Governing Frameworks for Sharing Actionable Knowledge

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Abstract: A fundamental necessity for the transfer of actionable knowledge is that it must occur within a context. This essay suggests that governing frameworks provide the medium within which it becomes possible to share actionable knowledge. To support this claim the notion of governing frames is first explicated. Frameworks provide the basic support structures for sharing knowledge within organizations through the development of an inextricable linkage between context and meaning often found in the underlying foundation for governance structures. Each of the classic governing frameworks discussed, formal, informal, markets, and professional, has different manifestations of key structural elements, relationships, elements, context, configurations, and temporal stability and thus different implications for sharing knowledge. The strengths and weakness of the various frameworks for understanding the sharing of knowledge in organizations are exemplified by focusing on two exemplar problems: information seeking and clinical and translational science. In conclusion, the concept of governing frameworks offers a new way of looking at the often intractable problem of sharing knowledge in our ever more complex organizations. A compelling focus of future research is how these frameworks are negotiated in an increasingly professionalized world where specialists must integrate their activities in interprofessional teams.

Keywords: organizational structure, governing frameworks, actionable knowledge, sharing, information seeking and clinical and translational science

1. Governing frameworks for sharing actionable knowledge

The absence of a role for context in organizational behavior not only leads to inadequate explanations for individual attitudes and behavior, but also makes it impossible to develop a common paradigm for micro and macro organizational research (Cappelli and Sherer, 1991, pp. 55).

A fundamental necessity for the transfer of actionable knowledge is that it must occur within a context. In general, in conceptualizing our world, we have a tendency to focus on objects rather than their grounds (Stocking and Holstein, 1993), focusing on messages or individuals, for example, rather than the contexts within which they are embedded. We concentrate on the processes we are interested in rather than on the more diffuse social contexts that frame, embed, and surround them. This essay will focus, then, on the relationship between governing frameworks, one instantiation of context, and structure in shaping the sharing of actionable knowledge in organizations.

Traditionally three senses of context have been used in organizational research (see Johnson, 2003, for more detail). First, context is seen as equivalent to the situation in which an individual is immersed, with situations viewed as more important in determining behaviors than individual traits or dispositions. Second, contingency approaches move toward specifying active ingredients that have specific, predictable effects on various processes. Third, major frameworks for meaning systems or interpretation are increasingly seen as critical to various processes. Since the first two of these senses have been extensively explored in the literature (e.g., Johnson, 2003), here we will focus on the more recent developments concerning frameworks and governance structures, the mechanisms by which contexts are operationalized, and become real for organizational participants.

Increasingly generating and manipulating knowledge is seen as a core function of our economy, the 'only sustainable way for organizations to create value and profitability in the longer term' (MacMorrow, 2001, pp. 381). Greater knowledge intensity leads to greater profitability for commercial firms, higher levels of innovation and, ultimately, knowledge has become the source of wealth creation and economic growth (Florida and Cohen, 1999, Leonard, 1995, Stewart, 2001). This is critical for organizations, since knowledge becomes something you can do something with. As a result it often leads to strategic advantages since organizations who have the best understanding of their environment and then act on them accrue competitive advantages.

Knowledge runs the gamut from information, to explicit knowledge, to tacit knowledge, to wisdom, with a variety of distinctions made between these terms in the literature. While there is a generally recognized

ordering among these terms, with wisdom having the least coverage of the other sets, they are often used interchangeably and in conflicting ways in the literature, resulting in some confusion (Boahene and Ditsa, 2003).

> *… we define knowledge as information that is relevant, actionable, and based at least partially on experience* (Leonard and Sensiper, 1998, pp. 113, italics in original).

Knowledge is also something that is inherently social (Brown and Duguid, 1998, Barnett, 1988, Orlikowski, 2002), bound to particular contexts (Barnett, 1988, Swan, 2003, Tsoukas and Valdimirou, 2001), and something that can be communicated to others, even if it may take considerable effort and require the development of mutually agreed upon symbols which is greatly facilitated by governance frameworks.

Knowledge sharing (also termed diffusion, dissemination, transfer, and adoption) has been a compelling issue in a variety of areas including technology transfer between developed and developing nations, between organizations, and within organizations. Here I primarily focus on internal organizational transfer. Since knowledge transfer among organizational units can provide opportunities for learning, cooperation and creativity, it has been directly related to organizational innovation (Tsai, 2001), as well as a number of other organizational processes (Reagans and McEvily, 2003). To be effective, transfer implies a level of understanding that enables action (Jensen and Meckling, 1995). In this essay it is suggested that governing frameworks provide the medium within which it becomes possible to share actionable knowledge. Innovation diffusion is ultimately a social process of information seeking and transfer of ideas perceived as new such as in clinical and translational science problems discussed in concluding this essay.

2. Frameworks as governance structures

A frame, or the act of framing, usually refers to putting a perspective into words when one encodes a message (1979) providing, for example, a definition, meaning, or conceptualization of an issue in a conflict situation (Putnam and Holmer, 1992). The concept of framework has a long history in the social sciences (e.g., Schon and Rein, 1994, Tversky and Kahneman, 1981), especially in relation to discourse processes (Goffman, 1974). Frames have been viewed as inherently delimiting, providing individuals with a situated context for action and for interpretations of particular 'strips of activity' (Goffman, 1974).

The concept of frames is most commonly used to indicate both a way of viewing the world and of subjectively interpreting it, acting as sense-making devices that establish the parameters of a problem (Gray, 1996). A fundamental property of communication is that interpretation depends on context. Frameworks are both windows on the world and lenses that bring the world into focus, at the same time they filter out some stimuli (Bolman and Deal, 1991). Often understandings attributable to various frameworks assume a taken-for-granted reality among interactants. Indeed, frameworks perform a number of critical functions for interactants: they are shared conversational resources; they provide a common emotional tone; they insure quicker responses; and they also provide a basis for temporal stability by insuring more continuous responses (Collins, 1981, Benson, 1975).

Here the focus will be on governance frameworks that provide a more encompassing context for interaction within organizations. A framework for interaction is the set of interrelated conditions that promoting certain levels of shared understanding of meanings, orient interactants to the nature of the event, and establish the ultimate purpose of continuing interaction (Johnson, 1997b, Johnson, 1998). A framework, then, is the ground that opens doors to social worlds of situated knowledge and governing rationalities. Frameworks provide the basic support structures for sharing knowledge within organizations through the development of an inextricable linkage between context and meaning often found in the underlying foundation for governance structures.

3. Governance structures

Governance implies the imposition of order by a common authority by allocating legal or quasi-legal entitlements and obligations (MacKechnie & Donnelly-Cox, 1996, pp. 46).

Structural research has been a primary focus of research on transfer and it has been centrally concerned with examining enduring governance structures. For example, Rogers concluded that 'in all cases it seems that social systems whose members are more closely linked by communication networks have a stronger diffusion

effect and a faster rate of adoption of innovations' (Rogers, 2003, p. 235). Structure determines what is possible in large organizations since it enables action within a governance framework. Without a predictable pattern of recurring relationships, coordinated activity, such as knowledge transfer, within the organization would be impossible. The more constraints that exist, the more things occur in predictable patterns; the more people know about their organization. Extensive reviews of the prior literature on structure has identified five common elements in most of its definitions; relationships, entities, configurations, context, and temporal stability (Johnson, 1992, Johnson, 1993). Hence, the following definition of structure: "… the relatively stable configuration of communication relationships between entities within an organizational context" (Johnson, 1992, pp. 100).

As Table 1 details each of the governing frameworks we will discuss, formal, informal, markets, and professional, has different manifestations of these key structural elements. As detailed below, each of these frameworks has been separately developed within different theoretical traditions. Johnson (1997b, 1998, 2009) has then integrated them by developing scales associated with them for empirical tests, applied them to case studies, and articulated their relationships to managing knowledge networks.

Table 1: Relationships between structural elements and governance frameworks

Governance Frameworks*

Structure Elements	**Formal**	**Informal**	**Markets**	**Professional**
Relationships	Hierarchical	Sentiments	Exchanges	Normative
Entities	Positions	People	Traders/Brokers	Professionals
Context	Rules System	Social/Personal/ Climate	Embeddedness	Practice Standards
Configuration	Organizational Chart	Sociogram	Bazaar	Guild/clan
Temporal Stability	Equivalent to Organization's	Limited	Dynamic	Generations, Common Law
Knowledge	Rules	Emotional Intelligence	Explicit	Tacit

*(Johnson, 2009, pp. 62)

A formal approach was the earliest systematic specification of the underlying basis for interaction within organizations and in many ways the other frameworks were established in opposition, or counterpoint, to it (Johnson, 1993). In fact, informal communication studies, the precursors to the modern interest in communication networks, became a residual category including a wide array of potential frameworks (e.g., sentiments, informal influence, and so on) for interaction. Thus, exchange rests on individuals pursuing their rational self-interest common to markets, while normative frameworks depend on operations of larger collectivities most clearly represented in the professions. The introduction of tacit knowledge also suggests a need for the more explicit introduction of culturally related normative elements captured most clearly in the professions. Let us know turn to a more explicit discussion of these four governing frameworks.

3.1 Formal

Administrative rationality in the Weberian sense has always been a central concern of the formal approach (e.g., Thompson, 1967) and with it has come the assumption that structures are designed to control behavior in such a way as to produce efficient/effective operations (Pfeffer, 1978), controlling competitive instincts to produce cooperative behaviors. Thus structures are conceived as fitting into a rational plan, rather than viewed as representing rationality after the fact (Weick, 1969).

Formal frameworks essentially represent the bureaucratic world of the organization, with its specification of patterns of super- and sub-ordination and other hierarchical relationships between positions in a relatively permanent system of rules (Weber, 1947). An hierarchy provides a framework for action by specifying control patterns, routinizing production, and implementing plans (McPhee, 1988). The kinds of behavior individuals can engage in are specified in company manuals and output targets are detailed in formal performance reports

(Baliga and Jaeger, 1984), laying the ground work for much of the common explicit knowledge with the organization. Usually formal frameworks require only a limited form of knowledge, based on system rules, training, and a legalistic understanding of relationships between positions best exemplified by the configurations embodied in the organizational chart. Actors are presupposed to be driven, or motivated, by the requirements of the positions they occupy within a specified organizational chart.

Knowledge transfer in formal structures is best accomplished if couched within this relatively limited frame which is especially conducive for sharing explicit, organizationally sanctioned knowledge. Often formal structure codify in rigid rules who is responsible for sharing knowledge and how it can be transmitted.

3.2 Informal

Often interaction results in collective sentiments; thus, friendship and other more emotional bases for relationship then provide the underlying basis for ties between people. Traditionally this has been cast as a primary basis for informal communication structures. The shared understandings characteristic of these relationships are often dependent on the depth of emotional involvement. Sentiments recognize the often neglected place of emotions (Mumby and Putnam, 1992) and the desire for affiliation in organizational life. The degree of affiliation felt between interactants determines the temporal stability of relationships which can be fleeting and the degree to which parties' sentiments may override other bases for relationships, such as exchange.

Knowledge transfer within this governing frame often depends on sophisticated understanding of the climate of the social system embodied in a high level of emotional intelligence. This level of understanding is essential to minimizing resistance and overcoming the uncertainty that is often associated with the change that knowledge sharing entails.

3.3 Markets

Recently, yet another view of structure, a market approach, which shares much with both network and formal approaches, and rests on economic and exchange assumptions, has emerged. Markets focus on exchange relationships between traders or brokers (see Table 1) and the paramount importance of trust often emerging from actors embedded in social systems in characterizing them (Kirman, 2001, Granovetter, 1985, Johnson, 1996) which has led to social capital perspectives on brokerage relations (Sawyer et al., 2003). In this view individuals are seen as driven to maximize rewards through their interaction with each other.

Obviously, an exchange relationship can rest on extremely rudimentary understandings of others, based on such fundamental issues as fair price and trust that the other party will follow through on bargains. Relationships are seen from a utilitarian perspective, with the primary bases for continued relationships resulting from a perception of mutual gain creating dynamic changes in social systems depending on changing rewards. Indeed, we may seek exchanges with others because they are not like us and they have resources that we do not possess.

Networks of explicit information exchanges, which also contain market elements, are particularly useful structures for organizations composed of highly skilled work forces who possess knowledge not limited to particular tasks (Powell, 1990). Indeed, more generally it has been argued that knowledge sharing may be best accomplished by market-like structures because of problems in recognizing the significance of information and communicating it effectively and efficiently (Gupta and Govindarajan, 1991). This form of decentralization often reduces the possibility of information overload within these organizations, and attendant delays and imperfect planning orders. Thus, in organizations like universities it may be better to minimize intrusive formal structures and promote wide-ranging interactions, while providing a framework in which trading relationships can occur, much like ancient bazaars.

3.4 Professional

Modern expertise comes partly at the expense of narrowness, and of ignorance about what other people do (Becker and Murphy, 1992, pp. 1146).

In some ways organizations have become umbrellas for various professional guilds. "They must be little republics of their own" (Polanyi and Prosch, 1975, pp. 204). These professions come together in organizations to pursue loosely defined larger objectives (e.g., universities and the pursuit of knowledge). Relationships between and among professions are often governed by such normative expectations (Cheney and Ashcraft, 2007). Professionals reinforce normative isomorphism in institutional theory terms, where all firms come to act in the same manner, especially under conditions of uncertainty where mimicry is often the safest course (Mizruchi and Fein, 1999). Unfortunately little theoretic attention has been focused on professionals (Lammers and Garcia, 2009, Pratt et al., 2006), especially on their interrelationships and micro level processes in organizations (Chreim et al., 2007), such as knowledge transfer, so we will discuss them in somewhat greater detail than the other frames here.

Most work on the professions has focused on how they establish (and protect) their jurisdictions and maintain their status within broader social systems. Knowledge is seen as a key tool in these processes (Lammers and Garcia, 2009, Abbott, 1988, Macdonald, 1995), especially in regard to "… special competence in esoteric bodies of knowledge linked to central needs and values of the social system" (Larson, 1977, pp. xi), and thus is an incidental focus of traditional research. Knowledge is intimately related with credentialing and training and the formal (and often legally, state enforced) differentiation of specialties in societies generally and organizations specifically (Macdonald, 1995). Relatedly, the development of tacit knowledge plays a key role in distinguishing professionals (Larson, 1977) and their relative competence (Schon, 1983). So, intraprofessional status often results from the ability of a profession to do non-routine work (Abbott, 1981) – to apply old knowledge in new ways to solve novel or unforeseen problems.

Over the last three decades cultural factors, which norms encapsulate, have assumed a central place in our theories of organizations. Culture is seen as providing an interpretive framework within which communication is possible; a macromedium for interaction (Johnson, 1993). Perhaps nowhere in our society is socialization more intensive than in the preparation of a professional with societies often delegating enforcement of practice standards to professional bodies. They, in turn, jealously guard their prerogatives, especially in relation to knowledge claims in specific areas (Cheney and Ashcraft, 2007), since these claims often define what the profession is and its relative status (Abbott, 1988). Their natural reluctance to share professional knowledge is further exacerbated by the more general reluctance to share knowledge with others if they are thought incapable of understanding it (Hew and Hara, 2007).

A key element of this socialization is the development of elaborate semantic systems of tacit understandings (von Hayek, 1945) that are difficult to share. The more elaborate and refined the framework, the more effective the communication within the profession (and that much more difficult outside of it). An advantage of strong cultures is their enhancement of shared understandings between actors and a norm of adjustment through consultation within a system of mutual authority that governs competition (Polanyi and Prosch, 1975). Clan controls result in high goal congruence and common interests, most appropriate when transformation processes are imperfect and measures of outcomes are low (Turner and Makhija, 2006). Interaction configurations are also provided with a normative base that expresses the underlying cultural values. This strong emphasis on socialization of succeeding generations reinforces the temporal stability associated with professions on a near common law accretion of knowledge.

Nonaka (1991) developed a more dynamic, interactive approach to these issues focusing on the implications of the spiral of knowledge and its articulation (converting tacit to explicit) and internalization (using explicit to extend one's own tacit knowledge). Thus professionals may gather large amounts of information to develop insights into deeper problems (e.g., financial trends) then articulate them, as financial brokers do, to specific buy and sell recommendations for their clients. However, once true expertise is developed, the professional may have a very difficult time translating it for the novice or generalist (Hinds and Pfeffer, 2003). Professions also develop strong norms of 'purity' that impede their ability to confront new, ambiguous problems (Abbott, 1981).

Expert knowledge does depend on the application of traditional knowledge to which the seeker is in many ways a servant. The freedom of members of these communities rests on certain obligations and systems of mutual authority that also entail personal judgments (e.g., scientists making hypotheses, lawyers preparing briefs). This process is accorded respect by society and certain things are left to communities of specialists to pursue; the mutual adjustment of these specialists then determine the ultimate directions of the societies of

which they are a part. Mutual adjustment depends in turn on consultation or, in the case of business, competitive forces. However, this system of spontaneous order has several limits: one, the public good can be surrendered to these personal judgments; two, society is ruled by a privileged oligarchy; and, three, it can drift in directions determined by no one (Polanyi and Prosch, 1975).

Some more cynical observers of the professions suggest that perhaps the most powerful motivation for doctors and lawyers to keep up-to-date is the ever present threat of a malpractice suit (Paisley, 1993). Most other professions do not have similarly compelling external motivations to keep current; they do not have sanctions for 'remediable ignorance,' for actions which duplicate or overlook existing knowledge (Paisley, 1980). These professions can in effect conspire to say it is pointless to try to keep up. They also have substantial interests in the preservation of personal knowledge unique to their professions by insuring there are heavy information costs to memberships in their priesthood, discouraging intermediation. However, never has secret knowledge been more accessible to those who are interested in it.

3.5 Negotiated order

The forgoing frameworks are ideal types. It is possible for an individual to act with others with their unique mix of the forgoing frames, to choose among themselves what frame (or combination of frames) will govern their interactions. It is also possible for two interactants to decide mutually on an idiosyncratic basis for interaction (Nathan and Mitroff, 1991). This possibility creates the underlying conditions for change (Strauss, 1978). Indeed, the absence of a dominating frame, or the lack of rigid specification when one or another applies, creates the possibility of flexibility within an organization.

So two parties communicate with each other to arrange the nature of their future interaction by mutual agreement. This negotiation is designed to establish a stable ordering of the relationship governing interactions within it, to move to a state where the underlying base for the interaction is taken-for-granted. At times this negotiation might be explicit, verging on contractual terms, at other times it might grow out of ongoing interactions.

4. Discussion

Within organizations, governance frameworks differentially impact knowledge transfer. Formal structures tend to lessen contact and contracting costs, but may not be very efficient at finding the optimal price. There is also a quite natural human tendency to exercise ever more control when performance problems are experienced, which may partially explain its prevalence, even though it 'is the organizational form of last resort" (Williamson, 1994, pp. 91). Informal approaches focus on the emotional impact of knowledge sharing focusing on issues such as potential points of resistance. Strong professional norms can severely restrict the content and interactants available to individuals, but interestingly, because of the increased sophistication of shared understandings, they can enhance the effectiveness of knowledge transfer. They also can improve efficiency by clearly delineating roles and relationships. In contrast, exchange based transfer have few barriers, but limited breadth and only moderate levels of effectiveness and efficiency, in part because of the differential understanding levels of the parties.

In general, it has been argued that there are three approaches to organizational phenomenon (Lee et al., 2004, Ferratt et al., 2005): universalistic; contingency, and configurational which focuses on bundles of attributes that exhibit synergestic, nonlinear effects on outcomes. This focus on commonly occurring clusters of attributes which can be linked to performance (Lee et al., 2004) is also linked to the classic system concepts of equifinality (Gresov and Drazin, 1997). By focusing on sets of practices, with the adoption of one limiting the adoption of others because of complementarity/fit/gestalt issues. Gestalts are feasible sets of internally consistent configurations, with research findings suggesting configurational approaches are more predictive of outcomes than others (Lee et al., 2004). For example, Andersen and Segars (2001) found that IT enhancing communication supported a decentralized decision structure that was associated with higher financial performance. Each of the governance frameworks can be seen as relating as a configuration to a variety of different organizational outcomes such as knowledge sharing. In this section we will focus on the issues of what types of knowledge can be shared and where it might come from, then we turn to two exemplars of these processes, clinical and translational science and information seeking.

The critical knowledge that is the focus of transfer in formal settings is a set of rules and routines that can form the basis for information processing. In informal governance structures knowledge of personal affiliations and coalitions is critical to determining the political acceptance of different types of knowledge. Markets are best suited for the transference of knowledge as a commodity that most often takes on explicit, limited forms, although in certain situations it may have special significance, somewhat akin to insider trading, because of the ability of one of the parties to use it for their unique benefit. Finally, professional knowledge is often tacit based on years of experience and as a result difficult to transfer. In addition, professionals often jealously guard their secrets and are reluctant to share them with outsiders.

This quick sketch also raises some interesting issues of where new perspectives come from and what is the nature of the knowledge that is transferred. Interestingly, the first three frameworks focus on the processes by which knowledge might be shared, while professional knowledge is also concerned with this in developing a unique approach to problems, it also deals with content more directly. So, fundamentally, these frameworks provide the overall institutional frame in which knowledge can be shared. One of the reasons why transfer has proved so difficult is that they must all be operating in concert with each other. Thus agents are needed to facilitate transfer of tacit knowledge who operate simultaneously within several frames, a key role for management in the modern organization (Postrel, 2002).

One of the basic problems with relying exclusively on what goes on within an organization is that there is a finite limit to the number of new ideas that can be produced from the same elements of a knowledge set (Katila and Ahuja, 2002). Professions play a unique role in determining where is it substantive change within organizations comes from. In many ways strong professions transcend particular organizations and make their boundaries more permeable. Membership in a profession provides access to a much larger, scalable tacit knowledge community outside the organization (Lammers and Garcia, 2009). These much broader tacit networks, especially associated with professional institutions, become the primary vehicle for external learning (Lammers and Garcia, 2009, Van der Krogt, 1998). This is a key shortcoming of the other approaches to governance which primarily focus on what happens within the firm

Professionals seek answers to their questions wherever they may easily be available, whether inside or outside the organization. Indeed, professional membership is likely to diminish organizational identification (Lammers and Garcia, 2009). Sophisticated search agents and brokers only accelerate this trend. This is a unique advantage of a professional framework - they are scalable, they bring the world outside in (Newman et al., 2006), becoming a more modern version/extension of the classic cosmopolitan/local distinction (Gouldner, 1957).

The relationships between diverse professional groupings, who jealously guard their domains, is an increasingly critical problem, particularly in health care settings (Clark, 2006, D'Amour et al., 2005). "Professionals tend to pursue their own aspirations and to maintain their professional autonomy and jurisdiction rather than opening their practice to collaborative behavior" (Sicotte et al., 2002). However, balancing cooperation and competition must be achieved, most notably in sharing information that is in the interest of the collective, in spite of individual motivations to hoard (Kalman et al., 2002). The greater effort that is devoted to specialization, which implies you benefit from the work of others, the more reluctant someone will be to give up what they know, especially to perceived free riders. Some have suggested that the best motivator for knowledge sharing is a sense of collectivism and reciprocity (Hew and Hara, 2007).

4.1 The clinical and translational science problem

There is a widely held view that the U.S. is not receiving the full value for its investment in biomedical research (Colditz et al., 2008, Real, 2008, Lee, 2007). While there are over 10,000 randomized trials of new intervention approaches every year, very few innovations are ever widely adopted (Grol and Grimshaw, 2003). Drug companies have also expressed concern about the length of time it takes for their investments to pay off and their low success rate, with only 1 in nine compounds eventually achieving government regulatory approval (Berelson and Steiner, 1964). While there has been growth in evidence reviews that inform practice there also is a growing gap in their implementation (Colditz et al., 2008). Of course, this is emblematic of a larger problem in translating research into professional practice common to many disciplines including communication, management (Reay et al., 2009), and information science (Garnett, 2011).

Clinical and Translational Science Institute's began to be funded by NIH in 2006. They were established to be the home for clinical research within Academic Health Centers and to improve their resource base by establishing linkages to industry and other health care organizations enhancing the level of community engagement, while at the same time increasing the control of NIH over their direction (Robertson and Williams, 2009). They are also designed to provide the critical infrastructure needed for traditional academic training and linkages to clinical research resources (Robertson and Williams, 2009). The key problem faced both within AHC's and outside of them is interprofessional collaboration in sharing relevant knowledge.

The reasons why it takes nearly two decades to transfer knowledge into routine medical practice are complex and still poorly understood (Sussman et al., 2006). Changes in practice are rarely easy and require collaborations between disciplines in very complex systems (Grol and Grimshaw, 2003). In the 1970s and 80s, in recognition of the difficulties in knowledge translation, the dominant conceptual model came to focus on the inherent differences between research and policymaking communities with the two communities theory stressing that the inherent differences between them were often intractable (Jacobson et al., 2003). Translational research often demands that there be communication across disciplines, which often runs into basic problems that scientist have in communicating well with people from the practice community (Sussman et al., 2006).

If we apply the framework of governance structures to this problem we can easily see why it has proved so intractable. First, AHC have a layering of formal bureaucracy that constrains many research processes (e.g., human subjects protections, animal usage, and so on). Then, we have an informal structure governed by sentiments and political coalitions that can prove difficult to negotiate and which is particularly important traditionally for physicians who often place more weight on reputational standing of their colleagues in adopting new practices than on bureaucratic dicta. Next, we have market exchanges and the inevitable question of what is in it for me and who can I trust. Finally, we have the strong, compelling normative interests of a multiplicity of professions. In some ways, all of these forces need to be aligned for successful implementation, although adoption and creation may only depend on one. So new ideas are created, but it may take nearly two decades to align all the frameworks.

When moving from the bedside to the community we face the additional problem that these factors become even more diffuse, since the formal structures of government regulations and insurance guidelines is not bolstered by the bureaucracy of the AHC. Further market relations and sentiments become much more diffuse and fractured, so the only constant is the professional framework within which practice is embedded. All this makes the information sharing and seeking components more critical for widespread practice implementation.

4.2 Information seeking

Not only to people initiate sharing of information they possess with others, which has been the primary focus of the literature on knowledge sharing, but individuals often initiate sharing on their own based on their perceived needs. In doing this they must decide on the objects of their searches. Will a health professional who needs information seek it from the formal structure of the organization, will they depend on friends, will they exchange their knowledge with other health professions in teams, or will they rely on the advice of colleagues in their own profession.

Sadly, in a series of studies, Hersh has demonstrated that the information seeking practices of health professionals are very problematic which further impedes effective sharing. So, an experimental study by Hersh, Crabtree et al. (2002) showed that students of medicine and nursing were only partially successful in applying the results of medical database searches to clinical questions. Subjects did the best in interpreting the implications of medical literature for prognosis, and worst in applying retrieved documents to questions of diagnosis and potential harm to the patient. An earlier analysis by Hersh (1998) of existing studies concluded that literature searches exhibit poor recall of potentially relevant items, their results typically address only a small portion of physicians' actual needs in practice, and overall the extent of the benefits of information retrieval for medical doctors are unclear.

Johnson (1996, 1997a) has summarized the basic approach to information seeking of individuals with Case (2012) in a more recent review making very similar arguments. First, people seek out information that is the most accessible. However, second, having access to information means very little if an individual does not have

the proper information seeking skills and training to retrieve it. Third, people follow habitual patterns in their information seeking. Fourth, face-to-face, interpersonal communication is the preferred mode of communication for information seeking. This creates some real problems of scale when people move outside of the physical proximate setting of AHC. Fifth, different types of persons use different sources of information. This is further reinforced in medical setting by professional norms and standards of care which may differ somewhat from profession to profession in a health care team. Finally, there are cognitive limits on the amount of information individuals can process, especially in short term memory. All of this is further complicated by the near chaotic framework typical of modern health care with multiple frameworks and players within each of them coming into play (Lawrence, 2002).

5. Conclusion

The corporations take on the task of putting appropriate specializations together to exploit the synergistic advantages thus accruing. The business executive becomes the integrators of the bright ones' capabilities (Fuller, 2010/1962, pp. 80).

As this quote suggests the problem of bringing together different professions to share knowledge has been with us for a long time with Fuller maintaining that Alfred North Whitehead early in the 20th century traced it to the increasingly specialized training of professionals at our universities. This created what was termed the Whitehead Dilemma of ever deepening tacit knowledge that is difficult to bring together to apply to society's problems. So, a compelling focus of future research is how these frameworks are negotiated in an increasingly professionalized world where specialists must integrate their activities in interprofessional teams.

Managers need tacit knowledge, deep understanding for fundamental change, but this knowledge is supported by existing frameworks and various inertial forces. This can result in coalitions and power struggles, which often are a by-product of tacit knowledge. A key social outcome of more specialized tacit knowledge is the problems of concertative control resulting in conformity and influence within groups which makes intergroup action much more difficult. While we need the support of others, they also limit our action.

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