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Analysis

Shifting environmental perspectives in agriculture: Repeated Q analysis and the stability of preference structures

Ben B. Davies [a,*], Ian D. Hodge [b]

[a] Aberdeen Centre for Environmental Sustainability (ACES), Business School, University of Aberdeen, Edward Wright Building, Dunbar Street, Aberdeen, AB24 3QY, UK
[b] Department of Land Economy, University of Cambridge, 19 Silver Street, Cambridge, CB3 9EP, UK

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ABSTRACT

A critical issue in behavioural environmental studies is the evolution of attitudes over time. This analysis reports a unique longitudinal study of individual farmers' perspectives using Q methodology, with a group of UK farmers' opinions assessed in both 2001 and 2008. Three main outcomes are evident. Firstly, the set of farmers' perspectives identified in 2001 appears to be still adequate to summarise the range of views present in 2008; thus substantially new sets of concerns do not appear to be forming over this period. Secondly, the proportions of farmers aligning themselves with particular perspectives appear to have shifted, indicating some clear reorientations of attitudes. Thirdly, these shifts indicate a small number of specific directions of change, oriented towards more productivist positions and away from more environmental interests. In summary, the key dimensions of agri-environmental concern amongst farmers overall do not appear to be significantly changing over this period, but the proportions of farmers that are sensitive to particular concerns do appear to have undergone some change. Given the unusual methodology, sample size and recruitment methods used these results most certainly cannot be translated into population-wide effects, but they do provide a valuable opportunity for consideration of pathways of change.

1. Introduction

There is a long tradition in agri-environmental research of studying the links between farming attitudes, values and behaviour, an approach that can be broadly summarised under the banner of the behavioural approach (Burton and Wilson, 2006). There is a wide range of diversity in the research approaches taken, with many quantitative studies including some measures of attitudes, broadly defined. As a simple summary the results have frequently demonstrated that attitudinal variables can be significant predictors of certain kinds of behaviours, though the relationships are inevitably complex and the usefulness of attitudinal measures for deriving policy directions is frequently subject to debate.

Although both singular and composite index measures of attitudes have been very widely deployed in agri-environmental research, typically linked with additional structural and socio-demographic measures, there are increasing numbers of authors (for example Bohnet et al., 2011; Emtage et al., 2007; Fairweather and Klonsky, 2009; Kings and Ilbery, 2010) who argue that although simple single dimension quantitative measures may be useful for some purposes, they do not lend themselves to particularly satisfactory representation of the comprehensive complexity of human motivation (see also earlier work by Austin et al., 1996; Perkin and Rehman, 1994; Seabrook and Higgins, 1988; Shucksmith, 1993). In particular, there is a very evident gulf between the kinds of sociological complexity in terms of identity, perspective, values and attitudes advanced by authors such as Burton and Wilson (2006), and the more or less straightforward correlation of attitude with behaviour that underpins a more positivistic view of mental constructs as relatively simple—and stable—entities.

A central issue in this regard is the complexity of the overall mental perspective of individuals where several competing motivations are combined (Coughenour, 1995; Fairweather and Keating, 1994). This branch of research is more concerned with what kinds of combinations of attitudes exist, and is frequently involved in the development of typologies and particularly discussion of the appropriate components required to create them (Walter, 1997; Whatmore et al., 1987). Recent work has addressed both sociological and structural components of this typological challenge (Bohnet, 2008; Busck, 2002; Darnhofer et al., 2005; Emtage et al., 2007; Kings and Ilbery, 2010; Vesala and Vesala, 2010) and approaches at the intersection of rural sociology, behavioural economics and social psychology characterise work in this field.

Increasingly the notion of farmer typologies has itself received cogent criticism from a constructivist perspective, centred on the recognition that farming 'types', or more correctly perhaps 'archetypes', are relatively easy to define but typically very hard to validate, in the important sense that evidence of types that match the theoretical description cannot be found in practice. Howden and Vanclay (2000)

* Corresponding author. Tel.: +44 1224 273237; fax: +44 1224 276127.
E-mail addresses: ben.davies@abdn.ac.uk (B.B. Davies), idh3@cam.ac.uk (I.D. Hodge).

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present useful evidence in this regard and note that although farmers themselves could produce a series of possible types, none of them were prepared to identify themselves as belonging exclusively to those that were defined.

The method employed in the current study—Q methodology (Stephenson, 1953)—is an approach to addressing questions related to this field using the responses of farmers in a partially hermeneutic way to provide quite complex profiles of their perceptual frameworks. The results of such analysis are descriptions of attitudinal dimensions or interpretive frameworks that farmers themselves consider appropriate to describing their own views, understood as clusters of related opinions. Based on factor analysis (and described in more detail below), Q method has the advantage of working with small samples, based on the principle that there are a limited number of coherent perceptual frameworks or constructs which can be used to describe any population, though these may be combined in a number of ways in practice.

The use of Q methodology in both research and policy circles has received increasing attention over the last 15 years (Barry and Proops, 1999; Brown, et al., 2008; Durning, 1999; Ellingsen et al., 2010), and notable recent debates over the use of Q in rural policy (Eden et al., 2005; Fairweather and Klonsky, 2009) have emphasised its focus on respondent-led, interpretive analysis. It is however very rarely used for longitudinal studies due to a number of challenges, with Fairweather and Swaffield (1996) providing the only previous longer-term study, which found preferences for visual landscape features to be relatively stable over a two year interval. The current paper is the first known effort to use Q method approach to explore possible changes in individuals' environmental perceptual frameworks over the much longer period of seven years.

2. The Methodology of the Current Study

The current study is particularly unusual in applying the same Q method survey instrument at two distinct time periods within the UK, in 2001 and 2008. This section briefly reviews the approach of Q method below, before introducing results from the study.

2.1. A Comment on Q Methodology

Q method (Adams and Proops, 2001; Brown, 1980; Stephenson, 1953) is a factor based analytic approach originally pioneered in psychology, which identifies the principal dimensions of respondents' attitudinal perspectives by extracting factors relating to scores assigned to a set of statements. It uses factor analysis to extract patterns of similarity between the responses of a small respondent sample to a set of opinion statements about a particular issue. The statements are evaluated by each respondent in a process known as a Q-sort, which involves assigning a score to each opinion statement to show different degrees of agreement and disagreement. A matrix of cross correlations between all Q sorts is then subjected to factor analysis, which extracts linear combinations of statement scores which capture the main dimensions of similarity between the respondents' Q sorts. Each dimension or factor extracted thereby identifies a particular viewpoint, with the loading of a respondent on a particular factor giving the extent to which a respondent agrees or disagrees with it.

It is important to recognise that the factors produced within Q, although developed through correlations of the responses of individuals, are not *clusters* in a formal sense, because they identify perspectives that are by no means mutually exclusive types. Although the majority of individuals are mostly strongly associated with only one of these perspectives, there are also many who have a significant factor loading on two or more, often with no single clearly defined high loading. A given individual may thus be described as evidencing aspects of two or more broad perspectives. The role of a Q factor is thereby to delineate the most pertinent dimensions which enable an efficient and appropriate characterisation of individuals within a population. In this sense the factors emerging from Q are offered as descriptive archetypes, which map out a limited—but it is hoped adequately comprehensive—set of dimensions in terms of which the overall perspectives existing within a population can be described.

This approach is therefore significantly different from index scale measures which independently establish a measurement instrument against which a single characteristic is measured. In a Q study, by completing a Q sort a participant is identifying his or her own unique perspective on the relative importance of the issues presented in the Q statements—and if this perspective is shared by other Q sorters, these Q sorts will correlate and a factor can then be identified which represents this perspective. An element of judgement is therefore required in deciding how many factors should be extracted to account for the diversity of viewpoints, since the statistical guidelines used in typical R factor analyses based on random samples are not directly appropriate in most Q contexts. For a full discussion of these and other issues related to Q methodology, see Brown (1980) and Adams and Proops (2001).

2.2. The 2001–2008 UK study

A relatively large (102 farm) sample of farmers from predominantly arable and mixed farms in Eastern England was analysed with Q method conducted through face-to-face interviews in 2001. This led to the definition of five broad attitudinal clusters, and this analysis and the resulting attitudinal dimensions are described in detail in Davies and Hodge (2007). In summary, five representative attitudinal dimensions were identified in the 2001 study, which were described as Environmentalists, Progressives, Commodity Conservationists, Jeffersonians, and Yeomen. A summary table of these types is shown in Table 1, and the detailed scores for each of the 33 statements associated with each of these types are provided in Table 2. In total this factor solution accounted for 57% of the variance, and led to significant loadings for all but 6 of the cases. The factors identified bore some comparison with previous UK farming attitudinal studies, (e.g. Austin et al., 1996; Beedell and Rehman, 1999), whilst providing a new perspective on factor combinations. This framework provides the basis for comparison between the two time periods in the current study.

To explore possible attitudinal change over time, an attempt was made to re-sample the respondents to the original East Anglian 2001 survey in 2007–8. For practical reasons the re-sampling took place in two phases: an initial targeted sub-set of 13 farmers, most of whom completed the Q sorts postally but 5 doing so in a personal interview in late 2007; and all remaining respondents were then approached in early 2008 with a postal Q sort. The overall useable response over the two phases was 34 fully completed forms (33%), although communication was received from 45 farmers or their families in total, including Q sorts undertaken by new individuals, but these are excluded from this current analysis. For simplicity this study is referred to as '2008' when the majority of responses were received.

The high non-response to the repeat survey places limitations on inferences that can be drawn regarding the overall scope of changes within the original sample, but further investigation of non-responses was not feasible. It is therefore acknowledged that the repeat subsample necessarily potentially excludes a substantial number of active farmers whose responses may have added to further variations in the range of changes recorded here, but data on these perspectives simply could not be pursued further.

3. Study Findings

3.1. Durability of Perspectives Over Time

As noted above, the repeat sample of respondents in 2008 is self-selecting, and it contains an imbalanced representation of the original