Working Papers on The Nature of Evidence:
How Well Do 'Facts' Travel?
No. 31/08

'Voice' and the Facts and Observations of Experience

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July 2008

"The Nature of Evidence: How Well Do 'Facts' Travel?" is funded by The Leverhulme Trust and the ESRC at the Department of Economic History, London School of Economics.

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‘Voice’ and the Facts and Observations of Experience[1]

Mary S. Morgan

Abstract

The facts of social sciences are ones that stem from scientific expertise, but in the social world, everyone is their own expert. Everyone lives in society, and experiences either first-hand, or closely second-hand, the same phenomena that social scientists investigate. Consequently, people are not only the subjects of scientific investigation, but are themselves amateur reflexive scientists: observing and making sense of their own experiences in social and economic affairs, And, in a democratic community, such personal experience claims a legitimate place in knowledge discussions. These two qualities mean that the observations from personal experience can not be so lightly dismissed by the social scientist, in the same way as the traditional observations of folk-lore can be trumped by the facts of scientific knowledge in the natural sciences. Yet, these facts of personal experience may not travel easily, for the possibilities of voicing that experience depend in part on the nature of the social science involved and in part on the civic epistemology of the environment within which they can be expressed. The considerations which underlie the successful articulation of experienced knowledge suggest that “voice” differs from both “engagement” and “understanding” as a way to characterize public participation in social science – as opposed to natural science – knowledge discussions.

1. Personal Experience in Forms of Knowledge

I approach the idea that a public’s social science knowledge can be understood as the observations and facts of their experience by

[1] This paper originated in a shorter paper originally entitled “Facts of Expertise and Facts of Experience” given at a conference on *The Social Sciences and Democracy: A Philosophy of Science Perspective* at Gent University, September 2006. It was heavily revised for the conference *Observation and Experiment in Science: New Methodological Perspectives* at University Da Coruña, 8-9th March 2007 at the invitation of Wenceslao González. I thank participants at both meetings for their comments. I also thank for their help: Tiago Mata, Trisha Greenhalgh, and my colleagues from “The Nature of Evidence: How Well Do ‘Facts’ Travel?” project (funded by The Leverhulme Trust and the ESRC grant F/07 004/Z, at the Department of Economic History, London School of Economics) which supported this research; and Nat Ishino for her research assistance. Comments are welcome: m.morgan@lse.ac.uk

beginning with a case that lies neatly at the intersection of the natural sciences and the social sciences, namely the well-known MMR case in medicine.[2] The Measles, Mumps, and Rubella triple vaccine is the standard vaccine, but in the late 1990s and early 21st century in the UK came to be associated in the public mind with the triggering of particular conditions including the onset of autism in children. This prompted many exhortations from the relevant state officials to parents not to forgo the vaccine on the grounds that: the vaccine was safe; that this medical knowledge was certain; and that the dangers from not having the vaccination were real. In the UK context, such medical science facts did not travel well to a public which had learnt to distrust governmental assurances about the certainty and content of scientific knowledge. The crisis also prompted further medical research, and the medical establishment in due course re-affirmed their view that there was no evidence that the vaccine was harmful or triggered these particular conditions.[3] At the end of all this, Richard Horton, the editor of *The Lancet* (which had published the initial findings relating the vaccine to the onset of the conditions based on a small sample of children, parts of the subsequent medical debates, and a partial "retraction" of the original paper) said (in a seminar) that you could not tell a mother that her child's autism was not the result of the MMR vaccine despite the negative findings of the scientific work.[4] Why not?

No doubt there are many reasons why not, for the MMR case is highly complex in its cultural, social, medical and scientific aspects and I

[2] This paper intersects with the work of two broad literatures: the public understanding of science discussions, and standpoint theories of knowledge. I discuss the former in various places in the text and in footnotes 6 and 31; the latter is only briefly referenced in footnote 28.

[3] For one particularly interesting example of this review work, see Liam Smeeth et al, 2004 (I am grateful to Trisha Greenhalgh for pointing me to this work). See also the statistical work discussed in Horton (2004); and references to other studies in both sources.

[4] Horton's comments were made at a seminar at the Centre for Philosophy of Natural and Social Science, 7th December, 2005.

am not trying to judge these in any substantive way.[5] The aim here is merely to explore the epistemic and cognitive difficulties of persuading a parent about some aspect of their child's health of which they have observed experience. On this ground, we can, at first sight, interpret this case as an example of the public's failure to understand science: the implication is that such a parent cannot have understood either the nature of the evidence or the specific medical findings. The public appears stupid and the medical profession both more discerning (about the nature of scientific evidence) and more knowledgeable (about the medical conditions involved). This aligns with the standard "deficit model" of the public understanding of science literature, here seen as a two-fold deficit, about both the content of scientific knowledge and about methods of scientific enquiry.[6] But Horton was serious and not belittling the mother in question. So the question "Why not?" still requires an answer: why can't you tell a mother that her child's autism is not the result of the MMR vaccine? What is involved in the knowledge structure of such a situation that might lead Horton to make such a statement?

First, the fact that, in many cases taken together, there is no statistical evidence for such a connection between the vaccine and the condition suggests that a relationship between them is unlikely, but does

[5] See Horton (2004) for an account by one of the main participants and Mike Fitzgerald's (2004) account comes from a general practitioner and parent of an autistic child. An example of social science research into the social and cognitive complexity of the problem from the point of view of parents is Mike Poltorak et al, 2005. For a science studies perspective, see Collins and Pinch (2005), and the DEMOS report, Jack Stilgoe, et al (2006), which concludes its discussion of the case: "While the experts and the government were noisily talking about the facts, parents were quietly asking about uncertainty." p 50.

[6] This deficit model is associated with the "public understanding of science" project, which in the UK case, arose from the Royal Society's 1985 paper of that title, though most serious scholars have found it wanting as a conceptual tool and show a healthy scepticism about the public's ignorance. For example, Ziman (1991) summed up the general situation of public knowledge about science thus: "a simple 'deficit' model, which tries to interpret the situation solely in terms of public ignorance or scientific illiteracy, does not provide an adequate analytical framework for many of the results of our research." (1991, p 101). Wynne, 1993, described the deficit model as "discredited .... more an ideological construct than a research model" (1993, p 322).

not necessarily disprove a relation between the events in one particular case. Such an inference would conflate the probability-based, population or sample level finding with a definite claim for one individual (that is, for one observation, or potential observation in the statistical data set). This is not a comment on the quality of the statistical work in this field, but a comment on the difference in epistemic scope and relevance of statistical reasoning when applied to individual cases.[7] Statistical findings and probability reasoning apply to populations and samples, and are not epistemologically fitted to give you an account of any one observation or individual case in situations – as here - where there is large amount of variability in such individuals' behaviour and complex responses in medical and social terms.

The case of smoking and cancer provides a parallel example, where there is a more accepted understanding of the nature of the problem of reasoning from statistical evidence to an individual case. Statistical evidence and reasoning on a large data base was used to uncover the positive co-relationship between smoking and lung cancer. But while the findings are based on large samples, the probability of the connection is not 100%; and for any one individual with lung cancer, there will be a particular combination of smoking and other causes and of background conditions to the onset of the disease. So, some people who do smoke don't get lung cancer, and some who don't smoke nevertheless do get lung cancer.

Of course the smoking case was of a positive correlation, and here with the MMR case, we have a negative correlation. Yet the epistemic structure of the problem remains similar. We can speculate that despite the statistical findings, amongst the total population of children who

[7] Nor does this discussion consider the very real problems that both medics and patients have in understanding probability and statistical reasoning, on which there is a considerable literature; nor the differences between different modes of such reasoning, on which there is an even more extensive literature!

received the MMR vaccination, a particularly very finely stratified sample might throw up a significant positive correlation between the vaccine and the conditions, so that a link might be made for any rare or idiosyncratic case that fell into that sub-class (as Horton himself noted, 2004, p 25). In this situation, even the most carefully constructed study that shows that the MMR and autism are not statistically related in a large sample of children does not provide a fully effective argument that disproves an apparent trigger in any one case. The epistemic structure of the situation makes it difficult to persuade a mother that her child's autism is not the result of the MMR vaccine on the basis of the statistical results.

Second, the problem also depends on another potential dissonance - in epistemic terms - between the clinical medical knowledge of doctors which is case-based, and that of medical research based on statistical work, that is, between clinical and epidemiological traditions. This difficulty was recognised in the nineteenth century when statistical arguments were first used in medical contexts. By a long traditional understanding, clinical knowledge and expertise relies on experience of a series of individual cases and this knowledge is then applied to further specific individual cases. This is the pattern that typically creates the "experienced expert". For such a modern clinician, unless their medical knowledge based on learning from the laboratory or experimental work taken in conjunction with their clinical knowledge, and their experience of this particular case, all accord, it may well be difficult for an individual doctor - in spite of the statistical or epidemiological information - to tell an individual mother that their child's autism was not triggered by the MMR vaccine.[8] Of course, the patient's (or their parents') medical knowledge is

[8] The hierarchy of "scientificity" of medical knowledge methods involves not just epidemiological (statistical) but experimental investigations of various kinds in contrast to the clinical knowledge of practising doctors with their experiential case-based knowledge of individual patients. (This may make the general practitioner also a member of the "public" in this case, though clearly one with high medical knowledge - I

even more case-based: usually they only experience one such case. The observations of such individual personal experience even in the single case may be very powerful. A mother may recognise more than her clinician the signs of *what* has happened and *when* it happened by observing two closely related events - because it is her own child, whom she knows more about and has watched more carefully and consistently than a doctor ever could - even though she may not know *why*, that is, the nature of any connection between them.[9]

This brings us to the third point: for both doctor and mother, there is no "*why*" answer in the statistical studies. The non association between the vaccine and autism in epidemiological studies says nothing about why autism occurs, and the causes of autism are little understood. If we asked the question the other way around: What would convince a mother that the vaccine did not cause her child's autism?, the answer would probably require the doctor to know and explain some already established causes of autism.[10] Thus, for both parties, having no explanation, no definite causal determinants of the condition, is a severe problem that makes it very difficult to convince a mother that her child's autism was not due to the MMR vaccine. The experienced expert: the clinician, may not have the explanatory means to trump the observations of individual personal experience.[11]

The fourth reason is to do with recent changes in the knowledge

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am indebted to Tiago Mata for pointing this out.) These different epistemic approaches have different ways of investigating causes, but it is not clear that the hierarchy of methods for finding knowledge of associations meshes well with methods for clarifying knowledge of how causes work. Thus, in the parallel smoking case, the standard account is that the epidemiological finding persuaded some people to give up smoking, but others were not convinced until the causal links were established through experimental work.

[9] See for comparison, the account of medical versus parental knowledge of Down syndrome discussed in Stilgoe et al,'s DEMOS report, p 32.

[10] For example, the idea that autism may be genetically related has a long history, but the evidence is still being gathered (see Olga Amsterdamska, March 2008).

[11] Ziman's general claim seems apt here: "It cannot be assumed that their [the public's] formal ignorance of science makes them quite unwise in their actions." (1991, p 103.)

relations between doctors and patients. Medical knowledge is no longer compellingly authoritative in the UK and patients are more demanding in their requirements. On the one hand, patients have been rebranded as consumers and are expected to make informed consumer choices. Medical treatment occurs in a market place inside and outside a state provided service.[12] The consumer rights of patients gives them the power (oftentimes only nominal) to pick and choose amongst a set of medical "services" provided by the various medical practitioners. On the other hand, doctors - particularly at general practice level - have become less "all-knowing" and other sources of information about treatment (the internet etc) have to some extent made the information relationship more even. Patients have not only the power to question, but to research and bring their own findings from the publicly available knowledge about medical science to the consulting room.[13] Changes in information and in culture have combined to alter the accepted boundaries of knowledge, and so power, between doctor and patient in terms of legitimate discussion about scientific knowledge as well as to choices and rights to treatment. These changes in the personal relations of knowledge between doctor and patient have made it not so easy for a doctor to say with easy authority to a mother that her child's autistic condition is not due to the vaccine. And, on the other side of the relationship, the increased expectation that patients (rather than doctors) will be the ones to make responsible and informed medical choices gives parents particular worries where that responsibility is their child's future health. Recent

[12] Of course, the history of medicine is largely a history of a market, which only turned into a near state monopoly in the UK after WWII. Although some "private" (ie market) medicine continued in the intervening years, the state monopoly is now turning private again. For an interesting discussion of the implications of this pertinent to this argument, see Downie and Randall, 2008; I am grateful to Erika Mattila who brought this paper to my attention.

[13] This phenomenon is known as the "expert patient" in health policy circles (again, thanks to Trisha Greenhalgh for supplying this point). See the discussion of general practitioners' responses to this development in the Stilgoe et al,'s DEMOS report, p 41-3.

changes in the way we think about medical knowledge no longer treats it as “other” knowledge - knowledge that only scientists understand and therefore make decisions about. Rather it has become an area of shared responsibility and sharing of knowledge.

2. Personal Experience and the Experienced Expert

Understanding the epistemic structure of the situation in which an informed doctor cannot tell a mother that her child did not develop autism from the MMR vaccine gives insight into another set of cases, which share some of the same characteristics, but in the social sciences.[14]

The BBC often has a science slot in its early morning Radio 4 news. If this is a natural science story - the scientist is interviewed, and questioned about his/her discovery and is asked to explain his/her work and its potential relevance, usually with a certain deference to his/her particular and superior knowledge. If this is a social science or medical treatment news item, there is less deference to the learning of the scientist interviewed, and there is nearly always someone else brought in to provide “balance”: usually a non-scientist - ie a single mother, a social worker, a teacher, a parent, a charity worker, a patient, or so forth. The BBC format pits the expert from NICE (the UK National Institute for Clinical Excellence) vs the patient as they do the education expert from a university vs the parent or school governor of a school. This BBC habit of pairing scientist and non-scientist may be interpreted as an example of a

[14] I concentrate here on the knowledge of personal experience versus that of the scientist, but there are other characteristics that these social science cases often share with the MMR case. For example, both the MMR and the smoking case were characterised by difficulties in applying the science of the population to individual cases. Exactly the same thing can happen in economics, where the individual observations of statistics travel easily into the aggregate, but it is not so easy to reverse this. Den Butter (2007) provides relevant examples of this “road back from macro to micro” (p 223), such as the problems of applying measures of inflation relevant at the general level to specific kinds of households (such as pensioner households).

double standard in which natural sciences are understood to make or discover *knowledge* compared to the less effective and objective social sciences, and so the provision of an alternative voice in these circumstances seemed to be for the purpose as ensuring a balance of *opinions*, as in political interviews and debates. No doubt there maybe some element of this "two cultures" divide.[15] But following the discussion above, I now understand what is happening here somewhat differently, for these BBC social science enactments have the same structure as the MMR situation depicted by Horton. These second interviewees brought in to confront the scientists are not "lay" persons with opinions: this is the wrong label. Rather, they are individuals with personal experience, or they are experienced experts, in the field of the social science and its knowledge sets.[16]

A good example of this BBC news genre - in medical science - occurred on 27th October 2006 when a respected medical scientist, Dr Tom Jefferson, was interviewed about his findings on the efficacy of influenza vaccination (to be published the following day in the *British Medical Journal*).[17] He argued that there was currently insufficient evidence, based on his survey of a wide set of investigations, that flu jabs worked sufficiently effectively to justify the policy of annual widespread vaccination against the flu. He was paired in the science slot with Mrs Fish, who suffered from asthma, and had had flu vaccinations annually for 12 years. She reported having experienced no respiratory/chest infections

[15] I thank Tiago Mata for bringing to my attention Dunwoody's 1986 paper about the coverage by science writers of the social sciences.
[16] I am told by my colleagues at the University of Amsterdam that similar pairings occur in the Dutch news media, for example, see footnote 47.
[17] The pairing can be heard at the BBC News Section, "Listen Again" facility for 27th October, 2006, 7.34 am. available at: http://www.bbc.co.uk/radio4/today/listenagain/listenagain_archive.shtml Jefferson was writing as "co-ordinator" of the vaccines section of the influential Cochrane Collaboration; his survey of the evidence is found in his 2006. He also featured in the MMR debate by writing critically of the methodology of adverse event studies; see D. Price & T. Jefferson, 2002.

during that period compared to frequent ones in the years before. In the interview, Jefferson stressed that the evidence was weak on certain groups (the elderly), and not always consistent when taking account of different background medical conditions, and those in different living circumstances (eg nursing homes versus the community). His science based evidence did not actually contradict the personal experience of Mrs Fish and it was clear that he recognised the validity of her experience. At the end of the interview, he was asked what has become the standard question in these interchanges: "If you had an elderly mother who'd been going to get vaccines each year, would you be advising her to get it this year?" to which he replied "It's a personal thing. I wouldn't."[18] The question immediately makes the case a non-abstract, personal, one to match the experience of Mrs Fish, but in the British context, its use indicates both the public lack of trust in the scientific knowledge and an associated willingness to see personal experience as offering some equally valid knowledge. It is worth noting also that in these situations, there is no such catch question to Mrs Fish, for an interviewer cannot possibly cast doubt on her experience except by casting doubt on her truthfulness.

What is there about the structure of these situations which allows this recognition of the validity of personal knowledge, a recognition that we find also in the social science interviews? First, there is the mismatch between the epistemic scope of the scientific work (a meta-survey of the existing research findings) being reported and the personal experience

[18] Although the interviewer's motivation here may have been to establish "balance" by finding a divergence between the scientific and personal knowledge, this did not occur and the scientist and personal evidence, listened to carefully, did not conflict. Nevertheless, the question was an important one in this context, and might be called the "Gummer question". This is named after a government minister who asked his daughter to eat a beefburger in front of the TV cameras in order to persuade the British public that beef was safe to eat during the BSE (mad cow disease) crisis. Of course, as it turned out, it was not safe and the event has ever since typified the British public's reason to mistrust scientific expert judgements when heavily endorsed by the state.

expressed on the subject considered. In equivalent cases of social science knowledge, much of the social science work reported is either statistical work or survey work. Survey work is an interesting combination of the personal with the statistical: asking sufficient people about their experiences to enable statistical analysis to be done with the answers. In these radio interchanges, the social scientist is rarely faced with an individual actually included in the survey (for such surveys respect the anonymity of the respondents), but rather by a person from the set of people who might have been surveyed, or by a worker who works with such a group - for example of drug addicts, of single parents, of adoptive parents, of pensioner households etc. In both these kinds of one-to-one exchanges, the individual experience is set against the social scientists' knowledge of the population or sample surveyed. Such survey work is presented as the more obviously scientific method of knowledge gathering, but in these BBC set-ups, as in the Jefferson-Fish interchange, it is not seen as necessarily providing a more legitimate mode of knowing or of producing a more salient piece of knowledge. An example of this juxtaposition was the pairing of Professor Sue Hallam reporting her survey on the musical instruments that children chose to play with a successful female trumpeter, Alison Balsom.[19] It seems, according to the social survey research, that children choose musical instruments pretty equally in their primary school, but by the time they reach secondary school (or by age 11-12yrs) a gender difference has set in (eg boys choose to play brass instruments, girls woodwind ones). The discussion was about how, when, and why, this occurred, comparing the survey findings with the individual experience of Ms Balsom. Once again, both sides of the pairing found ways to show how their knowledge and

[19] This pairing occurred on 11th April, 2008, 7.42 am (see footnote 17 for web-reference). Hallam, a professor at the University of London's Institute of Education (and sometime professional musician) researches issues of musical education. Her paper is Hallam, S., Rogers, L., & Creech, A. (2008).

experience were complementary rather than contradictory.

So, what exactly is the knowledge set against the scientific knowledge here? My second point is (as with the medical case) to suggest that the alternative knowledge responses are not based on ignorance or stupidity - rather such knowledge is personal knowledge of experience.[20] The facts of social sciences are ones that stem from scientific knowledge, but in the social world, everyone is their own expert. Everyone lives in society, and experiences either first-hand, or closely second-hand, the same phenomena that social scientists investigate. Everyone acts in the market place, has experience of working, choosing what to buy, and so forth. Everyone has an education, knows someone who is a single parent, or is a pensioner. Everyone has seen police in action, entangled with bureaucracy and dealt with corporations, if not directly themselves, at close hand to someone else. Consequently, people are not only the subjects of scientific investigation, but are themselves observing and making sense of their own experiences in social and economic affairs. Just like individual parents who watch their child, personal observations and personal experience creates both some kinds of factual knowledge and some insight into relevant relationships.

Very often, the “non scientist” in such pairings may be an individual who has long experience of working with other people and so they draw on a range or set of repeated experiences: a teacher with twenty years experience of five year olds in a classroom; a social worker with years of experience of housing problems; etc. This results not in one individual case-based knowledge to be set against statistical knowledge or survey-based scientific knowledge. Rather, in such experienced people, we find

[20] To use the term “personal knowledge” requires a reference to Polanyi’s *Personal Knowledge* (1958), though this paper has been more informed by his *The Tacit Dimension* (1967). My sense of personal knowledge might be understood as lying between the personal and articulated nature of scientific knowledge discussed in his former book and the un-articulated but individual knowledge of his latter.

a somewhat broader personal knowledge, not the scientific knowledge of a social scientist, but akin to the many-cases knowledge of the clinician, an accumulated knowledge: so the personal knowledge on offer is the knowledge of experience of someone who, in their daily life, is a professional dealing with such experiences, ie, the experienced expert.

Because it is personal and experiential, such experienced expert knowledge may sometimes be labelled in these interchanges as "opinions" by the professional social scientist as a way of downgrading its legitimacy and validity, but this is clearly a rhetorical strategy. Nor is this knowledge expressing "values", ie, left or right political values, or about ideological elements. (This is not to say that these are not involved; rather that, in the fields of social science, such elements are equally found embodied in the knowledge of the professional social scientist.[21]) Nor are we talking about "tacit" knowledge, the kind of personal craft knowledge of materials and technologies that is revered, but remains mysterious precisely because it can not be articulated. Rather, this social science experiential knowledge of the experienced expert is a personal but articulated knowledge of facts and relations; it is the kind of knowledge that - gained under careful observational circumstances, or from long-standing interaction with the circumstances and cases - can be quite well articulated and analysed. Indeed, judging by the BBC science slots, such experienced expert knowledge is often better articulated than the knowledge held by the conventionally labelled "scientist"! Such knowledge obtained from observation and experience is not a folklore category, rather it refers to a method of acquiring scientific knowledge that goes back to the Baconian tradition (way before the method of experiment developed in the seventeenth and eighteenth centuries, while statistical evidence and reasoning became an acceptable scientific way of finding knowledge only the nineteenth and twentieth centuries).

[21] For a classic statement, see Schumpeter, 1949.

Of course not all social scientists have the same kinds of methods. Some social (and human) sciences are particularly dependent upon methods of careful observation: ethnographies, case work and survey work. These modes of research are either consistent with individual experience (for example case work dominates management sciences, some areas of sociology, and history) or privilege personal experience (survey and ethnographic work in sociology, psychology and anthropology). Other social sciences have tended to eschew the individual experience and been more heavily dependent - as economics - on statistics and models.[22] Scientists in fields which privilege personal or self-reporting accounts, or operate ethnographically may be more likely to accept the personal knowledge of individuals. Those that operate through more technocratic methods - as economics - are less likely to do so, and indeed, professional economists are rarely faced at the BBC with an opposing personal knowledge account as are sociologists. Instead, the BBC prefers to conduct single interviews of a professional economist from either academic or business life, or to enact a debate between those with similar knowledge levels.[23] Stephen Turner's observation that economics, despite its technocratic nature, has a weak cognitive authority is relevant here.[24] Jokes about economists who say to any question "it all depends", or that "ask any two economists and you will obtain at least three solutions", are one aspect of this weak cognitive authority. If one doubts this, a simple comparison between the way medical authorities pronounced on the MMR vaccination crisis and economists on the 2007-8

[22] A new interest in the directly expressed individual economic experience in the work on "happiness" and in behavioural economics is returning economists to the survey method last used in the field in the late 19th century.
[23] Business people are treated by the BBC more like politicians, to be questioned not for their knowledge, but to account for their actions, for example in allowing prices to rise, or for giving loans too easily, or not easily enough. Their personal experience is seen as an expression of self interest, not as experience relevant to knowledge questions.
[24] Stephen Turner, (2001), p 132.

financial crisis is instructive. Whereas members of the medical establishment pretty much agreed amongst themselves in the former case, in the latter case we see this weak cognitive authority in the way that the media often produce several different academic and experienced economic experts, who discussed different symptoms, gave different diagnoses, offered different treatments and dissected different elements of what they all considered a complex economic crisis.

Yet, even in the field of economics, we can find spaces in the media where personal experience and experienced experts are given voice in the same public domain. The single most important economic policy moment in the UK year is the annual "Budget". This is not just an accounting of forthcoming governmental income and expenditures. Rather, it involves documents and a speech by the Chancellor (the chief economic and financial minister and usually the second most powerful political figure after the Prime Minister) which survey the current state of the economy, forecast its future path, and announce a wide range of economic policy changes for the forthcoming period. In its coverage of this event, the serious UK newspapers have developed a mode of reporting which manages to be both educational and informative while reporting the analysis and responses of both scientific experts, experienced experts, and a range of personal experiences. Even the *Financial Times*, generally regarded as the most focussed on economics matters, follows this path. In the 2007 budget, for example, it gave space to three of the most senior policy economists in the UK for their "viewpoints" in which they gave general but critical comments on the budget.[25] Experienced experts appear equally with academic economists

[25] In "Three economists give their viewpoints" (22/03/07, p 11 of Budget Supplement); the economists were Robert Chote, Director, Institute of Fiscal Studies - analytical; De Anne Julius, Chairman of Chatham House (and ex Bank of England Monetary Policy Committee and ex professional business economist); and Martin Weale, Director, National Institute of Economic and Social Research.

in particular analyses. Thus, an article on productivity and the budget quoted two professors of economics, while one on growth used two business economists (considered both professional and experienced experts in these contexts). An article on the economics of science involved comments from leaders of science lobbying groups, university commentators, the President of the Royal Society (the most prestigious science body) and the union leader representing technical workers in science. An article on low income families incorporated interview material from the heads of the main charities involved, namely One Parent Families and the Child Poverty Action Group. All these different academic and experienced experts were given equal status in the way their knowledge was reported.

None of this is surprising given that the *Financial Times* is aimed at those who are professionally interested in these matters. It is more surprising however that the knowledge of personal experience was also brought in and given direct expression in the pages of the *Financial Times*, in ways which seems to be specific to its budget coverage. This was not just the personal experience of those in the business community, which was well covered with columns of quotes (for example on research and development or on investment) under the headline “Business Speaks”. More space was actually given to an alternative set of reports offering insights from a greater variety of personal economic experience under the heading: “My Budget”. Each of these boxed items contained a photo, and an account, from one of a series of individuals.[26] These people were named, but also labelled:- the chief executive, the manufacturer, the environmental campaigner, the entrepreneur, the professor, the health service worker, and the pensioner. Each person was interviewed by an “economics reporter”, and given space to react with an analytical and

[26] Each was from the same marginal parliamentary seat, though not much was made of this point.

critical stance to the budget, and to reflect not on their own position, but as someone who held specific personal knowledge according to their given labels, eg whether the budget was helpful for the environment, or the National Health Service, or for pensioners in general. The *Financial Times's* 2008 coverage employed the same device and reported some trenchant and insightful criticisms from its chosen people: the tailor, the regeneration specialist, the professor (a university leader), the commuter, the pensioner, the brewer and the entrepreneur. "The brewer" pointed to a failure to use economic policy to affect a big social and health problem: "You do despair. We have been getting lots of lectures about tackling binge drinking and had been looking for some long-term vision from the government. But lifting duty [tax] across the board just raises more cash for the government - and will not prevent drink being sold by supermarkets as a loss-leader." "The entrepreneur" commented, succinctly but equally effectively on the £60m set aside for training: "It doesn't seem like a lot of money to train a country."[27] In other words, these people were using their personal experiences and specific working knowledge to give a response to a general policy decision.

The Times offered something similar, presenting a double page spread under the heading "The Jury" (22/03/08, p 10-11). These eleven people (with their households) were first described according to their economic situation (their occupation, age, income, and main assets,), and they were clearly chosen to represent a cross-section of individuals in the economy:- small business owner, professional couple, single pensioner, young professional, tradesman, nurse, retired couple, student, single mother, disabled worker, and company director. After the description, each provided a "verdict" about the budget impact on them, and on something general that they had experience of: for example, the "disabled worker" commented favourably, not on disability benefits, but on

[27] The *Financial Times Budget 2008*, Thursday March 13th, 2008.

increasing money to defence (because she had three sons who were in the forces), the nurse discussed investment in the NHS, but noted that more money was unlikely to be spent on what she thought were the right things (buildings and cleaners).

What we find here then is the use of individual people labelled by the characteristics of their household or their occupational or their geographical position, and given the chance to offer insights from their own economic experience into some of the details of the economic policy in the budget. What kind of representing quality do these chosen few share? It seems not to be occupational classes according to our normal socio-economic characteristics, nor does it seem to be any statistical notion of representativeness (that is, there is no sense in which tailors are a statistically significant class of workers). Indeed, these labels seem more like a modern version of the children's counting rhyme: "tinker, tailor, soldier, sailor, rich man, poor man, beggar man, thief" - a cross section of occupations and income, rather than a well accepted set of categories of people.

The notion that these people are chosen and act like a jury captures the notion of representation going on here. These selected individuals represent a range of economic experiences and socio-demographic characteristics, and, having heard the Chancellor's speech, give their verdicts. But they do not directly represent economic classes nor always give comments that reflect an occupational or income group that they come from: it appears that they are not chosen *individually* for their representativeness, but *collectively* for their ability jointly to represent the public voice, the voice of an economy rather than a society.[28] And, as

[28] This account of voice has much in common with standpoint theory which also provides an epistemology based on personal experience. This discussion of juries may have clarified a difference in emphasis here: the individual speaks not as a member of a particular group because of certain shared characteristics with other members of that group but rather as individuals, or experienced experts, with a range of personal

in a legal jury, their verdicts can not have been made on hearing just one expert witnesses, in this case, the Chancellor, for this would not be enough evidence for them to make the critiques they do. Rather, as in other juries, they each judge his analysis and his policies by weighing up his Budget's claims against their own lifetime experience and understanding of the economy.[29] They are not a lay public commenting on an economic matter, but a economic jury of citizens, using their experiential knowledge of the economy to judge - on behalf of their peers, ie citizens - the adequacy of the analysis and policies for the future of the economy.[30]

3. Epistemology, Experience and Voice

What enables such personal and experienced-based knowledge to gain voice in the public sphere. It is important to stress here that my question is about the articulation of personal knowledge from experience by participants in the society and economy. It is not about the attempts to understand science made by a public who are generally defined and framed, in the literature on natural science, as an audience or consumer of science. There, it is generally assumed that the public cannot fully understand and participate in that same knowledge space as the scientists because it is knowledge of another kind of content and acquired

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experience relevant to a particular question. (See Anderson, 2007, in the *Stanford Encyclopaedia of Philosophy* for an introduction to the literature on standpoint theory in the context of feminist epistemology.)

[29] This account of using the knowledge of personal experience in providing "a jury of peers" contrasts with the discussion of lay juries (ie non expert) for science policy decisions, see Robert Evans and Alexandra Plowys, "Listening without prejudice? Rediscovering the value of the disinterested citizen", website paper p 17-18 downloaded on 26th April, 2008: http://www.cf.ac.uk/socsi/contactsandpeople/harrycollins/expertise-project/expertisepreprints.html#listening

[30] How these token economic citizens are chosen is an interesting question raised by Tiago Mata.

in another way, that they, by definition, do not hold.[31] Nevertheless, the literature on public engagement, rather than understanding, does prove useful in clarifying certain issues of the public's knowledge of social sciences.[32] We can investigate the knowledge gap between the public and the traditional sciences in terms of three elements in science "its intellectual contents, its research methods, and its organizational forms of ownership and control".[33] This triad is equally useful in considering the relationships between the knowledge of the experienced expert compared to scientific knowledge in the social sciences. While the knowledge of experienced experts maybe about the same stuff as that of social scientists, their research methods may be different and the mode of organisation will also likely be different.

There are scientific fields where amateur scientists can still claim discoveries and make valid scientific contributions: the amateur botanist perhaps or the amateur astronomer. These sciences are in part dependent on meticulous observation and description by the individual working on their own, observing particular aspects of the world with

[31] See also footnote 6. Science studies tend to treat public engagement with science as an engagement with "the other": the public are not the scientists and do not have the scientists' knowledge and so must always effectively remain in some deficit. The discussion about expertise and experience in these circles is sophisticated, yet the base assumption remains that the experience or expertise of the lay public must be qualitatively different than that of the scientists because the content of the sciences are about *something other than them as people, or their experience, or their social arrangements*. (Of course, this important assumption is the very one that does not hold here.) Thus, even where there is recognition that there may be groups with relevant expertise or experience, it remains knowledge that has to be constructed or found - not experienced, and so of something that remains "other". References and recent reviews of this literature are found in Harry Collins and Robert Evans (2002) and in the various responses to it by Jasanoff, Rip and Wynne (all 2003).

[32] Brian Wynne's work is particularly useful for he tends neither to privilege the status of science and scientists, nor treats such scientific knowledge as an other kind of knowledge, nor assumes an unbridgeable ignorance in the public (see Wynne, 1991, 1992, and 1993). Another exception, and one of the few treatments that pitches this issue of cognitive authority in the context of liberal political traditions, and without treating the public as "the other", is offered in Stephen Turner (2001).

[33] As Wynne suggests, (1991) p 120. His distinctions seem obvious, but like all obvious distinctions, they were and remain immensely useful in sorting out confusions: they help to locate exactly where the public mis-understanding or mistrust of scientists lies in any particular case.

patience over long periods, taking note of variety and of changes in the most ephemeral of things and of the smallest of deviations in the natural world that surrounds them. Some sciences indeed have been historically dependent upon such contributions of amateur scientists. These amateur scientists have followed the *same kinds of knowledge paths* as their professional colleagues, they are specialists in somewhat the same kinds of ways. It is these same grounds that give them voice in the scientific world.[34]

In the social sciences, there are people who work in this same kind of way as in these natural sciences, observing with patience the particularities of behaviour of people, social events, cultural changes, economic cycles and so forth. But, in contrast to amateur astronomers, such amateur social scientists rarely claim expertise in the scientific ways of knowing recognised by social scientists. They do not know about social science from using the modes of social science research: surveys, event studies, statistics, modelling - rather, they know things about society and economy from personal experience because they live in the world, they observe that world, and they interact within that world. Such events and behaviour are not separate objects to be studied from afar, but part of their life. The characteristics of such personal knowledge fit ill with the stereotyped "deficit model" of the public understanding of science project, which fails to have quite the same resonance in dealing with the social sciences as with various natural sciences. The fact that everyone lives in society and knows something of it, mean that the facts about events and relationships drawn from personal experience cannot simply be dismissed as ignorance just because they are not known through the methods of science.[35]

[34] The ways in which such amateur scientists' knowledge intersects with professional knowledge is of course a complex matter; for an example especially pertinent to this paper, see Anne Secord (1994).

[35] This is perhaps why economists like counter-intuitive findings so much, because they are less likely to accord with personal knowledge, which can then be seen as

We may hone this idea of personal knowledge in the social sciences further by contrast with other characterizations of personal scientific knowledge based on experience. Brian Wynne outlined the notion of "lay expertise" based on his research with the hill farmers of NW England during the period after the Chernobyl disaster.[36] The knowledge of farmers was presented as complementary to the knowledge of scientists dealing with the effects of the fall out: they had different kinds of knowledge and about different aspects of the problem of how to decontaminate the sheep from nuclear fall-out. The farmers' knowledge was a personal craft-based knowledge, articulated in the sense that it was shared and discussed with other farmers and equally applied in their own decision making (in the same way as mothers share similarly acquired knowledge of their children's health). The contrast I want to point to is that such "lay expertise" (eg of how lambs behave, how farming goes on) is seen as complementary knowledge to the "scientific expertise" (eg of the life of radioactive fall-out) because they are different not just in origin - how that knowledge was acquired - but in content. Such personal knowledge can thus be dismissed by natural scientists on two grounds - content and method. In contrast, in social science cases, although the personal knowledge and the scientific knowledge may be differently acquired, they are not necessarily different in content. The parent whose child is taught spelling and reading by phonetics has experience which may agree with, or may contradict, the findings of the educational specialist who researches how learning by phonetics occurs using social scientific techniques of investigation. That is, it is knowledge about the same problem, even though differently acquired.

We can get a bit closer than this to the way these two different

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folklore (for example, J.M. Keynes in the Great Depression advised people: don't save for a worse rainy day, go out and spend!).

[36] See Wynne, 1992.

sources of knowledge - personal knowledge from experience and scientific knowledge - fit together in social sciences. I return again to commentary by Wynne (1991), for while his discussion is oriented towards more traditional fields (for example, of the knowledge held and used by patients and families about a specific medical condition, or by local communities about the variability of local pollutants), his findings prove particularly relevant to the claims made here about the social sciences. He observes that the extra knowledge about a particular situation or condition held by such individuals and groups is often "more specifically accurate" about that problem even while "less generally authoritative" than the knowledge held by professional scientists. This more specifically situated knowledge may even "confound formal scientific authorities" and "come into conflict with the generalized claims of the more remote technical specialists".[37] And, as he noted, the content of this additional knowledge from personal experience even proved sufficiently close to that of the scientists to be used by these personal or experienced experts to measure or judge the quality of the knowledge offered by scientists.[38]

These characteristics of personal experience are likely to be more generally relevant to discussions of the social sciences where there is likely to be a much wider base of knowledge based on experience than in cases based on natural science and their technologies. Wynne's finding are certainly consistent with my examples of personal experience knowledge of social sciences reported in the print and radio media discussed above. In these, it seems that knowledge from experience consists of facts about situations and events, and some understanding of relationships, the kind of knowledge which can be built up without necessarily having the theories and concepts that we

[37] Wynne, 1991, p 114 and 118.
[38] This process in turn depends on people's social and institutional experience of such interactions with scientific experts (Wynne, 1991, p 115).

associate with scientific knowledge and which allow scientists to make more general claims. As we would expect, the knowledge of personal experience is less theorized and less conceptualized than the knowledge from the scientific community.[39] This does not mean that social scientists rejected the situated knowledge of experienced experts as inaccurate. In the cases I have reported, for example, the flu vaccine and the musical instruments cases, the academic expert and the person with experience did not confound or contradict each other (though in the former case, there was the potential for the evidence of personal experience to be inconsistent with that from the expert; as it was, his evidence was inconclusive) and when we listen to them carefully, we find that the scientist was able to accommodate the specific personal knowledge within their wider more general knowledge.

Where then lies the difference between my notion of voice and that of public engagement? The significant point about the voicing of personal knowledge in the social sciences is that it comes from a general democratic right of the expression of social and economic experience. Amateur social scientists – both ordinary individuals and experienced experts - claim a voice in the social scientists' account of that world not from following a social scientific mode of enquiry (as their botanist and astronomer cousins do) but because of their position as citizens in their own society: everyone has the right to be expert in their own experience and to express it. If someone has been ill-treated by the police, they have a right to say so; if someone has personal knowledge of drug addiction through working in rehabilitation, they have a right to share in discussion on that topic. In a democratic society and economy, everyone has a right not just to express their *opinions*, but to evaluate

[39] My reflections here rely on a close listening and reading of the media uses of personal experience, rather than any ethnographic or survey of experienced experts in the social sciences. There seems much less work done on the public understanding of social sciences and its manifestations than on the natural sciences.

and tell their *knowledge* - the *facts* of their experience of the social, economic and political world. Thus, the voicing of experience (from individual or accumulated experience) comes from the right of expression in a democratic society; from the rights of citizens to use their own experience to argue about political, economic and social arrangements that affect them, their clients, their students or their children, directly. And, as political and economic rights are extended into other domains, eg medical ones, then those rights of the expression of experience follow on. Remember the case of Mrs Fish - she cannot be called a liar by the BBC interviewer, but nor by the medical expert that is lined up against her, even if his wider and more general evidence had been sufficiently strong to be contradictory to the facts of her personal history. Such personal experience knowledge has not just a legitimate claim to be voiced, but to be listened to.

These citizenship claims to articulate the knowledge of economic and social experience are both stronger and more generic (less specialised) than the rights associated with the notion of stakeholders, which seem more like property rights. Again, a comparison with the sheep farmers case is instructive. As Wynne presented that case, the scientists were unable to take advantage of farmers' significant lay knowledge in the behaviour of sheep and economics of hill farming to make their own scientific knowledge relevant and effective and thus reduce their own scientific ignorance about how to decontaminate the sheep. And while the farmers felt their specialist knowledge had a right to be expressed and wanted to make use of it to save their own economy, its expression was mired in difficulties for both sides in dealing with each other. Farmers found the power of the bureaucracy over their decisions, the scientists' modes of decision making, their own lack of trust towards the scientists, and the community relations that the hill farmers had with the workers at the Sellafield nuclear plant, all

intervened. The scientists faced their own parallel set of constraints in communicating with the farmers. Neither side were able to articulate their knowledge to each other in such a way as to solve the problems they faced in an effective manner. While Jasanoff (2003, p 392) has interpreted the failure of both sides to use their complementary knowledge as due to their radically different ways of understanding the world, Wynne's three way distinction (noted earlier) suggests that the lack of communication between these groups came not from their different knowledge sets, nor their different ways of knowing such knowledge but from the distrust - based on experience - by the sheep farmers of the institutional set up of the nuclear science knowledge and, on the scientists' side, by the lack of an institutional basis for the farmer's knowledge.

Yet this last interpretation undervalues the stakeholder rights of the farmers to express their own experience - this was not just a matter of safety of themselves and their families, but of their economic livelihood, a right that seems to have been hardly recognised by the scientists. Why didn't the sheep farmers make their stakeholder knowledge heard? There are many occasions in which stake-holders' rights, voices, and experiences, are brushed aside in the economic world, for example, by capital holders who believe a firm belongs only to them and ignore the rights and knowledge or their workforce or the experiences of their pensioners. Stakeholder rights nearly always overlap with the rights of others, which is why their expression is so often resisted. But even when not resisted, such experienced knowledge claims are expected to be expressed within the terms and limits of those stakeholder rights. For example it is a legitimate right of workers to express their personal experience of the pay system in their company, and so those paid below the minimum wage are expected to report their employers for not doing so (though here, as in many other

such situations, the relative power of those involved will intervene to prevent that expression). Yet their rights to voice other aspects of their knowledge which might be regarded as beyond their particular stakeholder rights, for example, commercial secrets about a production innovation, would generally fall outside this legitimate range of expression. That is, the expression of such personal experiences are usually restricted to those aspects of knowledge defined as relevant to the particular interests of such a stakeholder (which is why they carry the intuitions of property rights). Thus the problems of "whistleblowing" arise where the interpretation of these stakeholder rights differs between the company (or state) and the whistle blower: where the organisation may regard the voicing of such personal knowledge as dangerous and inappropriate and the whistle blower may have the view that it is dangerous and inappropriate not to voice the knowledge - for example about pollution caused by the company's activities.[40] The classical economic analysis of such problems suggests that the choice that the individual must make is between leaving the situation, expressing their knowledge as a way of changing the situation, or staying and keeping quiet: exit, voice or loyalty.[41]

In contrast, the citizen's legitimate expression of personal knowledge of social and economic experience is restricted only by general social conventions (expressed, for example, in the laws of

[40] In many countries, as in the UK, civil servants are covered by an Official Secrets Act, which stops people voicing their knowledge acquired as civil servants, a particularly problematic blanket charge which, nevertheless, proves my point that citizens will otherwise take this expression as a right.

[41] This choice - for individuals in failing institutions such as firms or states - has been analysed most memorably in the social science literature by Albert Hirschman in *Exit, Voice and Loyalty* (1970), where he associates voice with both stakeholder rights and with citizenry rights. In my account here, voice is more narrowly defined as the articulation of knowledge, not a choice of actions. Of course, there are other reasons, often more powerful, such as the relative funding which opens or closes access to media, courts and so forth that limit the effective expression of personal or experienced knowledge and restrict the travels of that knowledge to the relevant communities or decision makers (see for example Oreskes, forthcoming, for an example from climate science).

slander and libel). This makes such knowledge potentially more powerful in a very particular sense. Voice: the citizens' articulation of experienced knowledge, is not just an expression of such knowledge but - because it is unrestricted - contains the power and gives the means to question the framing of the issues and thus to contest both the questions and analysis offered in the social scientific research. To take one of our earlier examples, whereas the academic expert Sue Hallam was worried about the negative aspects of gendered decisions by children (such as the likelihood of boys who chose to play the flute being teased), Alison Balsom, the trumpeter, effectively reframed the question by turning it around onto the positive aspects of being different.[42] The budget respondents in the *Financial Times* reinterpreted and reframed the economic policy of the budget to make it relevant to much narrower concerns than the broad brush groups and categories such as "pensioners" or "families" or "education spending" offered in much of the Budget and its commentary. The voicing of experienced knowledge does not just add to the knowledge of the social scientists, but can reframe their questions or findings.

The denial of voice is therefore not just the denial of the knowledge of experience, but the denial of citizens' abilities to frame and interpret their own experience and so affect the way a question is discussed. This is how "voice" contrasts with "engaging" the public in one-sided knowledge discussions, or carrying out projects to make them "understand" science, or even the legitimate but limited expression of stakeholder interests.[43] That is, the denial of voice is about the

[42] Mrs Fish effectively reframed the question about the flu vaccine: whereas much of the medical evidence surveyed was an analysis of deaths and hospital admissions that were likely to have been avoided by the vaccination programme, her experience was about illness without hospitalisation, and the medical analysis might not even have counted the benefits of her experiences even though it would count the costs of the vaccine.

[43] These are one-sided not just in knowledge asymmetry, but because the public is usually "engaged" within the framework defined by the scientists.

exclusion of particular problems, issues, and the framing of particular meanings rather than just the exclusion of people with relevant knowledge. The possibility that the experienced expert enjoys to frame the questions and meanings of the debates in their own terms follows from their rights as citizens, not as stakeholders.[44]

It might reasonably be argued that, as it is, this is only one particular national account of personal or experienced knowledge, and the account will not travel well! Of course, this is a national story: voice is only heard within a particular "civic epistemology" which creates the environment within which the facts of experience can be made to travel. While the chance to voice personal knowledge of experience is a feature of a democratic society, the ways in which voice can be expressed, or may be heard, are shaped by the local civic values, mores and laws of any particular society.

We can see how the expression of this individual, personal but articulated, experiential knowledge of social sciences is shaped by looking more closely at this notion of "civic epistemology", a notion that Sheila Jasanoff defines by asking how scientific and technical knowledge come to be seen as reliable in public spaces, so that collective choices can be made based on publicly shared knowledge.[45] Civic epistemology is the process by which democratic societies come to know about and make decisions about science and technology matters. Jasanoff treats this civic epistemology as based on tacit-knowledge, not at the level of individuals but at the level of society: "modern technoscientific cultures have developed tacit knowledge-ways through which they assess the rationality and robustness of claims that

[44] Wynne, in his provocative critique of Collins and Evans' 2002 "third wave" paper noted of his sheep farmers' case, that "the power to define the meaning of the questions remained with the .... scientists and officials" (Wynne 2003 p 408). My point may be seen as the positive other side of this coin: in the social sciences, such reframing power comes with the citizen's rights to voice experience which, as I noted, is stronger than his farmers' stakeholder rights.

[45] S. Jasanoff, *Designs on Nature,* 2005 (see Chapter 10).

seek to order their lives" (Jasanoff, 2005, p255). This civic epistemology contrasts with the personal articulated knowledge of citizens that I have been describing. But they are not inconsistent.

How civic epistemology is constituted depends on the society one lives in for it is defined as "culturally specific, historically and politically grounded, public knowledge-ways" (Jasanoff, 2005, p249). The particularities of different national civic epistemologies that she presents from her case studies (with respect to bio-technologies in agricultural and biomedical sciences) are presented as having a wider cultural grip. As such, they intersect with the possibilities for expression of the kind of personal yet articulated knowledge of the social sciences - citizenry personal knowledge - that I am discussing here. For example, Jasanoff's three way comparison of the US, Germany and the UK points - for the UK - to the relatively strong role of empirical science in demonstration practices, the importance of the expertise of experience (relative to the professional skills required in the US mode, or the training and accredited skills of the German expert), and the relatively high value placed on consultation rather than formal reasoning. These are all consistent with a public mode of civic epistemology for the social sciences in which people with non-accredited expertise - ie knowledge based on experience not qualifications - are valued and able to voice that knowledge. Thus Jasanoff's characterization of the civic epistemology of the UK fits with my observations about social sciences in the UK.[46] The fact that civic epistemologies differ suggests either that other societies are likely to see social science personal knowledge experience somewhat differently, or that their citizenry's personal

[46] In the context of the civic epistemology of the UK, current ideas about governance argue for stake-holders, users and lay persons to be part of governance structures of most organizations. I suggest that, over a range of questions in the social and economic realm, their importance is not as "lay" persons, or as "disinterested" persons but as interested citizens bringing relevant social science experience to those organisations and voicing it.

knowledge might have a less powerful voice in their civic epistemology, or that its range and places of expression may be different, but not that in other societies voice does not exist, albeit in various different forms.[47]

4. Conclusion

Societies have different ways to develop democratic process with respect to scientific knowledge within the context of various civic epistemologies. Yet most of the literature that treats questions about public scientific knowledge does so in the context of natural science where the public is seen as handicapped compared to the knowledge of the scientist. This paper has explored the structure of situations in medical and social science where the observations of experience or the experienced knowledge held by citizens, is presented as valid knowledge of these topics.

While voice represents the citizens' right to express, not their opinions, but, their knowledge based on experience, the articulation of that knowledge is always going to depend on the local civic context. For this reason it is difficult to generalise about how the individual gets the facts of their personal experience to travel into the public domain. By implication, the pragmatics of the articulation of personal social science knowledge need to be explored, analysed and compared in different societies. Until then, "voice" offers a generic concept, a way to understand why social science personal knowledge has a different validity, and so is likely to be expressed in different ways, than public expertise about other sciences. This in turn suggests that neither the

[47] For example, my Dutch colleagues report examples from The Netherlands where governmental claims about the rising real incomes of the population due to government policy were challenged in TV news slots by individuals whose incomes had fallen, with ministers faced across the media table by a personal case evidencing the limitation of their statistical claims about the events in the economy - see Den Butter, 2007.

public engagement literature nor the public understanding literature applies to the social sciences without some re-consideration. (In-between fields, such as those of medical treatments, might also appear differently in this new frame.) Making use of the concept of “voice” not only shows how and why personal knowledge may be complementary to the scientific work of social scientists, but why it has the possibility to challenge and reframe that knowledge of social scientists more effectively than the processes of civic epistemology do for the natural sciences.

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