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What Is This Knowledge That We Seek to "Exchange"?

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Surely it is time to problematize and critically question what knowledge is. How does it differ from data, information, evidence, or experience? Is it explicit or tacit, individual or collective, generic or specific, context free or context bound, value neutral or value laden? To what extent do these dualities, well rehearsed in the literature, adequately capture what we know and do not know about knowledge and its exchange? Let me summarize what I think that Contandriopoulos and colleagues are saying before returning to consider how well they have answered (or sidestepped) these ontological questions.

Contandriopoulos and colleagues consider knowledge in two essential forms (figure 1 in their article): (1) individual, that is, held in people's heads and translated (or not) into action by human will and agency, and (2) collective, that is, socially shared and organizationally embedded, whose effect on individual behavior and specific outcomes is more diffuse (Contandriopoulos et al. 2010). They make a persuasive case for moving knowledge exchange research from an individual level (for which the evidence base is extensive, largely experimental, relatively uncontested, and well summarized in Cochrane-style reviews) to an organizational and policy level (at which none of these characteristics applies). The road to enlightenment on these meso- and macro-dimensions of knowledge exchange is not paved exclusively with controlled experiments.

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Putting aside the question of how valid and reliable an item of information is in the first place (an important part of the picture but beyond the scope of their review), Contandriopoulos and colleagues suggest a variety of mechanisms by which such information may become collectivized, including efforts to make it relevant (timely, salient, actionable), legitimate (credible, authoritative, reasonable), and accessible (available, understandable, assimilable) and to take account of the points of departure (assumptions, world views, priorities) of a particular audience.

They also present evidence that the success of such efforts depends on the extent to which the audience is polarized on the issue (Is it a problem? Is it a priority? What would a solution look like?). If we agree on these questions ("low issue polarization"), arguments can proceed along scientific and technical lines (i.e., on the nature and strength of the research evidence). If not ("high issue polarization"), we will find ourselves in the realm of political science, in which knowledge becomes a "prized commodity in political struggles, with both a price and a value" (Contandriopoulos et al. 2010, 462).

In other words, a meta-analysis might be slapped on the boardroom table or passed to the press (perhaps bundled up with personal testimony, descriptive statistics, or cost-benefit estimates) in a strategic attempt to influence a decision to (say) provide or deny treatment to an individual or group. In high-polarization situations, the production, distribution, and use of knowledge cease to be a linear and value-neutral evidence pipeline (researchers → academic journals → practitioners) and instead become a muddy battleground where lobbyists seek to ensure that particular items of information are pitched into discussions for particular purposes and employ rhetorical techniques to erode the legitimacy and priority accorded to rival sources.

Information is exchanged in networks, especially when the members of these networks like and trust one another and have found previous communications useful. Networks take many forms (managed or informal, focused or diffuse, intranets or extranets, hierarchies or cliques). Knowledge brokers, whose job descriptions typically include both "hard" tasks (obtaining and distributing information) and "soft" tasks (building and maintaining relationships), have the ability to augment the work of such networks, but beware the naïve broker-on, broker-off comparative study that strips away the very contextual features (evidence pipeline or tribal battleground?) that hold the secret of variations in their effectiveness.

Two contrasting but ultimately commensurable conceptualizations of knowledge run through the article by Contandriopoulos and colleagues. The first is simple and applies to low-polarization situations: knowledge consists of Cartesian, value-neutral quotas of information (such as the results of empirical research studies), which protagonists of the "pipeline" metaphor would view as needing to be encouraged into practice. The second is more complex and applies to high-polarization situations: knowledge takes the form of "convincing and politically viable action proposals" (466), that is, something that will convince a skeptical audience that the issue addressed is important and this is the way to tackle it. This kind of knowledge leaves pipeline theorists high and dry (and much in need of, although few of them realize it, a lesson in political science).

This taxonomy of knowledge explains why, for example, the thousands of studies in the Cochrane Effective Practice and Organization of Care (EPOC) database generally add only limited grist to the realpolitik of "getting evidence into practice." But even though Contandriopoulos and colleagues' article has many strengths, I think it places too much weight on the political axis (value neutral/value laden) and not enough on the others relevant to knowledge utilization in organizations, including the individual-collective, explicit-tacit, and generic-specific axes.

I wonder whether the authors' method of identifying landmark papers by beginning with a "team consensus" and snowballing from there was sufficiently robust or whether, if they had spread their net more widely, they would have identified other relevant seminal publications. Next I summarize what I think are two such publications, since they productively complicate the picture painted by Contandriopoulos and colleagues. The first paper, "Organizational Knowledge" (Tsoukas and Vladimiros 2001), considers the work of two philosophers, Michael Polanyi (who argued that all knowledge is personal) and Ludwig Wittgenstein (who argued that all knowledge is collective). Its central argument is that each of these positions complements and extends the other. The authors begin with a widely cited definition of knowledge from another paper by Davenport and Pruzak:

> Knowledge is a flux mix of framed experiences, values, contextual information and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organizations, it often

> becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms. (Tsoukas and Vladimiros 2001, 974)

This definition, Tsoukas and Vladimiros suggest, is appealingly inclusive but fails to distinguish between data (which, drawing on previous work, they define as "an ordered sequence of given items or events," such as the alphabetical index of a book), information ("a context-based arrangement of items whereby relations between them are shown," such as the chapter headings and subheadings in a book), and knowledge ("the judgment of the significance of events and items, which comes from a particular context and/or theory," such as a student's own themed list of key sections of the book, oriented to a forthcoming examination). Data, information, and knowledge are conceptualized as lying on a single continuum and differ in the extent to which human processing and judgment is involved.

Let us pause for an example. Suppose that I saw a patient complaining of a cough. I chose to ignore the "cough" decision support algorithm on my computer because I know this patient and his situation well. He is an asylum seeker from a war zone, living in temporary (damp, cramped) quarters and awaiting rehousing, for which I have written to the relevant authority. The patient knows (and I know that he knows) that rehousing decisions are made on the basis of a points system in which serious medical conditions count for a lot and that he is currently many points short of the top of the waiting list. In this context, and taking account of intuitive cues accumulated from twenty-five years of listening to patients coughing (Greenhalgh 2002), I classified this symptom alongside the abdominal pain for which he was referred to a gastroenterologist (no organic cause was found) and his recurring headaches, which are accompanied by flashbacks. I removed my doctor-as-diagnostician hat and turned away from the computer screen. I listened to his troubles and, for a few brief minutes, bore witness to his suffering (Charon 2001).

Suppose, too, that the medical student who was sitting in with me later called up a guideline on his personal digital assistant and challenged me. Why had I not listened to the patient's chest or measured his peak expiratory flow rate? Why had I not entered any "facts" on the computer? Why, he implicitly asked, had I not followed the rules? In justifying my actions, I advised my bold student to note Kathryn Montgomery Hunter's advice that the practice of medicine—especially

when the signal-to-noise ratio is not clear—is not merely about knowing the rules but about deciding which rule is relevant in any given situation:

> Clinical education is preparation for practical, ethical action: what best to do, how to behave, how to discover enough to warrant taking action, which choice to make on behalf of the patient. [These] choices are governed not by hard and fast rules but by competing maxims. . . . As lawyers, literary critics, historians and other students of evidence know well, there is no text that is self-interpreting. As rules, these maxims are relentlessly contextual. (Hunter 1996, 230)

Knowledge (the capacity to exercise judgment) requires two things: (1) the ability to draw distinctions (e.g., between a dry cough and a wet cough, but also between a simple cough and an anguished cough) and (2) the location within a collectively generated and sustained domain of action (Tsoukas and Vladimiros 2001). My domain of action is family medicine, which places central importance on "the hidden agenda," the unspoken psychological needs for which trivial physical complaints are often the overt currency (Balint 1957).

Hunter's observation that mountains of robust research evidence notwithstanding, the "rules" of medicine are competing maxims in need of contextual judgments reflects Wittgenstein's a priori statement (cited by Tsoukas and Vladimiros) that rules do not apply themselves. Knowledgeable individuals exercise judgment within their domain of action because (and to the extent that) they have successfully completed a period of socialization (sociocultural, professional, organizational, and usually a combination of all these) that has enabled them to appreciate and take account of subtle aspects of context when making distinctions.

Tsoukas and Vladimiros's "domains of action," rich in shared cultural assumptions, unwritten rules, and taken-for-granted cognitive maps, have many parallels to what Bourdieu calls "field" (Bourdieu 1986), Stones (following Giddens) calls "external social structures" (Stones 2005), and Scott calls the "normative and cultural-cognitive pillars" of institutional life (Scott 1995). The collectively generated and shared knowledge contained in such external structures is embodied and reproduced by human agents in a dynamic, organic process that is referred to in different literatures as "structuration" (Stones 2005), "collective sensemaking" (Weick 1995), "communities of practice" (Lave and Wenger 1988), and "mindlines" (Gabbay and le May 2004).

In professional, scientific, and organizational life (as opposed to social life in general), social structures are often formally negotiated:

> The justification (purpose) underlying a rule needs to be elaborated upon and its meaning agreed by the organizational collective. Organizational tasks are thus accomplished by individuals being able to secure a shared sense of what rules mean (or by agreeing upon, reinforcing, and sustaining a set of justifications in the course of their work). (Tsoukas and Vladimiros 2001, 981)

The contribution of individually embodied (Polanyi) but at the same time socially shared (Wittgenstein) meaning-systems to what human actors know prompted philosopher Sandra Tanenbaum, writing in the *New England Journal of Medicine*, to take issue with "evidence-based medicine, [which] argues for the fundamental separability of expertise from expert and of knowledge from knower, and the distillation of medical truth outside the clinical encounter would seem to allow both buyers and sellers in the health care market to act independently and rationally" (Tanenbaum 1993, 1268). Those who find themselves smiling wryly at these words should explore the sociological research on ethnomethodology, or how individuals particularize generic rules through their knowledge of context so as to make appropriate moment-by-moment judgments on what to do next (Garfinkel 1967).

Another landmark paper that a broader search might have uncovered is Van de Ven and Johnson's "Knowledge for Theory and Practice" (2006). They find three broad conceptualizations of the relationship between theory and practice. The first begins with knowledge and considers how it is transferred into practice. The second, drawing on Aristotle's notions of episteme, techne, and praxis, views theory and practice as different kinds of knowledge and considers that the former (which is oriented to building context-free generalizations) cannot be translated into the latter (which is situated, contextualized, and oriented to addressing here-and-now problems). A third (and, suggest Van de Ven and Johnson, the preferred) view holds that knowledge emerges dialectically when academics and practitioners or policymakers converge to address a problem. "Engaged scholarship," as they call this process, necessarily involves different perceptions of what the problem is and different measures of success in solving it. Conflicts among the different parties are inevitable and should be treated as data (and as opportunities for reflection).

The notion that knowledge translation and exchange is an impoverished framing of the theory-practice challenge, compared with knowledge generation via academic-practitioner dialogue, is not new. Jonathan Lomas once described the former framing as "the sound of one hand clapping" (Lomas 1997). Nonetheless, translation and exchange have remained the dominant metaphors in the field of health care.

In conclusion, the insights that Contandriopoulos and colleagues have systematically drawn from the political science literature have added significantly to the study of knowledge exchange in health care policymaking. But there are other rich seams of evidence to be mined, relating to how, in what are generally low- and moderate-polarization situations, what the individual knows is related to what the collective (profession, team, organization) knows and how generic knowledge (e.g., clinical trials, guidelines, decision support algorithms) is related to the specific knowledge of this organization, this patient, this occasion. It also is time to ask how many more times knowledge translation and exchange will be systematically reviewed before someone reviews engaged scholarship. When they do, a citation track of Van de Ven and Johnson's 2006 paper is likely to produce some rich pickings.

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