Using Logic Analysis to Evaluate Knowledge Transfer Initiatives:

The Case of the Research Collective on the Organization of Primary Care Services

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Abstract

Models that shift more responsibility onto researchers for the process of incorporating research results into decision-making have greatly gained in popularity during the past two decades. This shift has created a new area of research to identify the best ways to transfer academic results into the organizational and political arenas. However, evaluating the utilization of information coming out of a knowledge transfer (KT) initiative remains an enormous challenge. This article demonstrates how logic analysis has proven to be a useful evaluation method to assess the utilization potential of KT initiatives. We present the case of the evaluation of the Research Collective on the Organization of Primary Care Services, an innovative experiment in knowledge synthesis and transfer. The conclusions focus not only on the utilization potential of results coming out of the Research Collective, but also on the theoretical framework used, in order to facilitate its application to the evaluation of other knowledge transfer initiatives.

Keywords

case study; evaluation; information utilization; knowledge transfer; logic analysis

Introduction

The past two decades have seen a progressive decline in the use of the pull model of using research results in decision-making and its replacement by models that shift more responsibility onto researchers (Lomas, 2005; Mitton et al., 2007). In the pull model, it is the decision-makers' responsibility to locate, identify and incorporate research results and scientific evidence into decision processes and policy-making (Knott and Wildavsky, 1980). Though this model was once the norm, the push and exchange models are becoming

increasingly important (Denis and Lomas, 2003; Lavis et al., 2003), making it the researcher's responsibility to contribute to the transfer of results into the organizational and political arenas (Amara et al., 2004; Knott and Wildavsky, 1980). This shift has opened a new area of research to identify the best ways to do so (Mitton et al., 2007; Nutley et al., 2003). The core of this article is centered on a related question: how to evaluate knowledge transfer (KT) activities at the organizational (management) and system (governance) levels (Ferlie and Shortell, 2001).

We were invited to evaluate an innovative experiment in knowledge building and dissemination: the Research Collective on the Organization of Primary Care Services in Quebec (Pineault et al., 2006, 2007). Evaluating effects presented a number of challenges. How could we measure the different types of utilization? Could we be sure that the utilization as reconstructed was actually due to the Research Collective and not to other types of information or other factors? Wouldn't the use that the actors claimed to have made of the Collective's work manifest rather the utility derived from the exercise? Faced with these problems, we decided to proceed differently. We chose to carry out a logic analysis of the Collective to analyze its utilization potential. To do this, we first developed a theoretical framework – from a synthesis of literature in the fields of evaluation, political analysis (including lobbying), and knowledge transfer and exchange – that would allow us to define the utilization potential of knowledge transfer initiatives (Contandriopoulos et al., 2008). Then we tested the framework by comparing elements identified as maximizing utilization potential with the experience of the Collective (documents and interviews).

The aims of this article are threefold: first, to provide insight into KT processes, drawing from the evaluation of an innovative model; second, to discuss the challenges of KT evaluation; and finally, to discuss the implications of these conclusions for the respective roles and responsibilities of researchers and decision-makers in the new context of knowledge use in decision-making.

The Research Collective

The Research Collective is a method of knowledge synthesis that promotes the transmission of knowledge and its use in policy development and in the management of organizations and systems. This method is based on a number of principles that distinguish it from systematic reviews. First, the Collective integrates not only scientific knowledge, but also the tacit knowledge of decision-makers. Second, in synthesizing knowledge, the Collective bases itself on research studies in progress, rather than on published work. The objectives of this approach are to by-pass the delays associated with getting research results published, to promote knowledge transmission in real time, and thereby to maximize the relevance of scientific knowledge in relation to the current context. The Collective was principally motivated by the fact that the organization of primary care services had been designated a priority area by the Ministry of Health, and many research projects on this theme had been funded.

The Research Collective initiative was funded by several sources including government, research centers and funding agencies (Pineault et al., 2006, 2007). Operationally, it started

when a group of researchers ($n = 8$) invited others working on primary care services in Quebec to submit a brief description of their research. Among the 90 projects received, 30 were selected based on pre-established criteria. The investigators on these 30 projects agreed to fill out a description sheet and to come and present their results to other researchers and a panel of decision-makers ($n = 5$) who had been invited to react and comment on the studies (June 2004). All the researchers in the Collective then worked together to synthesize the combined knowledge. This synthesis was published as a report (November 2004) and then presented and discussed by the panel of decision-makers in a plenary session, before an assembly ($n = 111$) made up of researchers and decision-makers in nearly equal numbers (February 2005). Table 1 lists the main messages conveyed by the Collective.

The Research Collective, a one-year exercise, unfolded in parallel with a process of major health system restructuring in Quebec following the adoption of Bill 25 (Government of Quebec, 2003). The organization of primary care services – the subject of the Collective's research – was at the heart of this reform, of which one of the most contentious aspects was the forced merger of institutions into new local community structures (centers for health and social services, or CSSSs). These CSSSs are expected to adopt a population health perspective, although they are funded according to a historical budgeting system and there is no patient registration system, nor any form of capitation. The physicians' payment system and autonomy were not modified. The reform relied mostly on consensus-building and collaborative governance combined with performance contracts between CSSSs and the Health Department to modify primary care services delivery. However, as we argue in this article, it is impossible to assess the nature and extent of use of the Collective's message from an analysis of the implemented reform.

Methological Considerations

Evaluating Knowledge Transfer Initiatives

Knowledge transfer (KT) encompasses multiple processes and activities (Nutley et al., 2003) aimed at modifying practices at various levels (Dobrow et al., 2006; Hanney et al., 2003). There are multiple typologies used to identify the target level of KT activities. Ferlie and Shortell (2001: 283) identify four levels: 'the individual, the group or team, the overall organization, and the larger system or environment in which individual organizations are embedded'. Black (2001: 275) relies on the typology of Webb and Wistow (1986) to suggest three levels: 'A useful distinction has been made between practice policies (use of resources by practitioners), service policies (resource allocation, pattern of services), and governance policies (organizational and financial structures).' At the practice level, there are well-developed strands of work designed as evidence-based practice, quality improvement, and implementation research. This literature focuses on the development and evaluation of interventions to ensure professional practice is consistent with best practices and evidence. At the service level there is a shift from an individual and clinical perspective to a population and organizational delivery perspective (Dobrow et al., 2004). The present article does not cover the same ground; rather, it targets broad organizational (management) and systemwide (governance) decision-making levels. Because of this difference in focus, the kind of KT

activities analyzed here as well as the evaluation framework used to assess them are of a different nature (Black, 2001).

Most evaluations of KT interventions at a system-wide level rely either on indicators that are quite remote from actual use or else on users' self-reported use. A first avenue of evaluation posits that use logically depends initially on users' reception, and thus limits itself to measuring information reception by end-users (Knott and Wildavsky, 1980). The strength of this method is mostly its compatibility with robust quantitative data collection. However, the possible link between reception and use is left in the dark, and, as Knott and Wildavsky (1980) put it, 'adoption without implementation is a hollow victory'. A second avenue relies on questionnaire sampling of users' perceived use (e.g. Amara et al., 2004; Landry et al., 2003). Again, this allows for large samples and quantitative data, although the divergence between self-report and actual use can be significant. To illustrate this last point, one can think of physicians' opinion that their prescribing behavior is unaffected by pharmaceutical industry marketing, notwithstanding abundant evidence to the contrary (Morgan et al., 2006; Steinman et al., 2001). For the present evaluation, we were not satisfied by either of these avenues and chose rather to rely on logic analysis, which proposes a theoretical evaluation of the intervention.

Logic Analysis

Logic analysis is a way to analyze and improve the theory of the intervention by comparing the program theory or the implemented intervention with scientific knowledge or expert advice (Contandriopoulos et al., 2000). Logic analysis is used to evaluate the adequacy of the intervention theory and its potential impact. It is not used to determine whether the intervention has had real effects on the situation, which is the object of effect and implementation analysis, but rather whether the intervention is designed in a way that can logically produce the expected results. Logic analysis is useful in better understanding the intervention's strengths and weaknesses (Brouselle et al., 2006, 2007). It also allows us to assess the strength of the causal link between the intervention and the expected effects. A strong causal chain is a precondition for conducting an effect analysis but, in the absence of such a link, logic analysis can provide insights into the potential of the intervention (although that potential is in no way a guarantee of achieving effects).

In the present evaluation, we developed a conceptual framework on the basis of scientific literature from three fields that propose different and complementary perspectives on knowledge utilization: policy development and lobbying, evaluation, and knowledge transfer (see Contandriopoulos et al., 2008, for the complete discussion). This synthesis confirmed that the causal path from knowledge transfer to knowledge use is both complex and weak. We could easily imagine an initiative with strong utilization potential but no real utilization and, conversely, an initiative with weak utilization potential that, for whatever reason, results in an important utilization of information. We decided to conduct a logic analysis of the Research Collective to understand whether conditions were favorable for information utilization and whether the process was optimal or could have been planned differently to improve the potential for utilization.

We compared the various dimensions that had an impact on information use according to the established conceptual framework to the actual experience of the Research Collective on the Organization of Primary Care Services. To do this, we analyzed the written documents available (reports, meeting notes, conference recordings, published scientific articles of the Research Collective) and conducted two group interviews, one with the Research Collective investigators and one with the stakeholders involved in the Collective. Data were analyzed by documenting each of the dimensions highlighted in the conceptual framework. We then were able not only to assess the Collective's utilization potential, but also to identify elements that could have increased this potential. Finally, we were able to adapt the conceptual framework to the particular case of research findings utilization.

Logic Analysis of the Research Collective

Development of the Conceptual Framework

The first current of literature used in designing our framework is derived from the conceptualization of the link between information and decision-making in political science at large (Kingdon, 1995; Lindblom, 1959; Sabatier and Jenkins-Smith, 1993, 1999) and particularly in the subfield of lobbying (Ainsworth and Sened, 1993; Austen-Smith, 1993; Baumgartner and Leech, 1998; Berry, 1997; Carpenter et al., 1998, 2003, 2004; Jordan, 1991; Milbrath, 1960, 1963). This literature provides convincing evidence which suggests that neither the content, the nature, nor the scientific quality of the information will have anything but a marginal impact on its utilization. This suggests there is only a weak causal link between information transmission and its utilization in decision-making. The benefit of this first current is to highlight the notion that the core of the problem is competition for decision-makers' attention, as well as competition between types of uncertainty and between sources of information. This tallies closely with Knott and Wildavsky's seminal paper (1980). Our framework also relies heavily on Peterson's (1995) distinction between 'programmatic' and 'political' consequences.

A second current of literature – on evaluation – enriched the analysis framework on the basis of studies on the utilization of evaluation results and, more broadly, research use (Beyer and Trice, 1982; Champagne et al., 2004; Patton, 1988; Weiss, 1977). These authors identify different categories of utilization (instrumental, symbolic, and conceptual). Instrumental utilization refers to the use of programmatic analytical information to take, influence, or change a decision, policy, or program. Symbolic utilization occurs when analytical information produced by evaluations or other scientific sources also serves to legitimize predetermined positions. Conceptual utilization belongs to the cognitive process of sedimentation, through which analytical information received by decision-makers is gradually integrated and assimilated, becoming part of their everyday experience base.

The third and last current of literature is what is designated here as the knowledge transfer and exchange (KTE) literature (Mitton et al., 2007) as promoted by, among others, the Canadian Health Services Research Foundation (see e.g. CHSRF, 2003, 2005; Davis and Howden-Chapman, 1996; Denis and Lomas, 2003; Feldman et al., 1997; Frenk, 1992; Lavis et al., 2003; Lomas, 2005; Roos and Shapiro, 1999). A significant contribution of the KTE movement has been to suggest that the most relevant information, and therefore the most

useful and usable, is a product of neither the politico-administrative nor scientific arenas, but rather a co-production made possible by the interaction of individuals in both (Denis and Lomas, 2003; Lavis et al., 2003). Likewise, the KTE school suggests that, although scientific information may be reliable, it is also uncertain, dynamic, complex, debatable, and rarely complete (CHSRF, 2005). Coproduction allows for scientific information to be complemented by non-scientific data (expertise, viewpoints, and realities of other actors) and for knowledge to be adapted to the context in which it would be used (Abelson et al., 2003; CHSRF, 2005; Pirkis et al., 2006).

The integration of three fields approaching information utilization from different perspectives and using different concepts shows the complexity of the phenomenon (for a detailed presentation of the framework see Contandriopoulos et al., 2008). Because of this complexity, there could definitely be cases where scientific information of good quality is transmitted according to best practices without any subsequent utilization. Information utilization depends not only on the transmission process, but also, and primarily, on the contextual dynamics of the political arena, over which the researcher has no control – although adapting the strategy to the context is within the realm of the possible. This fact calls into question the relevance of effect or impact analysis. First, with regard to the nature of the effects, if those participating in the decision-making process perceive a use for the information, this might be expressed by a certain instrumental utilization of the information, but it could also manifest as a symbolic utilization, or even as a perceived utility, which is a very different concept from that of real utilization. Conversely, if the actors involved in decision-making see no information use, we cannot conclude there has been none. In fact, there is only a very tenuous and questionable link between perceived and actual utilization of information, leading us to set this aside as an unreliable and invalid indicator of utilization.

If it is not possible to carry out effect/impact analysis, it is nevertheless possible to consider evaluating an intervention's potential for utilization. The integration of the three approaches presented here demonstrates that there are different dimensions that support information utilization. We believe it is possible to evaluate information utilization by assessing dimensions that have an impact on the actual utilization of information, according to the theoretical framework.

Three major dimensions seem to influence utilization, i.e. the context of the political arena, the traits of the information carrier and the characteristics of the information transmission process (see Table 2). The only element over which the researcher has a certain amount of control is the transmission process. Convergences among the literature on lobbying and knowledge transfer support the relevance and validity of these factors.

Analysis of the Intervention Theory

Characteristics of the environment—An environment favorable to information utilization is characterized by the openness of the decision-making system, the presence of the subject on the decision-makers' agenda, and programmatic uncertainty about the decision.

As we mentioned earlier, the Collective's messages were publicized in the midst of a major reform of Quebec's healthcare system. This reform therefore provided a window of opportunity for the Research Collective, given the many decisions engendered at different levels of the health and social services network. Nevertheless, the reform's development phase took place within a relatively closed system, with very little external consultation by the political apparatus of the Ministry of Health and Social Services (MSSS). The utilization potential for this first phase was therefore relatively low. Once the broad parameters of the reform had been established, the system opened up on two levels. At one level, the desire to understand the logic behind the reform (*sensemaking*, Weick, 1995) spurred much discussion within the network which, by its very nature, resulted in an exercise of relatively open debate. At another level, the reform's implementation required the involvement of many institutional and individual players and prompted lively political interactions, in which groups and institutions came into conflict to defend their preferences.

The nature of the uncertainty surrounding the decision shifted progressively over the course of the Collective's work. Our hypothesis is that the potential for symbolic utilization is greater when the uncertainty is mostly political, i.e. when it comes to responding to political uncertainty, attributing meaning to the project and justifying it. On the other hand, conceptual and instrumental utilizations are more significant once the uncertainty is mostly programmatic, i.e. once information is required for effective decision-making.

From our understanding of the decision-making system within which the Collective evolved, the initial uncertainty was political, i.e. related to the impact of the proposed reform on the balance of power within the network. Also, some people in the network faced uncertainty regarding the continued existence of their own institution. A source of apprehension and anxiety, the reform caused many institutional actors to adopt positions relative to each other, or else to seek ways to calm the fears engendered by the prospect of change. In this environment, the Collective's work was well-positioned for symbolic utilization of its research findings. Indeed, decision-makers might be tempted to use the findings in such a way as to underscore the reform's legitimacy, or else to assert their institution's position within it (*ex-post justification*). In other words, the findings could serve as ammunition to confront all sorts of threats introduced by the reform. Almost simultaneously, however, decision-makers also had to understand the arguments, principles, and concepts that were used by the reform's initiators. Indeed, the political uncertainty could also be related to a need, on the part of certain decision-makers in the network, to understand the meaning of the reform (*sensemaking*). The Collective's work thus offered an external reference point that already encouraged conceptual utilization of the results.

The uncertainty became programmatic once the players in the health and social services system turned more toward questions of compliance with the reform's imperatives. Those preoccupations progressively outweighed political uncertainty, as the broad parameters of the reform's implementation became defined and as institutions were called upon to decide how their units of production would adapt to the new organizational structures that were being set up. For decision-makers, the findings could serve as levers for initiating change. This possibility made them focus primarily on elements of the summary that directly supported the implementation of change. However, it also motivated them to retain certain

practices as conditions for success. Thus, at the same time, there was continued conceptual utilization, to the extent that the findings made it possible to understand the issues and to consider how to orient the change, particularly in the long term or in relation to other decisional processes besides those strictly related to implementation of the reform.

Altogether, the information produced by the Collective was potentially useful not only in assessing the reform, but also in understanding its environment, defending its logic, and participating in its implementation. The utilization potential was strengthened because the information was based on recent analyses, some of which had not yet even been published. This potential was, however, limited by the specificities of the environment itself. As soon as the highest levels of authority had determined the broad objectives of the reform, the possibilities of introducing fundamental changes became limited. The decision-makers' interest was rapidly channelled toward the details of the reform. This phenomenon was observed at the meetings organized by the Collective between researchers and decision-makers. Discussions initiated by the decision-makers were mostly on those aspects of the reform that elicited the greatest anxieties, particularly structural integration and hospital-centrism, while dimensions considered important by the Collective – tension between continuity and accessibility, or questions of disease management and of case management – were largely overlooked in the discussions. The information was appropriated mainly in terms of the political agenda of implementing the reform.

Characteristics of the information carrier—The characteristics of the information carrier that are most conducive to information utilization are the carrier's credibility and proximity to the decision-maker. On both these levels, the Collective appears to be at an advantage.

The Collective is maintained by a small group of researchers who are well-regarded both by the research community studying the organization of healthcare services – primary care in particular – as well as by the health and social services network. The credibility of the Collective's main organizer, added to his research colleagues' capacity for influence in the health and social services network, seems to have played an essential dual role. On one hand, it stimulated an interest among other researchers in primary care services in participating in the Collective's work. On the other hand, these traits of the information carrier also explain the interest shown by the decision-makers who agreed to participate in the two main activities organized for their benefit.

Initially, five decision-makers agreed to be on the panel to react and comment on the studies presented at a seminar meeting held for this purpose. The invitation extended to decision-makers was based on a pre-existing relationship of trust: these decision-makers were known to the small group of researchers and were respected for their analytical abilities, their sensitivity to the realities of research, and the diversity of their perspectives. Policy-makers and not managers, these were individuals who worked within the Quebec Ministry, regional agencies, or organizations in the public health sector, who participated in the work of the Collective as individuals and not as representatives of their institutions. In addition, each had the capacity to contribute to the decision-making processes of their institutions, although

none were in the highest positions of authority, where there is power to sway major political orientations.

Subsequently, 50 decision-makers from the health and social services network accepted the Collective's invitation to attend a plenary knowledge exchange meeting at which its synthesis report was presented and discussed. At the plenary session, the credibility of the decision-makers on the panel helped strengthen the message that was passed along to all the attendees. They took turns offering their interpretations and assessments of the research synthesis. In this way, not only did their participation bring credibility to the initiative, but it also provided an interpretation and a line of reasoning both by and for the decision-makers for whom the findings were intended. Finally, more broadly, this plenary session provided all participants with the opportunity to become potential vectors of information dissemination in their respective institutions.

The KTE literature on the involvement of decision-makers posits that proximity between users and producers encourages information utilization. Thus, a decision-maker who might influence file 'X' should work directly with a researcher who is analyzing phenomena related to file 'X'. From this angle, the proximity between the researchers in the Collective and the decision-makers does not appear very great. In fact, even though the researchers worked actively with the panel of five decision-makers, these five persons were not, in themselves, in a position to significantly modify the implementation of the reform.

Within the framework of the Collective's activities, the involvement of decision-makers seems mainly to have: (1) provided an interface for conveying political and scientific issues, and (2) brought credibility to the process and served as a vector for dissemination. The decision-makers involved were also atypical, or even 'hybrid', in the sense that all of them – contrary to the norm – had strong personal experience of the realities of research. For all these reasons, we feel that the proximity with decision-makers largely achieved its objectives by encouraging conceptual and instrumental utilization of the information.

Characteristics of the process—According to our theoretical model, information utilization is favored when the decision-maker's involvement is significant and when the connection between the decision-maker and the researcher is mutually advantageous (symbiotic).

In this respect, the last part of our analysis allowed us to identify certain important aspects of the process that characterize the work of the Collective: an investigator-driven building of knowledge; discussion of preliminary work and the explanation of issues assumed by a panel of decision-makers; and discussion of the research synthesis with a view to channeling its appropriation and broad dissemination toward a plenary session that brought together decision-makers and researchers.

More concretely, the Collective's approach was to create, in the first place, a scientific consensus and to bring a panel of decision-makers into the creation of this consensus during a day of exchange. From this initial work, researchers were able to identify key ideas around which they then focused their work. They also paid attention to points of view that diverged

from scientific evidence, with the idea that these could be useful for interpretation and analysis. In this context, decision-makers on the panel thus played a consultative role in interpreting findings and in sensitizing researchers to the practical environment and the potential consequences of various approaches that might be supported by scientific results. However, the key ideas or messages coming out of that initial work were subsequently the subject of new discussions in a plenary session among a much larger group of researchers and decision-makers, in such a way as to encourage their appropriation and dissemination. On this occasion, the decision-makers on the panel each spoke for a set time of seven minutes, and thereby took on the dual role of explaining and reasoning that eventually facilitated the transmission of the results to all the attendees.

In this process, the utility of the decision-makers and the researchers is thus unequal. Rather than a symbiotic relationship characterized by equivalent contributions to the building of knowledge and an equivalent interest in its utilization, it rather resembles a classic dialogue process in which contributions and interests vary according to the field of practice. In this respect, the Collective's process appears to be a deliberative type of initiative bringing together different expertises, and not a coproduction of knowledge as the KTE school would have it.

According to the strict view of the KTE school, both the definition of research questions and the process of knowledge building should be done as a coproduction of researchers and decision-makers. Yet the dispersion of power, the skill requirements, the availability of the actors and time constraints all render this approach less realistic in the Collective's work context. Moreover, as is argued in the theoretical model, the desirability of such a coproduction is debatable, particularly because of the risk that it might encourage a political and symbolic utilization of the results. From the researchers' perspective, a coproduction approach might have tainted the results with ideological positions or political agendas which would have directly affected their credibility. According to the Collective,

... decision-makers' viewpoints do not necessarily have to be integrated into the syntheses but rather should be examined for convergence or divergence with researchers' viewpoints. This deliberative process is more likely to enrich discussions and lead to enlightened decision and policy making. (Pineault et al., 2007)

The KTE school also favors deliberative approaches such as those experienced by the Collective in knowledge building. The value of these approaches would be in maximizing the utility and usability of the knowledge produced. The literature on lobbying, however, emphasizes their limitations. There is a risk of the message being diluted, losing focus, and becoming ambiguous because of all the negotiations required among divergent positions. In the case of the Collective, the deliberative approach does not seem to have resulted in dispersion of the message. Rather, it promoted the development of consensus around messages to be disseminated, which seems to have improved the utilization potential.

Also, the approach allowed the potential users to meet to discuss the findings, which immediately familiarized them with the work of the Collective and favored a more direct appropriation of some results. In contrast, a simple report that would have been looked over

just once would have been less likely to result in such immediate familiarization and appropriation. Seen from this angle, the conditions created by the Collective appear to favor the likelihood of conceptual utilization of its results.

According to our theoretical model, information utilization is also favored when the dissemination of knowledge, or even of messages, is adapted to the requirements of the decision-making environment and when those messages are presented in a manner that is summarized, concise, and appealing.

In line with the perspective of the KTE school, the main messages passed by the Collective were relatively general, i.e. they were not specifically formulated for any given decision-maker or organization. Nonetheless, they were designed to be easy to transpose. The messages were drafted in such a way as to highlight the link between actions or principles and a certain number of programmatic consequences. The decision-makers nevertheless noted that the Collective's efforts at contextualization were limited. Concerned about the internal validity of their approach, in accordance with current scientific approaches, the Collective did not fully satisfy all the decision-makers that they had produced a message that was immediately transferable or adaptable to the reform environment in which they had to take decisions.

The Collective made noteworthy attempts at communication. In particular, these attempts can be seen in the production of a synthesis report geared toward conforming to practices valued by the KTE school: content that is summarized (seven key messages), concise (messages cleared of their conceptual complexity), and appealing (presented in a user-friendly format). The researchers found this exercise of synthesizing to be complex and delicate. It involved a real departure from the usual requirements and processes for communicating research results. The product of all this effort nevertheless did not entirely respond to the requirements of the lobbying school in terms of simplicity and univocality, nor to certain expectations on the part of decision-makers regarding contextualization.

Still, it is important to acknowledge that striving for equilibrium between focalized messages and scientific neutrality represented an enormous challenge. The lobbying school suggests that the simpler and more univocal a message is, the more its political effectiveness is enhanced. The Collective decided to emphasize seven questions, which led to a 'cherry-picking' type of appropriation, such that a decision-maker could choose to focus on certain messages and ignore others. Very clearly, there is a tension between presenting lessons that are scientifically neutral and valid – i.e. directly derived from analyzed studies – and being politically effective in targeting, from among all possible lessons, those most likely to be used.

A more continuous transfer process, which might have stimulated more intense interaction and debate between researchers and decision-makers, could have been an alternative to promote even further the appropriation of all the results. Both the researchers and the decision-makers felt that continuing the dialogue would have allowed them to deepen the lessons of the Collective and to promote their transfer into the decisional environment as the context evolved. Such a process would, in particular, have met the expectations of those

decision-makers for whom action is directed less toward specific interventions and more toward continuous improvement of practices and processes.

Discussion

Logic analysis of the Research Collective on the Organization of Primary Care Services in Quebec made it possible to analyze its potential for utilization by decision-makers. Carrying out the logic analysis not only helped us to analyze the Collective, but also allowed us to test the conceptual framework we had developed, and to broaden or revise certain aspects, most especially in the specific context of knowledge transfer from scientific researchers to decision-makers, rather than from lobbyists to people in key decision-making positions.

Writings on policy analysis and lobbying form a very rich corpus of literature from which we can identify factors that strongly influence decision-makers' utilization of knowledge. Still, the perspectives of lobbyists, and the interests upon which they are based, are most often very different from those of researchers. While lobbyists have a direct interest in advancing a particular cause, researchers generally do not have such immediate and fundamental interests in having their message translated into decisions. The researchers' perspective promotes, at most, informed decision-making. The juxtaposition of these two points of view, in terms of our analysis, reveals a great deal about the points of tension noted in certain dimensions of the framework used. We present here those dimensions which should, in our opinion, be adapted to better reflect the conditions that influence decision-makers' utilization of research results.

The Topic of the Information on the Agenda

The work of the Research Collective unfolded concurrently with a major transformation in the organization of primary care services, which thrust the researchers' main area of interest onto the decision-makers' agenda. Nevertheless, the reform called greatly upon decision-makers' capacity to respond to change. According to our framework, it is the interaction of the political agenda and the flow of information that structures what information is relevant and thus useful. Since the Collective did not influence the broad parameters of the reform, it is those parameters that structured the relevance (or not) of the Collective's messages. Over the course of the reform, we observed a rapid evolution in decision-makers' concerns at different points in time. Their priorities and the themes of interest to them were constantly changing. The Collective managed to produce a knowledge synthesis in just a few months. Nevertheless, it appears that the delays generally associated with research, when combined with the constant evolution of decision-makers' concerns, make it difficult to link together these two areas of practice. This highlights the fact that, for information to be utilized, it is not enough that an issue be on the agenda. It also depends very much on the life cycles of the various specific issues facing the decision-makers.

Proximity to the Decision-Maker

It is rather rare, in the conduct of research in general, that a researcher develops a real relationship of proximity with a decision-maker who has the capacity to influence policy development. Analysis of the processes of developing and implementing public policies

shows that these are interactive processes (Lindblom, 1959) in which many actors, poorly coordinated and individually not very powerful, each have a marginal influence on the dossier, in accordance with a *path-dependency* model. Of course, there are a few key actors in such a decision-making process, but these are under so many contradictory pressures and subjected to such a flood of information (Knott and Wildavsky, 1980) that it is utopian to expect to be able to establish a proximity relationship such as envisioned by the KTE school.

Within the framework of a knowledge transfer exercise, it is nevertheless possible to associate with certain decision-makers who are in positions of proximity with key deciders and who are considered by them to be very credible. As was demonstrated in the case of the appropriation of knowledge at the Ministry, documented in our analysis, information is more likely to be used if an information carrier is in close proximity to key deciders. The carrier could just as well be a researcher as a decision-maker associated with the research effort.

Message Adapted to the Needs of the Targeted Decisional Environment

A direct consequence of the temporal variability of issues is that it becomes difficult to predict the decisional context and thus how scientific messages can be adapted to specific decisional contexts, whether this refers to the choice of message or its formulation. The difficulty is even greater when we are dealing with a research effort that is in progress. The decision to present a broader range of findings has the disadvantage of providing messages that are less focused and less contextualized. However, this may provide an opportunity to compensate for the volatility of issues by allowing decision-makers to seize upon those messages they find most relevant.

The literature on lobbying clearly states the importance, for effective utilization of information, of taking a strategic and selective position on the dissemination of messages. Researchers are more likely to want key messages to represent research findings in their entirety and to be as accurate as possible. This position creates significant tension when it comes to knowledge transfer. Providing a range of messages that are representative of the research findings allows decision-makers to retain those that are most relevant to them at that time. However, there is the risk that these messages, being more numerous and less adapted to the context, would be less effective politically. Asking researchers to adopt a more selective and effective strategy for transmitting messages would have the advantage of increasing the effectiveness of the messages, but also the negative consequence of choosing messages that are politically acceptable and opportune, at the expense of other messages that may be more important but less politically relevant.

Conclusion

The results of the analysis indicate that the Collective brings together many conditions that are favorable to information utilization:

- the window of opportunity presented by the disarray of the reform and the resulting need for decisions at different levels of the health and social services network;
- the credibility of the information carriers;

- the proximity to certain decision-makers;
- the creation of a deliberative process involving decision-makers;
- the pursuit of consensus in identifying messages adapted to the decisional environment; and
- the formulation of these messages to make them summarized, concise, and attractive.

Conversely, the utilization potential of the information was also reduced by various factors, of which most were outside the province of the Collective:

- the initial magnitude of the political uncertainty that characterized the decisional environment; the decision-makers' interests being channeled in accordance with the reform agenda;
- the difficulty of producing a message that was immediately transferable or adaptable to specific decisional needs, especially in an environment undergoing transformation;
- the differing interests of researchers and decision-makers, or of decision-makers at different decisional levels;
- the pursuit of scientific neutrality despite the concern to ensure the messages would be useful for decisions;
- the limited representation in the process of certain categories of decision-makers; and the time constraints on the Collective's activities.

Logic analysis is a type of evaluation that is still relatively little used. This type of evaluation allows us to question the validity of an intervention, as well as its potential. It has the advantage of using scientific knowledge to interpret and improve the intervention being evaluated, all the while allowing for an assessment of its potential for change in relation to a given situation. This type of evaluation is particularly useful in grasping the causality between the intervention and its expected effects. Indeed, it can be difficult to carry out an analysis of effects when an intervention interacts strongly with other contextual variables whose influence on the results is likely to be significant. On the other hand, this exercise can be even more perilous when the expected results are hard to measure, as is the case for information utilization. Under these conditions, logic analysis is an appreciable resource for determining whether, given the conception of the intervention being evaluated, we can expect to arrive at the anticipated outcome. We developed our analysis framework based on recognized literature in the fields of evaluation, policy development and lobbying, and knowledge transfer. Based on our experience, we find the framework to be sufficiently robust to be applied in different contexts of knowledge transfer. We have nevertheless identified certain dimensions of analysis that could be adapted to the specific exercise of researchers transmitting scientific information to a pool of decision-makers. In this respect, we believe we have developed a unique tool for analysis that could be particularly useful in evaluating information transfer and dissemination activities carried out in the context of research activities.

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Table 1**The Collective's Seven Main Messages**

1	Continuity in service delivery is a core desirable feature because it is closely linked with both comprehensiveness and accessibility. However, a high level of continuity may lower accessibility (and conversely). Thus policies to enhance accessibility or diminish emergency room use for primary care should encompass measures to enhance continuity; otherwise they may fail to achieve their goals in the long term.
2	In primary care, the optimal organizational model to achieve continuity and accessibility simultaneously would incorporate a balance of both walk-in and appointment services.
3	The introduction of new delivery models (i.e. integrated delivery networks, inter- professional teams) and information technology does not appear to lower total costs, but rather shifts those costs from hospital to community-based services. In the short term, primary care reorganization policies should thus target enhanced continuity, accessibility and comprehensiveness rather than cost reduction.
4	To introduce these changes, strategies targeting professional practices rather than organizational structures seem more promising. The creation of CSSSs (centers for health and social services) in Quebec will have only a limited impact if they are not based primarily on transformation of primary care professional practices.
5	For the reform to succeed, some necessary systemic conditions must be taken into account in policy proposals. Among them, physician fee-for-services payment and historical hospital budgeting approaches will need to be reassessed, in order to move toward a population health perspective.
6	There is no one-size-fits-all model of primary care organization. Each model should be adapted to its specific context. A system-wide blueprint is necessary to ensure consistency across the province, but significant autonomy should be retained at regional and local levels.
7	Two necessary conditions to the success of current proposals constitute a major puzzle for managers and decision-makers: the participation of physicians working outside public institutions and trust-building among all players. Specific attention should be given to these conditions and the measures that could facilitate their achievement.

Table 2**Dimensions for Evaluating the Potential for Information Utilization**

1	Characteristics of the context
	• The system is open (deliberation) (+/-) or closed (mediation of credible actors) (+/-) • The topic of the information is on the agenda (+) • There is political uncertainty surrounding the topic of the information (symbolic utilization +) or programmatic uncertainty (conceptual and instrumental utilization +)
2	Traits of the information carrier
	• There is recognition/credibility of the carrier (+) • There is proximity to the decision-maker (+)
3	Characteristics of the process
	• There is significant personal involvement of the decision-maker (co-building of knowledge, knowledge brokering, etc.) (+) • The information is submitted to a process of deliberation that includes different types of expertise: (+) according to the knowledge transfer movement; (-) according to the literature on lobbying • Researchers and decision-makers are mutually useful (source of information/interest in the decision and decisional power) (+) • The message is adapted to the needs of the targeted decisional environment (+), i.e.: a) formulated to convey the possible and probable consequences of decisions (+) according to the lobbying school; or b) formulated to provide advice on relevance, interests, needs, objectives, concerns, contextual information, and consequences (+) • The main messages are formulated synthetically, concisely and attractively (+)
4	Externalities related to the utilization of processes
	• The process may produce results of another type (creation of an exchange network, new alliances, etc.)

(+) indicates a variable positively associated with utilization.

(-) indicates the opposite.

(+/-) indicates that no consensus exists in the scientific literature.