Expertise

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Abstract

The main claim of the essay is that expertise is better understood neither as a set of skills that experts possess nor as a social attribution, but as a historically specific way in which we currently talk about the intersection, articulation, and friction between professions, science and technology on the one hand, and law and democratic politics on the other. It is shown that talk in terms of expertise is a fairly recent phenomenon, and it is claimed that it reflects not the rise of the "expert society," but its crisis, namely, as long as it was fairly clear who the experts were, and how to recognize them there was little discussion of expertise, but once the number of contenders for expert status has increased and the bases for their claims have become more heterogeneous; once the struggles between these would-be experts intensified; expertise became problematized because the question was how to determine whose claim is legitimate. After surveying some of the current debates about the nature and character of expertise, the essay concludes by suggesting that the more fruitful approach is to treat expertise in an open-ended nominalist manner as everything that is necessary to take into account when one seeks to give a description of the capacity to accomplish a relevant task, that is, of everything that is necessary in order for a particular expert statement or performance to be produced, repeated, and disseminated.

"The proper skill of expertise
Is to arrange the premises
So that the most foregone conclusion
Will fit therein without confusion.''

(An old quatrain, quoted in Butler, 1946, p. 33, n. 68)

INTRODUCTION

It is not useful to start by trying to define "expertise," because "expertise," as we shall see, is an essentially contested term. Different definitions or theories of expertise apportion social worth to certain persons (deemed "experts"),

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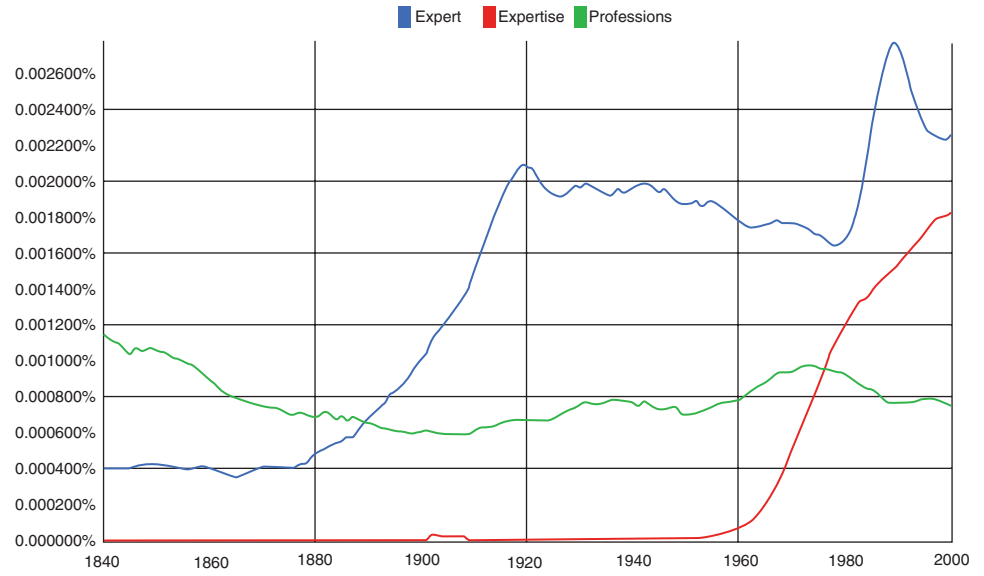

Figure 1 Frequency of appearance of "expertise," "expert," and "professions" in *Google Books* from 1800 to 2000.

statements, and performances, and withhold it from others. Consequently, the very nature of expertise, what it is and what the term should mean is a matter of struggle and disagreement. To circumvent this problem, it is better to concentrate on pragmatics—how the term is used—and to take into account the historical context of usage: When did talk about "expertise" begin? In what context? Who was talking? For what purpose? Why was the word useful in that situation, what did it do that other words could not?

"Expertise," it turns out, is a fairly recent word in the English language. As can be seen in Figure 1, while talk about "professions" was fairly constant, and discussion of "experts" accelerated in the period from 1880 to 1920, we did not begin to talk about "expertise" in earnest before 1960.[1] Indeed, the word "expertise" did not exist in the English language before the late nineteenth century, when it was adopted from the French. (Earle, 1891) Expertise, in fact, is so recent that Mandarin Chinese, while it has equivalents for "expert" and "skill," does not yet have a word to translate "expertise" (Robert Crease, personal communication).

1. Based on the data made available by Google Books Ngram Viewer. https://books.google.com/ngrams/graph?content=expert%2Cexpertise%2C+professions&year_start=1800&year_end=2000&corpus=0&smoothing=3&share=&direct_url=t1%3B%2Cexpert%3B%2Cc0%3B.t1%3B%2Cexpertise%3B%2Cc0%3B.t1%3B%2Cprofessions%3B%2Cc0 (last accessed 12/18/2013).

Contexts Where Expertise Was Problematized

There were several, partly overlapping, contexts in which the term "expertise" began to be used.

- A legal debate arose in the 1930s and 1940s about whether certain decisions of administrative agencies should be exempted from judicial review because these agencies are "expert bodies which deal with specialized subject matters." The term "expertise" was useful to articulate this debate because the question to be decided was whether a collective body that was not one of the recognized professions could be treated by the courts with the same deference due to individual members of the professions (Butler, 1946).
- The legal literature about expert testimony. Especially from the 1960s onwards, as the credibility and impartiality of the established professions was challenged, and as the vexing problem of assessing and managing *risk* emerged in tort litigation, it became less and less clear how to decide whose testimony could be treated as expert opinion. The term "expertise" was useful to indicate the new type of scrutiny exercised by judges not only into the professional standing and recognition enjoyed by the expert witnesses ("who is an expert?"), but into the content and methodology of the knowledge claims they made ("what is expertise?") (Edmonds & Mercer, 2004; Golan, 2004; Jasanoff, 1995).
- The literature and debate about artificial intelligence and "expert systems." The first attempts to construct "expert systems" in the 1970s consisted simply of "extracting" knowledge from experts and transcribing it into software. The failures and limitations of this first generation of expert systems led artificial intelligence (AI) researchers, as well as computer scientists and psychologists, to investigate more closely how experts work and think, and to develop general models of expertise as consisting of rules or heuristics (Ericsson, 1996; Hoffman, Feltovich, & Ford, 1997). In response, critics of AI developed an alternative account of expertise as consisting primarily of embodied skills and tacit knowledge (Collins & Evans, 2007; Dreyfus & Dreyfus, 2005).
- The debate about the increasing role that science and technology play in political decision making and public affairs (Habermas, 1970) has led to a proliferation of literature from the 1970s onwards about the "politics of expertise" (Benveniste, 1977), namely, about the role that experts play in policy making and how to organize the relations between science and democratic institutions. "Expertise" became a useful term with which to designate the problematic interface between science and democratic institutions, especially as politics have become increasingly dominated

by technically complex issues (global warming, inflation, GMOs) (Beck, 1992).
- Finally, sociological studies of the challenges mounted by patients' rights groups, environmentalists, and other social movements and/or stakeholders to the scientific and professional monopoly over authoritative knowledge and regulatory decisions, led to the coining of the phrase "lay expertise," and a debate about the significance of this phenomenon (Epstein, 1995; Prior, 2003; Raberharisoa & Callon, 2004; Wynne, 1996).

There are clearly certain commonalities in how "expertise" was used and what role the term played in all these different contexts where it emerged. To put it simply, in almost all of these cases the resort to talking about "expertise" was occasioned because it was no longer clear who were the experts: Could government agencies be considered experts? Who should be recognized as expert witnesses? How to make computers function as experts? What value could be accorded to the interventions of laypeople? As long as it was fairly clear who the experts were, and how to recognize them—namely, as long as the established professions enjoyed relatively unchallenged authority—there was little discussion of "expertise." Once, however, the number of contenders for expert status has increased and the bases for their claims have become more heterogeneous, especially because of the legitimation crisis of the established professions; once the struggles between these would-be experts intensified; "expertise" became problematized and the word was bandied about, because the question was how to determine whose claim is legitimate.

DEBATES ABOUT EXPERTISE

The main fault lines in the debates about the nature of expertise can be related to this initial problematization. A key fault line runs between a realist or "substantivist" position, according to which expertise is a real set of skills and knowhow possessed by experts (Collins & Evans, 2007), as against a "relational" or "attributional" position, according to which expertise is a quality attributed to experts by significant others (other experts, accrediting and licensing bodies, the public, the state) (Abbott, 1988). Obviously, there is an important grain of truth in both positions. Every time we pick up the phone to call a plumber, to use a simple example, we are acting on the intuitively appealing theory that experts possess specialized skills and knowledge that laypeople do not. On the other hand, if the plumber does not show up, and we somehow manage to solve the problem ourselves, we do not consider ourselves perforce to be experts or to possess expertise. Put more generally, the possession of skills may be a necessary but certainly not sufficient condition for the social attribution of expertise. Why then the debate? Why not

simply combine the two approaches or find some "middle way" between them? (Hoffman *et al*., 1997). The main reason the debate is perpetuated is because the relational position, as Collins and Evans (2007, pp. 1–15) argue, offers no criteria of exclusion, no solution to the problem of where to limit participation in decision making about technically complex public affairs. And this "problem of extension" itself has been created as a response to the legitimation crisis mentioned earlier: because science and the professions are more involved than ever before in political decision making, they are no longer trusted, and the way to regain this trust is by increasing public participation in technical decision making. But how far? In the highly politicized matter of global warming, for example, should the claims of self-appointed "lay experts" [or worse still, secretly corporate-funded "agnotologists" bent on amplifying ambiguity and therefore ignorance (Proctor & Scheibinger, 2008)] be accorded the same weight as those of scientists? How to distinguish true from false "climate experts" given that there is no single discipline, scientific specialization, or professional group with jurisdiction in the matter, and given that decisions about global warming have immediate implications in terms of government distributive allocations and corporate interests? This is why Collins and Evans (2007, pp. 1–15) insist on a realist position to anchor a normative "knowledge science" that could meaningfully discriminate between claims to expertise. This is also why they introduce a distinction between "contributory expertise" (the relatively rare "skills needed to perform a certain task with competence") and "interactional expertise" ("the ability to master the language of a specialist domain without actual practical competence"), because only interactional expertise can legitimate the claims of such normative knowledge science (or account of the empirical existence of meaningful public participation in technical decision making). Obviously, the debate is not resolved in this way because even if interactional experts control the attribution of contributory expertise, how or who will control the attribution of interactional expertise?

A different, although partly overlapping, debate is about the character of expert knowledge: Is it composed of relatively general abstractions that are articulable as rules or heuristics applicable to many different situations (Abbott, 1988; Hoffman *et al*., 1997), or does it consist in an embodied and tacit mastery of the details of practical circumstances? (Collins & Evans, 2007; Dreyfus & Dreyfus, 2005). Once again, there is an important grain of truth in both positions. Ever since Wittgenstein's critique of the notion of "following a rule" (to know how to follow a rule you need another rule, and so on *ad infinitum*), it seems clear that any rule-like activity (such as what experts do) can only be explained by reference to a background of practices that are tacit and embodied (Dreyfus, 1979). To use an example given by Dreyfus and Dreyfus (2005), what differentiates the expert driver

from the novice or the merely competent is not knowledge of the explicit rules of how to drive (which they all possess), but the bodily automation and schematization of these rules in order to attend to situational discrimination, based on a large store of accumulated knowledge of specific aspects of concrete situations. Yet, it seems equally clear that if expertise consisted of purely embodied and tacit knowledge, then it could not inspire trust nor command authority. If an expert witness about fingerprinting, for example, answered under cross-questioning that he or she could not explain how they arrived at a match, that they could not articulate a set of steps and tests that others would follow in order to reliably arrive at the same result, they would be laughed out of court. If it were not Collins and Evans (2007, p. 17) claiming that expertise involves "an understanding of rules that cannot be expressed," but a doctor testifying in court, would we not be suspicious? Nor could expertise consist purely in knowledge of practical, concrete details, because it would then be vulnerable to being captured and redescribed by another form of expertise, formulated at a higher level of abstraction (Abbott, 1988), just as the practical expertise of the farmer selecting seeds, for example, is redescribed and rendered obsolete by the molecular geneticist operating at a higher level of abstraction. Why then the debate? Why not simply say that expertise consists in some combination of practical mastery and knowledge of abstract rules? The main reason the debate is perpetuated is because at stake is the larger matter of "AI." The claim that expertise is a form of practical mastery is not only a descriptive account of what experts do but also a spirited defense of human experts against encroachments on their jurisdiction from expert systems, and more generally an attempt to protect human capacities and competencies from being captured and redescribed by the higher level of abstraction afforded by the "cyber sciences." Correspondingly, AI specialists admit that their account of expertise as composed of rules, heuristics, and algorithms should not be treated as "veridical simulation of human expertise," but is part of a more ambitious project in which AI is "evolv[ing] beyond the assumption that intelligence in computers must have the human as its sole benchmark" (Hoffman *et al*., 1997, p. 574).

A third debate is about the consequences of expertise: Do experts have a profound influence on policy, making politics technocratic, distorting communication in the public sphere (Evans, 2002; Habermas, 1970) and performatively shaping social and economic processes? (Mackenzie, Muniesa, & Siu, 2007); or, on the contrary, experts are relatively weak and compliant playthings of politicians, governments, and corporations, and their supposedly "performative" formulas are often a cover and post hoc justification for "politics as usual"? (Beneveniste, 1977; Mirowski & Nik-Kah, 2007). It goes without saying that both positions contain an important grain of truth, and

that the proper response would be to ask under what conditions, in what context, are experts influential and expertise consequential? Yet, the debate is perpetuated because at stake is the larger problem of the "phantom public" (Dewey, 1927; Lippmann, 1927; Marres, 2005): given that modern-day politics are thoroughly suffused with complex technical issues about which the public is ignorant, how is democracy founded on public opinion to be more than an empty shell masking the rule of experts, or of their puppet masters?

KEY ISSUES FOR FUTURE RESEARCH

The upshot of demonstrating that, at bottom, debates about the nature of expertise are inseparable from the contexts of problematization in which the term emerged, is to suggest that expertise is better understood not as a thing, not as a set of skills that experts possess, nor even as a set of claims and attributions, but as a historically specific way in which we currently talk about the intersection, articulation, and friction between professions, science and technology on the one hand, and law and democratic politics on the other. Talking in terms of "expertise" entails, first, a widening of the scope of relevant claims beyond those made by experts duly recognized as members of legitimate professions. "Expertise" derives from the Latin experiri, "to try." The Latin verb became an English adjective—expert—in the fourteenth century, exactly at the same time as the closely related experience. It meant simply that one is more experienced, "tried" (expertus; Williams, 1976, p. 129). Hence, when talking about expertise, one is necessarily taking into account the claims not only of credentialed professionals but of all who can claim practical experience in the matter at hand, including laypeople. Moreover, because of its proximity to "experience," the term "expertise" can also be used in ways that detach it from association with a specific individual, as in the often-heard anticipatory mode in which government officials or corporate leaders talk about the need to "develop expertise" in this or that area. Hence, talking about expertise permits to take into account also collectives composed of various experts and laypeople (Callon, 2005), computer systems, teams composed of computers and users (Collins, 1990), government agencies, think tanks, and so on. Second, talking in terms of "expertise" entails a shift of attention away from the experts, their values, interests and claims—as implied, for example, by the terms "profession" or "professionals," which derive from the term for the vows or public declarations taken upon entering a religious order—and onto the capacity to accomplish a relevant task better (and faster) than otherwise.

The way forward in studies of expertise is taken by analyses that—rather than trying to locate expertise either in an individual or in a social attribution; rather than defining expertise as either practical or abstract

knowledge—treat expertise in an open-ended nominalist manner as everything that is necessary to take into account when one seeks to give a description of the capacity to accomplish a relevant task, that is, of everything that is necessary in order for a particular expert statement or performance to be produced, repeated, and disseminated. Put differently, if—as the substantivist approach emphasizes—any rule-like performance is only explicable by reference to a "background of practices" that are its "conditions of possibility" (Dreyfus, 1979), then a full explication of expertise must explore indeed this background of practices and the social, material, spatial, organizational, and conceptual arrangements that serve as its conditions of possibility. This approach has been pioneered by Foucault (1972, 1973) and underlies a great deal of the work in science studies, especially actor-network theory (Cambrosio, Limoges, & Hoffman, 1992; Keating & Cambrosio, 2003; Lakoff, 2005; Latour, 1987, 1999). AI researchers have also become aware that "when studying expertise, the minimum unit of analysis is the 'expert-in-context'," and this means that the description of expertise cannot be separated from a description of the relevant tools, training, social arrangements, and so on (Hoffman *et al*., 1997, pp. 552–553). Clearly, a full account of the accomplishment of anything but the most rudimentary task must include, at a minimum, also the tools and devices used, as well as the trained ways in which they "withdraw" into embodied habits (Latour, 1999; Schubert, 2011). Very likely, such a full account requires also analyzing the contributions made by other experts, front-line workers, perhaps even laypeople, and the mechanisms by which their cooperation has been secured. A full account would include also the institutional and spatial arrangements (including regulatory agencies and standards) that foreground the problems that the task addresses, and make them observable and actionable, as well as those arrangements that obscure them from view or impede addressing them. Finally, the observations and interventions of the experts are organized by means of certain concepts, and these too may prove important when accounting for the way in which a problem is made relevant or a task is executed (Eyal, 2013; Eyal, Hart, Onculer, Oren, & Rossi, 2010).

Especially useful are analyses of this complex makeup of expertise when it is still "in the making," while alternative devices, actors, concepts, and arrangements are still viable candidates, and before it has been "black boxed" and standardized. It is especially this process of "black boxing" and standardization that makes it appear as if expertise is fully embodied by the expert (Cambrosio *et al*., 1992, pp. 347–349; Lakoff, 2005; Latour, 1987; Schubert, 2011).

This approach, in which expertise is treated a network or "assemblage," also allows to overcome the opposition between practical mastery and

abstraction. Studies in this vein focus on a specific expert statement or performance and trace the chain of "transcriptions" by which it is conveyed along the network toward its "centers of calculation" (Latour, 1987, 1999). Each link in the chain consists of altogether practical, concrete, and embodied skills and forms of reasoning, yet each transcription means that the statement/performance loses certain qualities it possessed before and acquires new ones, until it gradually becomes mobile, combinable, and "liquid" in the sense connoted by the term "abstraction" (Lakoff, 2005). This approach, moreover, permits to make qualitative distinctions between different forms of abstraction, and thus different forms of expertise, according to whether the chains of transcriptions are long or short; whether they can be traced backward or not; what qualities are added and subtracted along the way; how secure are the links, the transcriptions, from being taken apart by challengers; what other actors, devices, and arrangements were involved in constructing each link; and how their cooperation is secured (Eyal, 2013; Latour, 2010).

Finally, this approach is also useful for rethinking the problem of the consequences of expertise and the "phantom public." Given the complex and uncertain nature of the technical matters at the heart of contemporary politics—their appearance as only partly knowable "risks" that can only be managed, but not eliminated (think global warming)—any description of the capacity to address them as expert tasks includes much more than what any given group of experts has at its disposal. Put differently, not only the "public" but the experts too are fairly ignorant about newly emerging "matters of concern" that typically involve complex and unforeseen technical details. Thus, the "consequences of expertise" are not the elimination of public discussion or the distortion of the public sphere, but the emergence of new types of publics, provoked by and assembled around these "matters of concern." These collectives are typically composed of both stakeholders acting as "lay experts," as well as various other experts acting as advisers and/or collaborators. Neither group is in possession of the relevant expertise, but together they seek to educate and equip themselves with the necessary analyses, devices, tools, allies, and knowledge to address these matters (Callon, 2005; Latour, 2005).

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