstraction goes too far, and forces local values into meaningless categories. But equally, positive examples exist, e.g. Schwartz et al. [71], who have completed an impressive task of showing how certain abstract personal values are shared across people from many different cultures, following many years of empirical research and hundreds of studies. Humans have different cultures and personal differences, but these are not so enormous to make simplification and standardisation for survey questions outright impossible. More concrete values, survey questions and quantitative metrics could also always be designed for local contexts [48,61].

Another point concerns the basic ontology of values, which surely is a philosophical minefield [64,72–74]. Nevertheless, we suggest that processes of valuation always imply a quantitative and qualitative component and that these can never be separated within the valuing person. Whenever someone says "I value…", it is possible to reply "how much?", and even if the answer is simply "a lot" or "infinitely", quantification has already taken place. Skilful survey design can help to transform such vague quantities into discrete quantities (see also [75]). Resulting quantitative data should be seen as (imperfect) approximations for the purposes of empirical research, rather than representations of

exact quantities, and may vary in usefulness depending on the concrete research context [76]. Not least, appropriate methods for quantification of values need to be selected, which take into account that different types of values are often incommensurable (but not incomparable), i.e. they may require expression in different measurement units [77,78].

The ethics of representing people

The ways in which research participants' views are best represented for research and policy-making poses many practical, philosophical and ethical challenges [63,79]. To avoid associated pitfalls, many relational values researchers seem to favour forms of representation that are as close as possible to research participants' own views, which are more likely to be concrete, and in the form of a qualitative narrative, rather than in the standardised, abstract forms typically employed in quantitative research. While this is a justifiable choice, it risks overlooking some of the distinct benefits of quantitative research methods. Political and democratic legitimacy of environmental policy and governance can be enhanced if these represent the (relational) values of the general public well [74,80], which in turn may best be captured by (statistically) representative data from a large sample of respondents, assuming careful survey design and sampling.

In our view, qualitative and quantitative researchers alike need to think carefully about best practices and research ethics. Particularly, one needs to consider the challenges of extrapolating research findings from a small sample for environmental decision-making that may affect larger parts of society. Qualitative researchers could cause a lot of harm if they misrepresented a local narrative (as a carrier of relational values) due to relying on deficient translations, not unlike quantitative researchers who may force economic valuation onto indigenous people in an inappropriate context [66]. If qualitative research is to feed into policy-making beyond the local level, then some form of translation or upscaling (i.e. translating from one specific location to other or larger areas) would be necessary [10].

Quantitative sampling procedures (and very particularly probabilistic sampling) precisely aim at overcoming the practical issue of representativeness, which can help with this ethical dilemma [20]. While evidently some cases exist where representativeness through quantitative sampling cannot be achieved in practice (e.g. in hyper-diverse countries such as Papua New Guinea), and it is important to identify the correct scope or scale for a quantitative study to avoid outnumbering vulnerable minorities, quantitative methods generally remain very useful to address issues of legitimacy and democratic representation of multiple views.

Finally, it is also always important to define and consider the purpose of a concrete research project [81]: For example, is the objective to provide a forum for participation in decision-making as in some applied studies and policy-making processes (e.g. [82,83]), or is it about basic research instead, with no immediate environmental decision-making implications (e.g. [47])? If a study of relational values is to inform a concrete local environmental management decision, a qualitative stakeholder forum might sometimes indeed be more appropriate [82,83]. Conversely, the objective of a lot of e.g. quantitative basic psychological research is simply a better understanding of the human mind [43]. In a similar vein, Ives et al. [43] note that (qualitative and quantitative) research about concrete experiences or place-specific human-nature connections is more likely to come with policy recommendations than (mostly quantitative) psychological research on cognitive human-nature connections. But even basic quantitative research can be highly policy relevant, e.g. where de Groot [84] finds that public preferences for certain flood management strategies such as dike reinforcement or river restoration

can be traced back to survey respondents' underlying views on appropriate human-nature relationships (i.e. relational values).

Conclusions

Thus far, most empirical work on relational values has used qualitative research methods. In the present paper, we reflect on some of the reasons that may have contributed to the present lack of quantitative research, including, among others: the perceived risk of 'generification', i.e. inappropriate simplification of local relational values via translation into hegemonic national and international terms, and subsequent appropriation by external actors; and the need for appropriate representation of indigenous and local relational values, as well as public opinions in environmental research, policy and governance. We also suggest that many insights on relational values could be obtained from existing quantitative (and qualitative) empirical research on preferences, principles and virtues associated with relationships between humans and the environment, even if it does not (yet) use the terminology of relational values. For example, research on human-nature relationships, place attachment, or various ethical principles would likely be of high interest to the relational values researcher community.

Extending the methodological toolkit of relational values researchers to include quantitative research methods would generate a number of benefits, including (1) an improved empirical evidence base for hypotheses and assumptions originating from conceptual considerations and qualitative research, making use of elaborate methods designed for the study of relations between concepts and entities; (2) the 'discovery' of unifying elements and a common core of ethical principles (i.e. relational values) that are shared by people across various cultures, despite considerable qualitative (cultural) differences, which may facilitate communication and cooperation across groups; and (3) improved political legitimacy of environmental decision-making via the representation of public views through (statistically) representative surveys, which can help with the policy relevance of empirical research on relational values and beyond.

Combining qualitative and quantitative research methods in this way would not least also be in the spirit of integrated valuation approaches and value pluralism [9,52,59,63,85], making optimal use of the benefits of various research methods for various purposes.

Acknowledgements

The authors are grateful to Klaus Glenk and Antonio Ioris for early discussions that have enriched this work and to Jiwon Kim for advice on the philosophy of values. Julia Martin-Ortega acknowledges the support of the Writing Club at the School of Earth and Environment, University of Leeds.

Declaration of interests

The authors declare no conflict of interests.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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** This special issue editorial and mission statement of a group of applied transdisciplinary scientists argues in favour of integrated valuation as the preferred approach for informing natural resource management. This encompasses broad inclusion of stakeholders and decision-makers in the research process, the uncovering of hidden plural values, explicitly addressing power asymmetries, methodological pluralism and improving societal impacts of research.