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# CHAPTER 8

## EXPLANATION– UNDERSTANDING

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### Introduction

Undertaking research is the key means through which we find out about and assess the world around us. Research can take many different forms and there are numerous textbooks that detail the mechanics and techniques for how effective and valid research should be undertaken. This chapter, rather than focusing on the nuts and bolts of conducting research – how to go about generating and analyzing data in practice – examines instead how research, and by implication all academic work, is conceptually framed. Conducting research, it is important to note, is not simply a set of standard practices that, if implemented correctly, will provide a valid understanding or explanation of the world; it consists of more than a set of techniques that are mechanically applied by rule and rote, selected for general utility, convenience and expediency. Instead, empirical research practices – generating, analyzing, interpreting, writing and so on – are contextually embedded within a philosophically informed framing that works across four inter-related domains: ontology (what one can know about the world), epistemology (how one can know it), methodology (how one can measure

it) and ideology (what one does with the knowledge produced) (Hubbard *et al.*, 2002).

Taken together, ontology, epistemology, methodology and ideology provide the parameters of an academic world view and the means through which to conceptually frame how one approaches and undertakes a piece of research and how one interprets and makes sense of the research findings. They shape the kinds of questions one might legitimately ask, how those questions are operationalized and how data are gathered, analyzed and interpreted. In addition, they frame positions and debates about issues such as research ethics, positionality, validity and the politics of research. Unfortunately, when discussing the conceptual bases, practices and practicalities of conducting research this wider philosophical framing often gets reduced to the level of methodology and, in particular, to the kind of data that is generated and analyzed. Indeed, it is not uncommon to hear some researchers describe themselves as either performing quantitative or qualitative research, or even being a quantitative or qualitative geographer (see DeLyser *et al.*, 2010; Fotheringham *et al.*, 2000). In other words, they define themselves

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by the methodology they use, rather than by the focus of their research (e.g. a political, economic, cultural geographer) or by their wider theoretical viewpoint (e.g. a positivist, feminist, Marxist, poststructuralist geographer). This division between quantitative and qualitative research maps onto the notion that quantitative methods seek *explanation* (where quantitative data analysis explains causal relationships between variables) and qualitative methods create *understanding* (where qualitative data analysis produces insight and reveals meaning).

Such a description or identity is misleading because it suggests that the kinds of questions researchers ask, how they choose to try and answer them and their identity as a researcher, can simply be reduced to the kind of data they generate and how they analyze them – that one can meaningfully define themselves as a quantitative or qualitative geographer. This is not the case. Methodology is how research is operationalized; how we seek to ask and answer questions. The methodology devised, and the specific methods used, are shaped by our world view as to what is the most appropriate and valid way to make sense of the world. In other words, the methodology stems from the ontological, epistemological and ideological tenets of a researcher's world view, not vice versa. For example, a central tenet of positivism, an approach that seeks to apply the scientific approach used in the natural sciences

to the social world, is that science should not seek to answer metaphysical questions because they are empirically unknowable and unverifiable (see Kitchin, 2006). Such a question would be: is there a god? This is a question of faith and cannot be definitely proven through scientific measurement. Positivists would also be wary of subjective information such as opinions, attitudes, values, ethics, principles and beliefs, again because they are difficult to analytically measure and verify, rather preferring to focus on observed behaviour to explain actions. Feminists, on the other hand, who are interested in how power is mobilised and circulates within society, would have no difficulties in dealing with such information, arguing that it can be validly and rigorously examined (Seager and Nelson, 2004). They would also be interested in the power dynamics within the research process itself between researcher and researched and seek to find methods that are sensitive to imbalances in power such as participatory approaches or which openly acknowledge the positionality and situatedness of the researcher (how they are approaching the research foci theoretically, politically, ethically) (Kindon *et al.*, 2007; Rose, 1997). In other words, to characterize research as either being quantitative or qualitative in nature – to be about either explanation or understanding – then is somewhat deceptive.

## SUMMARY

- Conducting research is more than the rote application of standard methodological practices.
- Research is contextually embedded within a philosophically informed framing.
- Ontology, epistemology, methodology and ideology provide the parameters of philosophical thought and shape choices over the methodology and techniques adopted.

## The qualitative/ quantitative divide

In broad terms, quantitative data consist of numeric information. The information gathered is either extensive and relates to physical properties of phenomena (such as length, height, distance, weight, area, volume, etc.) or representative and relates to non-physical characteristics of phenomena (such as social class, educational attainment, social deprivation, quality of life rankings, etc.). In geography, a combination of extensive and representative quantitative information can be gathered to explain social and economic issues. These data can be nominal (placed into categories), ordinal (ranked in relation to each other), interval (measured on a fixed, continuous scale) or ratio (measured on a scale with a fixed zero origin) in character (Kitchin and Tate, 1999). These forms of data can be analyzed using descriptive or inferential statistics or be used as the inputs to predictive and simulation models. Descriptive statistics provide summary overviews of the trends within a data set and include techniques such as standard deviations, graphs, histograms, pie charts, maps and so on. Inferential statistics seek to determine statistically whether there are relationships and patterns within the data, whether the data differs significantly from other groups, or to make wider inferences about a larger population based on the sample. Quantitative data in the social sciences is mostly generated through surveys and questionnaires, much of which is derived through instruments such as censuses, household surveys, passenger surveys, political polling, etc., or is generated from large databases such as those held by government departments and health and financial institutions. More recently it can be generated from sensor and scanner technologies.

Qualitative data is non-numeric information. It can consist of text, images and sounds, including literature, diaries, policy documents, interview transcripts, photographs, art, video, movies, and music (Hay, 2010). While these data can be converted into quantitative data through classification, much of the richness of the material is lost through such a translation process. Qualitative data analysis then generally seeks to work with the original materials, seeking to tease out and build up meaning and understanding, using analytical techniques such as content analysis and deconstruction. Qualitative data in the social sciences is often generated through interviews, focus groups, observation, ethnography and participatory methods, or is accessed through archive collections, and generally consists of case studies focused on particular individuals, communities and places.

There is little doubt then that quantitative and qualitative data are different in nature: one being numeric, the other non-numeric. They are also generally understood to differ in terms of parameters of data generation, so that quantitative data is gathered by prescription, has large sample sizes, concentrates on incidence and frequency and focuses on populations, while qualitative data is gathered personally, has small sample sizes, concentrates on concepts and categories and focuses on individuals (see Table 8.1). The fundamental issues, however, are whether the type of data used in a study defines the approach taken, whether the two kinds of data are used in mutually exclusive ways and the ways in which the two broad data types are used to create and reproduce cleavages in geographical praxis.

**Figure 8.1 (a)–(f)** Quantitative data. Credit: (a)–(c) iStockphoto; (d) JeremyA (Wikimedia Creative Commons); (e) Rob Kitchin; (f) iStockphoto



## BOX 8A: INTERVIEW WITH RESPONDENT A

Male

Age: 43

Age since blind: 19

Location of interview: Respondent's home.

Spatial context: Urban estate, private owned (formerly council), semi-detached.

Date/Time of interview: \*/\*/97; 4pm.

Who was present: Dan Jacobson and Respondent A

Interview was recorded on tape and video.

Notes: Interviewee was cautious but reasonably forthcoming.

**INT: How do you approach and resolve problems encountered enroute?**

**RES:** Such as?

**INT: Well, how about detours?**

**RES:** I'm OK with them. But I got lost once. It tends to knock you sideways a bit. I crossed one too many streets and I ended up going in the opposite direction. Well, I would first of all – if I didn't know the area – I would ask someone. Or I would go back on myself and retrace, and maybe get a taxi or some other transport. Or maybe I would go to a friends house nearby.

**INT: How about if you found yourself off-route?**

**RES:** I don't really like finding myself in this situation. If I was caught in a security scare or something like that, I would wait until someone came along, or I would go to the door of a house. Or I would retrace.

**INT: Do you come across any specific hazards?**

Sometimes you have to be very wary, if there's a lorry parked on the pavement, or some awkward street furniture blocking the way. When 2 or 3 things happen at once, it can be really confusing. The only thing you can do is to backtrack.

**INT: Do you think environmental modifications might make navigating easier?**

**RES:** There is a conflict between dropped kerbs and flush pavements. I can't tell the difference. If you go from Castle Street, from Castle Court, the place where the pavement should be, it just isn't there. There is nothing to tell you where it is, it is all flush. Those bobbly tiles – I don't like those.

**INT: How do you find out about new routes?**

**RES:** By asking people. I haven't been down in the town for a while, but I knew there was work done on this part of the road. I didn't realise the Westlink went under the Falls Road. Nobody had ever told me that. I was walking across towards Divis Street, and suddenly I heard the roaring of a heavy thundering truck. 'Shit, this one's going to get me', I thought. Then it went underneath and I was OK.

**INT: How often do you learn a new route?**

**RES:** Very rarely, once or twice a year, most places I go, I go regular.

**INT: How do you prepare for learning a new route?**

**RES:** If I can get the information in advance I may go over it beforehand. If I can get detailed instructions, 'cross 3 roads, turn left, on the up kerb, turn right', it's a great help.

**INT: Have any route learning strategies proved to be particularly successful or disastrous?**

**RES:** No.

Figure 8.2 Qualitative data. Credit: (a) Rob Kitchin; (b) Christine Leerink; (c) iStockphoto; (d) Jacqueline Veissid/Getty Images; (e) Runner 1616 (Wikimedia Creative Commons); (f) iStockphoto



Figure 8.2 continued

As noted above, some geographers define themselves as quantitative or qualitative researchers, which suggests some kind of mutually exclusive relationship – you either work with quantitative or qualitative data, but not both. Indeed, the quantitative/qualitative distinction has become shorthand for a whole

set of binaries that appear to operate with respect to research praxis as set out in Table 8.1. These binaries concern a whole set of inter-related issues which frame how academic research is conceptually and practically located from the type of data, sample size, form of data generation, focus, scope, objective,

Quantitative	Qualitative
Data are numbers	Data are words, pictures and sounds
Data gathered by technology or prescription	Data gathered personally
Large sample sizes	Small sample sizes
Incidence and frequency	Concepts and categories
Populations	Individuals
Explanation and prediction	Meaning and understanding
Scientific	Humanistic
Nomothetic	Idiographic
Realistic	Idealistic
Deductive	Inductive
Objective	Subjective
Functionalist	Interpretative
Generalization	Extrapolation
God's eye view	Situated
Inquiry from the outside	Inquiry from the inside
Subjects/objects	Participants
Artificial	Natural
Macro	Micro
Generality	Specificity
Society	Self

Table 8.1 The qualitative/quantitative divide. Adapted from Kitchin and Tate (1999)

philosophical framing and rationale, to method and technique.

In Table 8.1 the distinction between qualitative and quantitative research is mapped onto a conceptual framing focused on methodology and methodological considerations. In very

broad terms, the distinction between quantitative and qualitative research is seen as one of *explanation and prediction* versus *meaning and understanding*. This divide is captured by a whole series of interlinked binaries that are worth elaborating a little in

order to make it clear how the distinction is being cleaved:

- The scientific versus humanistic divide concerns a distinction between an approach that is specifically designed to capture the complexities of people and society and one that seeks to take the procedures and practices of natural science and apply them to society. This is captured somewhat in the divide between an idiographic and nomothetic approach (Schaefer, 1953). An idiographic approach focuses on the specificity and uniqueness of individuals and places whereas a nomothetic approach seeks to determine generalizable laws to explain phenomenon. The quantitative revolution in Geography, for example, is often framed as an attempt to shift Geography from a discipline interested in understanding unique regions, landscapes and cultures, to one that discovered spatial laws that held across places and people (Johnston and Sidaway, 2012).
- Idealistic versus realistic approaches is a divide between research that seeks to understand and take account of the metaphysical, spiritual and non-materialistic aspects of life and approaches that concentrate on empirically measurable facts only (Kitchin and Tate, 1999).
- Qualitative studies often adopt an inductive approach to interpretation and theory building; that is, they generate the data and then use these to build a theory as to what is observed. Quantitative studies, in contrast, often use a deductive approach by constructing a theory and then testing whether that theory has any validity by examining the veracity of hypotheses.
- Subjective versus objective is framed as the difference between a point of view (such as values, opinions, beliefs) and observable, measurable facts, and between the researcher shaping the research process and a neutral, value-free analysis and interpretation (Rose, 1997). Qualitative data generation, because of its open-ended format and the kinds of questions asked, is thought by many to produce subjective data, but also to be open to subjectivity on behalf of the researcher (that is, qualitative methods are more open to the interpretation of the researcher). On the other hand, quantitative methods, it is argued, generate and analyze factual information and the use of statistical techniques (both descriptive and inferential) provides answers free of researcher bias and is therefore more objective.
- Related to this, situated knowledge is that which recognizes the experience, context and positionality of the researcher in investigating a topic, whereas ‘God’s eye view’ is the idea that we can stand outside of our personal history, beliefs and experiences when conducting research and interpreting findings – that we can rise above ourselves and see the world for what it is, free of any influences.
- Inquiry from the inside suggests that it is possible to become close to a group of people and to see the world from their perspective; that it is possible to conduct studies with and for people, rather than an inquiry from the outside that is detached, disembodied and is a study of a group. One consequence is that the people investigated within qualitative studies are often thought of as participants, whereas in quantitative studies they are viewed as subjects or objects. A critique of the latter is that people are effectively reduced to an essence that denies their complex messiness; they are simply a number in the analysis, not a person (hence the critique that quantitative geography is ‘peopleless’) (Hubbard *et al.*, 2002).
- Extrapolation versus generalization is related to sample sizes and the representativeness of



the data. Qualitative studies often have quite small sample sizes, so drawing conclusions from them with respect to large populations involves extrapolation. With quantitative

data it is often aggregated for analysis, so it tends to generalize individual data by hiding and reducing data variability.

## SUMMARY

- Quantitative data is numeric and can be analyzed using descriptive or inferential statistics; qualitative data is non-numeric and is generally analyzed discursively.
- A whole series of binaries relating to philosophical framing and research practices are often mapped onto the supposed quantitative/qualitative divide.
- Quantitative research is seen as producing explanation and prediction, whereas qualitative research produces meaning and understanding.

## A false dualism

Discussed in this way, it is easy to see how the cleavage between research that generates and analyzes quantitative and qualitative has been wedged apart into two seemingly mutually exclusive camps, one centred on providing explanation, the other on creating understanding. It is important to note, however, that this cleavage represents something of a false dualism and the binaries set out in Table 8.1 hide a huge amount of messiness. Even at the level of data, the divide is artificial in the sense that qualitative data can be made quantitative through codification, classification and digital rendering, and quantitative data can be described textually as narrative and visually as images, graphs and maps. And if the characteristics of qualitative data can be made to match that ascribed to quantitative data generation and vice versa, then it is relatively easy to see that the distinction between the other binaries related to data generation can also become blurred and indistinct.

While qualitative data are often gathered personally through interviews, focus groups, and ethnographic fieldwork, it can equally be derived from national archives, large photo and film libraries and technically produced documents such as parliamentary minutes, where the researcher had no personal involvement in generating or classifying the data or applying its metadata. Likewise, quantitative data can be generated through interviews, diaries, ethnographic research and so on, and not necessarily through a highly prescriptive technique (for instance, it might be derived from open-ended interviews where information is subsequently categorized). Equally, qualitative studies can have very large sample sizes, deal with populations such as cultural and linguistic groups or communities and deal with issues of incidence and frequency, as with health geography concerning illnesses and treatments or space–time diaries. Quantitative-based projects can have quite small sample sizes, deal with categories and concepts and do modelling around individual lives.

More broadly, as discussed in the introduction, it is the philosophical tenets of a worldview that shape research praxis, not data types. Geography as a discipline is theoretically plural and diverse with respect to the ontological, epistemological and ideological positions adopted. Indeed, there are numerous conceptual approaches practised within Geography and across the social sciences (Johnston and Sidaway, 2012). The extent to which qualitative and quantitative methodology is used in a mutually exclusive manner varies by philosophical approach, with some conceptual framings favouring an interpretive emphasis that seeks to generate meaning and understanding, others favouring a functionalist approach that aims to explain and predict, and a few that seek to do both, using both quantitative and qualitative methods in combination with each other.

Sometimes there can even be disagreements within a family of related approaches. For example, some feminists reject quantitative approaches as being masculinist and reductionist, producing peopleless geographies that not only fail to take account of the politics and power that shape everyday life but reproduce such relations, whereas others argue that quantitative data and techniques can be used effectively and sensitively to illustrate the effects of patriarchy on men and women's lives. This internal conflict between researchers who share the same ideological goals – to dismantle patriarchal social relations to create a more just society – was aired in the 'Should Women Count?' debate (see *Professional Geographer* 47(4): 426-466). This debate consisted of five papers that each explored the extent to which quantitative methods can be used to undertake research that adheres to feminist ideals and principles; that conform to feminist ways of seeing, doing and knowing the world. The argument forwarded across the papers is that

women can and should count (in quantitative method terms), but feminists should be aware and open about how the approach they have taken has shaped the questions asked and how they have been answered.

To illustrate the relationship between conceptual thought and methodology further, Table 8.2 outlines how eight different approaches used within Geography would generally conceptually frame and investigate issues of poverty (Kitchin and Tate, 1999). What the table makes clear is that each philosophical position approaches poverty quite differently and this has a profound effect on the types of question they ask and how they seek to answer them. In other words, in order to operationalize poverty research, each philosophy requires certain kinds of data to be generated and for that data to be analyzed and interpreted in a particular way in order to comply with the ontological and epistemological principles of that approach. For example, empiricism relies on the weight of facts, positivism statistically tests the relationship between variables, phenomenology tries to reconstruct the life world of people who are poor, Marxism seeks to uncover the capitalist structures that shape life chances, and so on. It should be noted that while each approach pushes a researcher toward a particular kind of data, what is most important is that the data is analyzed in such a way that it does not break the ontological and epistemological assumptions of that philosophy. For example, a positivist can use qualitative data in their analysis, but only if it relates to non-metaphysical matters and is analyzed scientifically through statistics. In general, this means avoiding metaphysical questions (that is, questions that cannot be empirically measured and verified) and converting qualitative data into quantitative data through classification and codification.

Philosophy	How poverty is researched	Main methodologies
Empiricism	Facts and statements about poverty are collected and presented for interpretation by the reader (e.g. indices of poverty – social welfare status, housing tenure). Data are understood to 'speak for themselves'	Presentation of experienced facts and statements; descriptive statistics
Positivism	Poverty is explained through testing a hypothesis by collecting and scientifically testing data related to poverty (e.g. statistically testing whether poverty is a function of educational attainment)	Surveys, questionnaires, secondary analysis of other quantitative data sets  Would rarely use qualitative methods/data
Phenomenology	To understand poverty it is necessary to reconstruct the lifeworld of people who are poor (e.g. we need to try and see the world through the eyes of poor people). This might be attempted by talking to them about their life experiences	In-depth interviews; ethnography  Would rarely use quantitative methods/data
Existentialism	Poverty is understood by trying to gain insight into how people who are poor come to know, ascribe meaning and interact with the world (e.g. interviewing poor people about how they decide how much money they spend on different things)	In-depth interviews; ethnography; participant observation  Would rarely use quantitative methods/data
Pragmatism	Poverty is understood by observing how individuals in society interact to produce conditions which sustain destitution (e.g. examining whether poor people remain poor because they live in a cycle of crime, under-education, low self-esteem)	Ethnography; participant observation
Marxism	Poverty is explained through the examination of how society is structured for the purposes of capital accumulation (e.g. we need to examine how the interests of capital are served by retaining unskilled, low wage jobs rather than distributing fully corporate profit)	Observation; quantitative analysis of secondary sources; deconstruction of policy documents; interviews

Philosophy	How poverty is researched	Main methodologies
Post-structuralism	Poverty is understood through an examination and deconstruction of complex (and often contradictory and paradoxical) exclusionary practices of society, as expressed through discursive and material practices (e.g. deconstructing cultural norms, myths and practices that reproduce exclusionary processes which seek to marginalize poor people from material wealth)	Observation; deconstruction of documents and practices Would critique and deconstruct quantitative data/methods but would rarely use them
Feminism	Poverty is understood by examining the ways in which power works to create and reproduce certain social and spatial relations (e.g. examining the unequal access to work and wealth between men and women and the role of patriarchy in reproducing such relations)	Interviews; focus groups; ethnography; participatory methods; surveys; questionnaires; analysis of secondary data sets

**Table 8.2** Different approaches used to conceptually frame and investigate issues of poverty. Adapted from Kitchin and Tate (1999)

Deciding how one researches and makes sense of poverty then – and indeed any other issue or phenomenon – is far from simply choosing whether one uses qualitative or quantitative methods of data generation and analysis. Instead, a much more fundamental thinking needs to occur regarding how one thinks the world works and how best to formulate meaningful questions and answer to those questions. For some researchers this means pursuing approaches that prioritize description, interpretation and meaning (such as empiricism, phenomenology, post-structuralism) and for others adopting approaches that seek explanation and prediction (such as positivism and Marxism).

In many instances, as detailed in Table 8.2, it might mean generating and analyzing both

quantitative and qualitative data in order to try and produce both explanation and meaning. A mixed methods approach, combining quantitative and qualitative methods, is a perfectly legitimate way of generating and analyzing data within some philosophical approaches. For example, in the ‘Should women count?’ debate, one of the principle conclusions of the participants was that a mixed methods approach provides a middle way forward that can remain true to the principles and values of feminism.

Such a mixed method approach is also common in Marxist, realist and empiricist approaches. In the latter case, data are seen to speak for themselves and knowledge about the world conveyed through the weight of evidence. Here, by combining insights into quantitative data

with that of qualitative data it is hoped that both a broad and detailed understanding of an issue can be conveyed. So, for example, if one is interested in issues of migration one might start by conducting a broad-based analysis of patterns of migration to provide a generalized understanding of migratory flows. This might involve an analysis of the census or undertaking a large scale survey of migrants. The next step might be to interview in depth a smaller sample of migrants in order to try and gain a deeper understanding of the reasons for and experiences of migration. In other words, the quantitative data is used to frame and

contextualize the qualitative element of the research. The process can also work in reverse. So, for example, in-depth interviews are undertaken to determine the main reasons for and experiences of migration. The findings are then used to design a larger survey which is distributed to a much larger sampler. In both cases, quantitative and qualitative methods work in concert with each other to enhance insights. In the former case, the broad picture is used to help frame and deepen understanding. In the latter case, in-depth understanding provides the basis for trying to establish wider explanation.

## SUMMARY

- The quantitative/qualitative divide is somewhat of a false dualism.
- The philosophical world view shapes the methodology and form of data generated, not vice versa.
- Quantitative approaches fit the assumptions of some philosophies while qualitative approaches more suit others and a mixed methods approach, utilising quantitative and qualitative approaches, is possible.

## Conclusion

Conceptually, research is sometimes framed as producing either explanation or understanding, and that these are mutually exclusive. This division is mapped onto a crude division between quantitative and qualitative data and methods, and a range of associated binaries such as scientific/humanistic, nomothetic/idiographic, deductive/inductive, objective/subjective, functionalist/interpretative, generalization/extrapolation and so on. The argument in this chapter has been that binaries are somewhat false and that the methodology and purpose of research is not defined by data type and method, but rather by a wider

philosophical framing with respect to ontology, epistemology and ideology.

While some philosophical approaches largely foreclose the use of quantitative or qualitative methods, others permit the use of both, and it is possible to conduct research that seeks both understanding and explanation of a phenomena. What is important then as a researcher is to develop a coherent worldview and a sense of one's ontological, epistemological and ideological positioning and to use this to frame the questions one can legitimately and validly ask, how one asks them and for what purpose. This is no simple task and involves serious engagement and reflection upon

philosophical thought. This tends to be an evolving process as ideas are mulled over, teased out and tested. It is, however, a vital process for

determining how one's research is practised and defended.

## DISCUSSION POINTS

1. Do you consider yourself a qualitative geographer, a quantitative geographer, neither or both? On what basis do you rationalize your choice?
2. What philosophy underpins your worldview and how does this shape your methodological approach to research?
3. In what ways do quantitative and qualitative data and methods of analysis differ from each other? What do those differences mean with respect to what a research study might discover?
4. To what extent can qualitative and quantitative methods be used in conjunction with each other?

## FURTHER READING

Aitken, S. and Valentine, G. (2006) *Approaches to Human Geography*. London: Sage.

A general introduction to different philosophical approaches used in geographical enquiry.

Kitchin, R. and Tate, N. (1999) *Conducting Research in Human Geography*. Harlow: Pearson.

A general introduction to the theory and practice of conducting research in Human Geography.

Multi-method research in population geography. *Professional Geographer* 51(1), 40–89.

A collection of five papers that examine the use of mixed and multiple methods in migration and population geography.

Should women count? *Professional Geographer* 47(4), 426–66.

A collection of five papers that debate feminist theory and the use of quantitative methods.