Probes, Surveys, and the Ontology of the Social

Harry Collins1 and Robert Evans1

Abstract
By distinguishing between a survey and—a newly introduced term—a “probe,” we recast the relationship between qualitative and quantitative approaches to social science. The difference turns on the uniformity of the phenomenon being examined. Uniformity is a fundamental idea underlying all scientific research but is rarely spoken about. The idea explains the different approaches to social science and has implications for monomethod and mixed method research designs. At the broadest level, it clarifies the different logics of quantitative and qualitative research and how they combine. For individual researcher, it provides a new rationale for mixing small and large samples in the same research project and, in the right circumstances, justifies efficient research designs based on small samples.

Keywords
sampling, qualitative methods, quantitative methods, uniformity, representativeness

Uniformity and the Integration of Qualitative and Quantitative Methods
Discussions of mixed methods typically contrast the “representative” nature of quantitative samples with the “information rich” properties of qualitative samples. Integration of methods is, of course, not a matter of combining numbers with descriptions but of combining the best qualities of quantitative data with the best qualities of qualitative research. Here, as well as explaining the general idea and its wider implications, we “question the assumptions of qualitative and quantitative disciplinary borders” and set out a “new way . . . of thinking [about] and producing mixed methods results” that goes beyond the pragmatic approach traditionally associated with the field. We argue that there are circumstances—uniformity of the population—in which the representative quality of large surveys can be obtained using small qualitative studies, which are naturally as representative of populations as large random surveys. We call these small, convenience samples “probes.”

As with many basic ideas, this one is at first counterintuitive and then turns out to have been obvious all along. The argument has implications for research across the social sciences and immediate consequences for thinking about the nature and practice of mixed methods. It shows

1Cardiff University, Cardiff, UK

Corresponding Author:
Robert Evans, Centre for the Study of Knowledge Expertise and Science, Cardiff School of Social Sciences, Cardiff University, Glamorgan Building, King Edward VII Avenue, Cardiff CF10 3WT, UK.
Email: EvansRJ1@Cardiff.ac.uk
that, where there is uniformity, the goal of mixed methods—integrating representativeness and depth—can be achieved in a single small study, or by a combination of qualitative methods, enabling representative data to be collected even where logistical or resource constraints rule out large-scale surveys. \(^3\) It also shows that where the assumption of uniformity does not hold for the population as a whole, but holds for some research questions, the best mixture could have three components: Surveys and qualitative studies for the nonuniform parts and probes for the uniform parts. If the right choices are made, depth and representativeness can be achieved in the most efficient way. To exemplify, in our own use of mixed method research—“Imitation Games”—we combine the probe and survey approaches within a single, integrated, research design that generates qualitative and quantitative data simultaneously.\(^4\)

**Overview of the Argument**

The special circumstances that justify a probe as against a survey are determined by the “uniformity” of populations. To take it to its extreme, if a population is completely uniform in respect of the research question(s) being asked—that is, if every member is identical—then a single member of the population will represent the entire population just as faithfully as a large sample. This idea and its consequences are what we explore here.\(^5\)

To show the generality of the question, we begin by introducing it in philosophical terms: All experimental and observational science must resolve the problem of how “tokens” relate to “types”—a particular Higgs boson is a *token*, the *type* is “Higgs bosons.” We note that large swathes of the natural sciences already operate on the assumption that their subject matter is uniform. When we turn to the social sciences, however, we find that humans can be grouped in different ways and that not all of these will give rise to uniformity. We therefore need to clarify the notion of a social group in order to decide whether the population being researched can be described uniform.\(^6\) We base our understanding of social groups on the Wittgensteinian notion of “form of life,” a combination of practice and language, which is similar to the more general notion of “culture” and its many synonyms or related notions such as “thought collective” (Fleck) or “paradigm” (Kuhn).\(^7\) To the extent that a social group shares a form of life, then that social group can be said to be uniform.

But is a social group something big like “all English speakers” or small like “all gravitational wave physicists” (the topic of one of the authors’ long-term studies)? Also, there is the problem of intersectionality. In the social sciences, populations overlap untidily: For example, populations of Christians overlap with populations of cricketers, overlap with populations of thieves, and are embedded in populations of natural language speakers. What we call “the fractal model” allows us to circumvent these difficulties so long as it is realized that the existence of fuzzy boundaries around social groups, or around any class of object, does not mean that classes do not exist. We explain both the fractal model and the fallaciousness of certain kinds of reasoning about boundaries. For the latter, we invoke the “pond–field fallacy”: The boundary may be mud but water and earth are, nevertheless, distinct.

We argue that the best way to analyze the social world is to treat cultures or forms of life as the basic unit of investigation, with individuals being seen as combinations of cultures—individuals are the molecules, cultures, or forms of life, are the atoms! That is the ontology. We explain how this works in the case of natural language speaking—all native English speakers draw on the collective way of speaking English and thus all put the verb in the middle of the sentence—and use this as a “paradigm” case, which can be referred to whenever the basic notion of uniformity and its consequences seem less than secure.

Armed with the new concepts of “probe” and “uniformity,” we clarify the foundations of small-scale qualitative research and show that such methods can support results that are not
merely “information-rich” but representative in their own right. Of course, this requires that the probe approach be used appropriately, which requires a theory of uniformity. We conclude by indicating what such a theory might look like, looking at native language speakers and expert patients and health care professionals.

We argue that the ideas set out here have always been implicit in much ethnographic and similar work, but because they have not been explicated, the relationship between qualitative and quantitative research has often been misunderstood with, inter alia, implications for mixed methods research.8 Both qualitative and quantitative research can be representative of the populations researched, the crucial variable being uniformity.

**Types, Tokens, and Representativeness**

Any empirical investigation, in any science, that is aimed at general understanding faces the problem of representativeness. That is, how well does the individual token or set of tokens (hereafter tokens) selected for examination or experimentation reveal the properties of the type that is under investigation?9 The problem has two dimensions: “error” and “uniformity.”

The problem of error is a staple topic of the research methods literature and comes in one of two forms—systematic error (bias) and random error (noise). In either case, measurement error means that the data used to represent the tokens are affected by some disturbance that reduces their ability to reveal the properties of the type. Here, we are almost entirely concerned with random error and how this affects the way tokens represent types.

The problem of uniformity, which is rarely discussed, relates to the homogeneity of the type being investigated. The basis of the entire argument of this article is the simple point that, other things being equal, the more uniform the type, the more faithfully will any set of tokens represent it. Indeed, if a population is completely uniform, then any set of tokens, no matter how large or small, and no matter how it is selected, is bound to represent it. In such cases, random sampling and the associated statistical analyses are otiose, while approaches based on small numbers of tokens are adequate. We suggest that uniformity of the population is the assumption on which all qualitative research that is meant to represent more than one case should be justified.

Unfortunately this justification has never been set out and so qualitative research has often been seen as deficient, in terms of representativeness, when compared with quantitative research.10 Of course, it is deficient where the topic being investigated is not uniform, for example, voting intentions—but instead of partitioning topics into uniform and nonuniform sets, nonuniformity is treated as the default position. Qualitative researchers are then led to defend their approach in terms of its “trustworthiness” and “authenticity,” with “transferability” taking the place of “external validity” or “generalization.”11 We believe the default position should start with the question of uniformity.12

**Uniformity and Generalization**

In contrast to the social sciences, many natural sciences start from the idea of uniformity. Objects of study such as atoms, quantum transitions, gravitational attractions, the behavior of worker bees, the mating habits of types of birds, and so forth, are all treated as essentially uniform such that any set of tokens can be taken to represent the type. When the announcement was made in 2012 that the Higgs boson had a certain mass, physicists were not worried about whether the “Swiss Higgs bosons” observed in the Large Hadron Collider at CERN were representative of all Higgs bosons. Chemists investigating the chemical properties of sodium do not worry about whether the properties of the atoms of sodium in their “test tube” differ from
those of other sodium atoms. When entomologists study the specific behaviors of worker bees, they do not worry about whether something different might be going on in the hive next door. In principle, a natural scientist pursuing such topics can explore a phenomenon or entity in great detail by examining only one token. In practice, the sample size is often greater than one but this arises out of a concern with measurement error not uniformity. A study, using a small nonrandom sample, such as is typical of these natural science cases, is what we define as a “probe” and “probing” is the right way to investigate “ontologically” uniform populations. It is also the right way to conduct those elements of a larger, mixed method, study for which the assumption of uniformity can be justified, thus generating representative data that can be integrated into the wider findings. In contrast, a “survey,” involving a randomly selected sample of an appropriate size, is required only where the type is nonuniform. One can probe gravity, or sodium atoms, or worker bees but one must survey air pollution, the weight of birds and, in most cases, voting intentions.

How Can Probes Work if Societies Are Culturally Diverse?

As researchers who are engaged in both qualitative and quantitative research, we are not interested in the rivalry between the two. Nevertheless, we have to overturn a very well-established prejudice in the social sciences so we start with a paradigm case that can be drawn on whenever there is need for a reminder of the basic argument. Consider an archetypal social practice, such as natural language speaking, and imagine that we want to discover something about the way words are ordered in different natural languages. Let us say we want to find out where the verb generally appears in English and German sentences. Despite the indefinite number of possible sentences that could be spoken in each language, and the large number of speakers of each language, and the fact that the languages are continually evolving, answering the research question does not require large, randomly selected samples of English and German speakers. In principle, a single member of English-speaking society and a single member of German-speaking society need only speak a few sentences to provide the information we need.

The easiest way to understand how this can be is through an ontology in which culture is the primary unit of explanation. A language is a collective, not an individual phenomenon, and it is this shared culture that provides the resources for mutual understanding. When it comes to natural language speaking, human beings are as, or nearly as, identical to each other as birds or sodium atoms. An individual speaker of a natural language exemplifies the collective category in much the same way as a thermometer in a beaker of liquid exhibits the temperature; the temperature does not belong to the thermometer but to the liquid. Just as a thermometer gets the temperature from the substance in which it is immersed, so a native language speaker gets the position of the verb from the linguistic collectivity into which he or she is immersed and from which language-speaking abilities are drawn. Thus, in such cases, when one examines an individual one sees, not the individual, but the embodiment of the collectivity, or set of collectivities, from which that individual is made. To avoid the problem of rare outliers, the prudent researcher would actually recruit a small haphazard selection of native participants but this does not refute the central argument. This, then, is what we will call the paradigm case of the use of a probe to examine features of a culture.

The Fractal Model of Uniformity Within Diversity

We now need to explain how collectivities relate to each other and how this enables humans to be both diverse and uniform. There are two elements to the argument. The first is that natural languages are analogous with the more specialist “practice languages” spoken by the many
different subgroups and cultures that exist within natural language communities and which describe the cultural and physical practices that distinguish one specialist community from another. For example, active Christians have a set of beliefs and practices that are reflected in their language; juvenile street gangs have different sets of practices and their own, often self-consciously distinct, languages with which to describe them; and gravitational wave physicists share both a specialist language and a specialist set of practices. There are, therefore, as many practice languages as there are social groups.

The difference between a practice language and, say, a subculture, is that the latter concept denotes a distinctive way of being that includes both a language and a set of practices, whereas a practice language denotes the distinctive spoken discourse alone. This means that a practice language can be acquired without mastering the practice, a distinction that is extremely important for qualitative research where researchers do not, in most cases, participate directly in the experiences they research (criminologists do not have to be murderers). Thus, the relationship between the paradigm case and the practical world of social science is close.

The second element of the explanation is the way in which different practice languages and their corresponding social groups are related to each other. Here we use a “fractal model” to capture the ways in which social groups and their practice languages can be found both at different levels of generality and nested within one another. At the largest scale, social groups coincide with natural languages; at the smallest scale, they may characterize small groups of eccentric hobbyists. They are embedded within one another and the sets of humans they are associated with crosscut one another. Thus, active Christians have a practice language within which are embedded the practice languages of Catholics and Protestants. Sportspersons have a practice language within which are embedded the practice languages of cricketers and footballers. Adult men have a practice language within which are embedded the practice languages of heterosexuals and homosexuals. But the languages and practices overlap and intermingle and this explains why individuals are different: They differ because they are constituted by different combinations of collectivities from which they draw. Every active Christian will be unique because some will be footballers, some will be gay men, some will be cricketers, and so on.

Figure 1 is an attempt to capture the idea that an individual is a mixture of social groups. It shows an individual who might be Christian (the dark shading), a cricketer (the dots), a philosopher (the empty shape), and so on. The large gray shape, in which all the other shapes are embedded, represents, say, native English speakers—in this case, all individuals are taken to share the same language. But a two-dimensional diagram cannot represent the model faithfully because there would need to be a similar diagram for, say, native Hindi speakers and the philosophy and cricket shapes, along with many others, would overlap both the natural language shapes—n dimensions are needed. Nevertheless, the figure intimates that to describe an individual, one must describe all the collectivities from which they draw. Of course, there are other sources of variation, such as personality and physique, but these are not the business of sociological study.

The model repeats itself at different scales, or levels, like a fractal. An English speaker may be looked at as an English speaker, as a speaker of a Northern dialect, or as an English-speaking cricketer, and so on. A similar diagram, embedded within one of the shapes, could be drawn for Northern dialect speakers and another diagram for cricketers and another one for gravitational wave physicists.

Notice that uniformity also has a relativistic component. At the high end of the fractal, all native English speakers exhibit uniformity in where they place the verb; looking down the fractal, however, they are nonuniform in respect of dialects and use of either restricted and elaborated codes. But within a dialect, they are, again, uniform and, of course, uniform classes of elaborated code users could be found and likewise for restricted code users. One may always
find a uniform group so long as one goes far enough down in the fractal or asks a sufficiently general question. Are humans uniform in respect of their religious beliefs? “No.” Are members of the Seventh Day Adventist Church uniform in their religious beliefs? “Yes.” Therefore, while it is correct to talk of uniformity as something that exists or does not exist, it is also necessary to bear in mind that one must look for the right thing in the right place. In mixed methods research, each element or population will need separate consideration in terms of its uniformity if probes are to be used when appropriate.16

The Political Context of Social Science and the Pond–Field Fallacy

A complication which besets the collectivity model and its need for ontological judgments about the nature of particular social groups is the political consequences of portraying a group as uniform. For example, in the authors’ “home” discipline of science studies, studies that draw on feminist, postcolonialist, and standpoint philosophies are increasingly common and continue a long history of using social research to support the “underdog” by challenging dominant classifications, assumptions and stereotypes.17 This kind of politically informed critique has been of immense value but the deconstruction of categories must not become an end in itself.18 The skeptical perspective is in tension with a perspective that stresses the differences—species, race, ethnicity, gender, sexuality, occupation, age, and so on—that can be used to distinguish between social groups and to understand their shared experiences. Which perspective is foremost depends on the purpose of the research. It must be possible to imagine circumstances in which the common features of social groups are the focus of inquiry or there could be no sociology.

It is also not the case that the absence of a sharp boundary between classes proves their ontological fragility as can easily be seen from the “pond–field fallacy.”19 Thus, the boundary between a pond and a field cannot be sharply defined because close examination shows that it is mud—a mixture of earth and water, which has no definable edge. The fallacy is to think that this observation licenses the conclusion that there is no difference between pond and field. But one may still drown in a pond but not in a field so that in spite of the, literally, muddy boundary, the classes, pond and field, can still be treated as distinct.20

Figure 1. The individual is made up of collectivities.
One can apply the same argument to differences between races, genders, sexualities, and species and must apply it in certain circumstances. For example, though it may be that the boundary between humans and animals is muddy in respect of language-speaking, for example, it is possible that chimps or dolphins have rudimentary language capabilities—only confusion is caused by refusing to acknowledge the enormous differences between humans and animals that arise out of the existence of language in humans and its absence in animals as a whole. Likewise, where there are systematic differences in the language and experience shared by different groups, then it makes sense to study those differences at the level of the groups that share them. Thus, in some cases, it will make sense to consider women as a social group, in other cases, it will make sense to consider heterosexuals as a social group, and in still others it will make sense for the relevant social group to be heterosexual women living in a particular location. Making these judgments is a crucial part of the tacit, craft skill of the social researcher.

The Probe and Mixed Methods

As explained in the introduction, the probe idea has implications wherever the contrast between quantitative and qualitative methods is cast in terms of the distinction between “representative” and “information-rich” data. Representativeness sometimes depends on randomized-sample quantitative methods but sometimes it does not. Using a large, random sample where there is uniformity will do no harm but it will bring no benefit and is, therefore, inefficient and wasteful. Furthermore, where probes are justified and the researcher wants to gain both an in-depth understanding and results that generalize, then qualitative research, with its nonrandom samples, is likely to be preferable for traditional reasons: “Trust networks” grow better, or only, in informal social settings.

To exemplify, Becker’s (1953) study of “Becoming a Marihuana User” should not be treated as suspect because it relied on a small, haphazard sample of respondents. It was, first, the only way to do the research but, second, assuming the probe logic was justified, as seems likely, nothing would have been gained by using a larger, random sample. Becker was implicitly using the probe logic: The tokens investigated by Becker were implicitly and, almost certainly, rightly accepted as representing the type even though they were few in number and not selected randomly. Although the example is a monomethod study, the same principle would apply to those elements of a mixed method design in which the intention was to gain representative data from a culturally uniform population.

How to Probe

There are two basic ways of probing. The first is for the researcher to become a participant in the target social collectivity and use his or her own experiences as a member of the group to provide both data and evidence of that understanding—the researcher becomes the single token that represents the type. This has been called “participant comprehension” but we would now say that the researcher has to learn the practice language pertaining to the domain. To go back to the earlier metaphor, in participant comprehension, the culturally embedded researcher is the equivalent of the thermometer in the beaker of liquid.

The second, more risky, method is to cause native members to reflect on the collectivities they draw on and articulate their understandings—to persuade the thermometers to read themselves. Going back to Figure 1, representatives of the various embedded and overlapping collectivities, when caused to reflect on their way of being, can often describe the envelope of routine social actions pertaining to that collectivity: All Christians have to help the weak; all Catholics have to believe in transubstantiation; all cricketers have to accept the umpire’s decision;
all gravitational wave physicists have to endorse the theory of relativity, and so on. The most reflective members will also be able to describe contexts where the rules can be broken or modified. Reflecting on a way of being is not, however, a straightforward matter as the example of verb placement indicates—speakers can speak their native languages without even knowing the difference between a noun and a verb, as illustrated by all young children. In such a case, it is necessary to have speakers perform not reflect. Furthermore, descriptions of a social world by its members often draw on received ideologies or myths rather than social life as it is lived. Probes must go beyond this and much of the skill of nonparticipatory qualitative research lies in knowing how to enable participants to make their taken-for-granted assumptions and practices more visible. Methods of causing members to reflect include in-depth interviews, focus groups and, a newly developed method, the Imitation Game.24

Just as with any other method of research, probes can go wrong in a number of ways. Those who use participation as an approach may fail to gain sufficient native competence to speak the practice language fluently. Observers may miss important details, interviewers may fail to evince much more than “pat” answers, focus groups may be poorly facilitated, and Imitation Games may be played without commitment. Such problems do not, however, undermine the argument any more than a badly designed questionnaire undermines the principle of survey research. Instead, the crucial question regarding the implementation of the probe idea is whether the participants can represent the collectivity, or collectivities, under examination or, to put the same point in a different way, whether or not the collectivities in question are sufficiently uniform to justify the probe approach.

When to Probe

In the natural sciences, scientists have to create settings in which local investigations can represent a more general class of behavior.25 For the social scientist, the equivalent skill is to judge how far the assumption of uniformity holds and hence how far a local investigation can represent a larger social group. In the case of mixed methods research, this same judgment is needed for each of the populations (and subpopulations) being researched and even each research question. Luckily, making judgments about uniformity is a skill that we need if we are to find our way through social life: If we did not have some sense of the uniformity and extension of the social groups, we would hardly dare go beyond our front doors. That is why we can have some confidence that we can recognize situations of uniformity and justify a probe approach in ways that have a chance of being widely accepted.

There will, of course, be cases where the justification is disputed and these, again, may overlap with ordinary life. For example, there is an ongoing argument about whether and in what respect lesbian, gay, bisexual, and transgender (LGBT) people constitute a single group with a shared LGBT identity as opposed to a set of groups, each with their own distinct and different identity.26 Our argument is that the degree of uniformity will vary according to the question being asked: The probe logic could apply to the LGBT group so long as what one was trying to understand was the general experience of belonging to a sexual minority but it would be a mistake to assume that the experiences of lesbian women were necessarily the same as those of gay, bisexual, or transgender people. Choosing to work at this more general level may lead one to ask if the uniform features might extend to a yet higher level and include other minority groups who also experience discrimination, such as religious or ethnic groups. A mixed methods study of these issues would, therefore, have to decide whether or not, for the research questions being pursued, the LGBT community could be treated as uniform, whether its constituent elements could be treated as uniform or whether each individual was effectively unique; only once these judgments were made could decisions about research methods and sampling be taken. These are
clearly difficult judgments and it would be useful to have something approximating a theory or taxonomy of uniformity. To develop such a theory will be a huge and difficult task, but here we try to provide some indications of how it might go.27

A probe is only appropriate when the research question concerns the properties of a collectivity rather than the aggregation of variations in individual behavior and when that collectivity is uniform in respect of the question being asked. To make a start, it is likely that a group will be uniform in respect of more rather than less research questions when, in network terms, it is fully, or nearly fully, connected as in the densely connected black nodes of Figure 2. Examples of such groups include local cultural minorities with strong shared identities such as those based around sexuality, religion, ethnicity, music, or sport. Such groups seem to justify the probe approach because they are characterized by dense networks of social relations in which shared participation in social practices and institutions enables members to develop a reflexive understanding of what counts as an appropriate action. In Figure 2, the left-hand diagram shows the ideal scenario, though we might normally expect a few links to be missing as in the central parts of the other two illustrations in Figure 2.

From a theoretical perspective, much more interesting is the possibility of uniformity where the population is very far from maximally connected. Verb placement is such a case since the links between nearly all the members of a native language–speaking community will be indirect, children, for example, being sparsely linked into the community. More sociologically interesting, are the “latent” social groups formed by people suffering from medical conditions, such as irritable bowel syndrome or dental anxiety, that require regular appointments with a medical specialist but who do not belong to any patient support group.28 In the middle diagram in Figure 2, the white nodes represent patients who interact regularly with one of six specialists who, by virtue of their shared training and workplace, form a densely networked group. Here, the patients are isolated from each other and so any shared understanding of their condition will be created through their interactions with the uniform medical culture. The doctors may also come to understand what it means to have the disease as a result of their conversations with the patients, but this experiential knowledge can only reach other patients if it is relayed by the doctors. In other words, to the extent that there is a joint understanding of the illness, then it is the doctors who facilitate the sharing of culture.

The question that the theory of social groups will need to answer is how like each other these white patient nodes will be: The doctors will be a uniform group but will the patients be a uniform group? It is tempting to say “no” or, at least, that they will be less uniform, because they are not densely interlinked, but the natural language example, where prenursery children will learn to speak language uniformly with all other prenursery children (e.g., in terms of verb placement) while linked into native language–speaking society only through their families, intimates that there can be uniformity without maximum social density so long as the right research questions are being pursued.

The right-hand diagram in Figure 2 shows patients each interacting with several specialists and having some interaction with each other as in the formation of a patients’ support group
(probably with denser relations between patients than is shown here). Two questions are thrown up this scenario: First, as before, would the patients become more like each other than is the case in the middle diagram; second, would there be any tendency for the patient group and the doctor group to draw apart and develop their own distinctive practice languages? In either case, however, the research questions could initially be addressed by a probe approach using some combination of purposive and theoretical sampling, with the data themselves providing some indication of the uniformity within each group and/or the need for further subdivision within a particular group (e.g., by age, time since diagnosis, and so on). In the context of a mixed methods design, these judgments about uniformity, and the theory of small-sample probes set out here, would provide the theoretical rationale for decisions about how to collect data from each of the populations implicated in the research question.

Of course, not every way of classifying people corresponds to a meaningful social group and so the probe method cannot be applied in all cases. For example, nowadays we see red-headed people trying to form a solidaristic group but it seems unlikely that they have been successful as yet. Our theory would have to explain when and in what respects such a collection of people does become a sociologically recognized collectivity and whether it is uniform, something that, in traditional terms, would be indicated by the number of participants needed for a qualitative study to reach saturation. The boundaries and qualities of “groupishness” within social collectivities thus becomes a topic in its own right.

Conclusions

We have tried to recast the relationship between qualitative and quantitative approaches to social science in way that clarifies both monomethod and mixed method research designs. The “default position” should not be that “quantitative data provide representativeness and qualitative data provide depth.” Rather, researchers should begin by considering whether or not their target population is uniform with respect to the questions being asked. Where the type is uniform, small, convenient collections of tokens are not only appropriate but also desirable because of their efficiency; we call this the “probe” approach as opposed to the “survey” approach. We defend this view by showing that this approach is implicitly adopted in much of the natural sciences, in much social science qualitative research, and by referring to the paradigm case of verb position in natural languages. Given the diversity of human behavior, we set out a model of society which shows how difference is compatible with uniformity: Diversity and uniformity are partly matters of the perspective chosen and the questions asked, but without the idea of uniformity, there could be no sociology. We show the bearing of these arguments on the way research methods are chosen and in the combination of approaches that characterizes mixed methods research. Though the recognition of uniformity is already required for social existence, we conclude that mixed methods research, in particular, would benefit from fully worked-out theory of uniformity.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: The research is supported by a European Research Council Advanced Grant (269463 IMGAME), a new method for cross-cultural and cross-temporal comparison of societies’ running from 2011 to 2016.
Notes

1. See, for example, Creswell and Plano Clark (2011), Johnson and Onwuegbuzie (2004).
2. The quote is from Fetters and Freshwater (2015, p. 116). For examples of the influence of pragmatism on mixed methods see Creswell (2003), Morgan (2007).
3. In particular, it suggests that many of the research design typologies in the mixed methods literature (e.g., Creswell & Plano Clark, 2011) are misleading in which they imply generalization requires quantitative methods.
4. See Collins et al. (in press) for a description of the methodology of Imitation Games. In the large-scale game, small samples can be justified at Step 1 when the ‘target population’ is uniform. In contrast, Step 2, which is interested in the distribution of knowledge, must be conducted as a survey.
5. In the case of a social survey, the phenomenon would reveal itself as zero-variance and a sampling distribution of zero-width. But, discovering such a thing in a small convenience sample would not show that it holds for the population as whole, so the argument for the usability of a probe has to be theoretical or commonsensical/experiential.
6. Making this judgment is a routine part of mixed methods research and an implicit assumption of uniformity underpins any use of purposive sampling where the cases studied are taken to represent something more than themselves. See Teddlie and Yu (2007) for a discussion of sampling in mixed methods research.
7. Our resource for this interpretation of Wittgenstein (1953) is Winch (1958). For “thought collective,” see Fleck (1935/1979) and for “paradigm,” see Kuhn (1962). Related concepts include “taken-for-granted reality” (Schutz, 1964); “social collectivity” (Durkheim, 1915); “comprehensive doctrine” (Rawls, 1993); “culture” (Geertz, 1973; Kluckhohn, 1962); “subculture” (Yinger, 1982); and “microculture,” “ideoculture” (Fine, 2010).
8. Bryman (2007, p. 19) notes that “intrinsic aspects of quantitative and qualitative research” are identified by mixed methods researchers as one of three barriers to integration; the idea of uniformity provides one way of bridging this divide.
9. For more on the distinction between “tokens” and “types,” see Collins and Kusch (1998).
10. As seen in discussions of sampling strategies (e.g., Teddlie & Yu, 2007).
12. For a rather different approach, see Romney, Weller, and Batchelder (1986) who put forward a statistical argument to justify small samples. They say that populations are uniform if they all answer information-based question in the same way. They argue that samples as small as four can reliably represent such populations. We agree with their argument in respect of information but are concerned with socialization and not information exchange and our argument is not statistical but “philosophical”—witness the fact that we argue that, if the right question is being asked, a single individual can represent populations. Our argument is based on the ontology of collectivities, which share tacit knowledge and from which individuals draw tacit knowledge. Such individuals may not always answer information-based questions in the same way. For example, not all members of native English-speaking populations are conscious of the fact that the verb is generally placed in the middle of the sentence even though all of them will always correctly locate the verb when speaking.
13. See Collins et al. (in press) for the authors’ engagement in both kinds of research.
14. See Collins (2011) for further discussion of this model.
15. The term “practice language” is relatively new but see Note 7 for related concepts.
16. It is this idea that is missing from the typologies of mixed methods designs found in the literature. See, for example, Creswell, Klassen, Plano Clark, and Smith (2011), Creswell and Plano Clark (2011), Johnson and Onwuegbuzie (2004).
18. See also Collins and Yearley (1992).
20. For an example of this tendency to reject the difference between two social groups or activities because the boundary between them is difficult to isolate, see the debates about the distinction (or lack of it) between “science” and “politics” that surround the “Third Wave of Science Studies.” See Collins and Evans (2002, 2007), Collins, Weinel, and Evans (2010, 2011), Epstein (2011), Fischer (2011).


22. See Becker (1953).

23. For participant comprehension, see Collins (2004). In some cases, the researcher will become such an active participant that they may acquire “contributory expertise” as well as interactional expertise but this is (a) not necessary and (b) often impossible.

24. Here, a member of the target collectivity and a nonmember who is pretending to be a member, answer questions from a “judge,” who is also a member; the judge’s task is to work out who is who. The content of the questions and “nonpretender’s” answers indicate features of the target collectivity. Each role can also be taken by a small group in which case their discussions about what counts as a good question and a good answer are also revealing. For details, see Collins et al. (in press), Collins and Evans (2014).

25. See Medawar (1967).

26. For an example of the differences within the LGBT fractal, see the tensions over the legitimacy of bisexuality and the challenge it poses to the normative monosexuality of lesbian and gay identities (e.g., Callis, 2009; Hartman, 2006; Pajor, 2005). A similar argument could be made in relation to ethnicity where Black and minority ethnic communities are often grouped together under the umbrella term BME.

27. The analysis of homophily—the tendency of people who are alike to form dense social networks (e.g., McPherson, Smith-Lovin, & Cook, 2001)—is an existing theoretical approach to the nature of groups but our starting point, growing out of studies of expertise and experience (Collins & Evans, 2002, 2007) is rather different. We start with the idea that groups of experts are formed when people come together to share tacit knowledge via a practice language—a process of joint socialization that starts with people who can be maximally dissimilar at the outset. The example we usually start with is the group of gravitational wave detection physicists studied by Collins (2011). Following this, studies of expertise and experience’s model of an expert is someone who has acquired the practice language and the tacit knowledge of the relevant social group. We also treat such things as gender, sexuality, religion and ethnicity as expertises.


29. For examples of Imitation Game research that explores the extent to which medical professionals are able to take the patient perspective see Evans and Crocker (2013), Wehrens (2014).


31. See, for example, Strauss and Corbin (1998).

References


Collins, H. M. (1996). In praise of futile gestures: How scientific is the sociology of scientific knowledge? Social Studies of Science, 26, 229-244.


