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The Montreal CIS Project: Exploring the Structuration of Collaboration in a Competitive Institutional Field

Charo Rodríguez, MD, Ph.D

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THE MONTREAL CIS PROJECT: EXPLORING THE STRUCTURATION OF COLLABORATION IN A COMPETITIVE INSTITUTIONAL FIELD

Charo Rodríguez, MD, Ph.D
McGill University
Faculty of Medicine
Department of Family Medicine
Area of Health Services and Policy Research
517 Pine Avenue West – Room 10
Montreal, Quebec, Canada H2W 1S4
Telephone: (514) 398.7375 ext. 0495#
Fax: (514) 398.4202
E-mail:charo.rodriguez@mcgill.ca

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EXECUTIVE SUMMARY

The aim of the this study has been to closely examine how the process of joint acquisition and implementation of a new clinical information system (CIS), undertaken in fall 2001 by two leading multi-hospital university health centres located in Montreal, has proceeded with an increasing structuration of inter-organizational collaboration at the organizational field level.

To do so, from a structurationist and discursive theoretical and methodological perspective, an in-depth longitudinal qualitative case study has been conducted from October 2001 to December 2005. Methods for generating empirical material have included face-to-face, one to one semi-structured interviews with CIS managers, clinicians and informatics staff; participant and non-participant observations of a considerable number of committee meetings; and archives of diverse documents such as minutes, CIS project management plan, CIS schemes of governance structure, vendor's milestones, communication and training plans, as well as media documents and government reports. Then, textual data has been analyzed through the adoption of temporal bracketing and critical discourse analytical strategies.

The key issues raised by this investigation are the following:

- It is well established that, despite the current imperative character of information technology in health care organizations, the implementation of new technology as a CIS always constitutes a very challenging process, due to the difficulties of attaining an adequate fit between technology and particular organizational contingencies.

- Taking this into account, the Montreal CIS Project appears *additionally complex* due to a number of reasons such as:
    - the presence of a group of researchers and clinician-researchers, who have triggered and partially funded the project so far;
    - the involvement in the project of not one, but two very complex organizations, competitors at the academic level, which are jointly implementing the same CIS, a feature that, although with positive results to date, slows processes and makes the negotiation with the vendor more burdensome;
    - the fact that these two organizations operate in a publicly-funded healthcare context, within which policy-decision makers play a determinant role;
    - the association of the project with the highly politicized and unresolved portfolio of new `mega-hospitals', a feature that, while justifiable for budgetary reasons, has largely increased the political complexity of the project.

- Indeed, and related to the aforementioned, the Montreal CIS Project has not yet achieved the two elements that, according to the literature, appear necessary in any technology implementation process of this nature, namely an adequate level of financial resources and a deep involvement of end-users (i.e. clinicians) from the very beginning of the project.

- Despite all these extremely difficult and intertwined contingencies, CIS stakeholders from these two hospitals **have increasingly worked together at managerial, as well as clinical and technological levels around the CIS.** From a structurationist perspective, it appears that

the joint processes of CIS selection and initial CIS implementation, undertaken more than four years ago by both organizations, are compelling them to discuss, work through and rethink their respective organizational sets of rules and resources when looking for a shared technological solution meaningful to both. An overlapping of inter-organizational and organizational levels of conduct for CIS configuration is therefore triggering the restructuring of institutional principles of organizational autonomy, towards those suited to collaborative inter-organizational processes.

- What is more, such collaborative processes *may* have institutional implications beyond the space of collaboration that the two *concurrent partners* are creating around this (socio-) technological project.

- Nevertheless, as collaboration between both hospitals has never previously been undertaken, it may be stopped at any time. Difficulties in accessing financial resources required for CIS implementation will prevent the incorporation of clinicians from both hospitals into the project. This could adversely impact not only CIS implementation but also interactions between both hospitals, which may be undermined and brought to a halt, seriously threatening the possibility of institutionalization of the collaborative rules and resources.

In conclusion, the interest for a new CIS by a restricted and very committed number of individual actors from both hospitals has constituted the technological headlong that has precipitated a process of institutional change on the way to collaboration. After four years, this process is in a phase of pre-institutionalization. To be able to move from pre-institutionalization towards full institutionalization, these actors need to act as *institutional entrepreneurs*; that is they have to be able to leverage the sufficient resources that allow them to effectively realize their highly-valued ambition of jointly implementing their new CIS. The identification of a CIS Project Holder by hospital (i.e. a person with great reputation and well-known in the organization available to work *full-time* for the project), a formal commitment from hospitals top managers to financially support the project, or a better positioning of the project vis-à-vis policy decision-makers may constitute steps forward in this direction.

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SOMMAIRE EXÉCUTIF

Le but de cette étude est d'examiner en profondeur comment le processus conjoint d'acquisition et d'implantation d'un nouveau système d'informations cliniques (SIC), entrepris à l'automne 2001 par les deux principaux hôpitaux universitaires situés à Montréal, s'est déroulé par une structuration croissante de la collaboration entre les deux organisations sur le terrain.

Pour ce faire, une étude de cas qualitative longitudinale a été menée entre octobre 2001 et décembre 2005, dans une perspective théorique et méthodologique structurationiste et discursive. Les méthodes pour récolter le matériel empirique ont inclus des entrevues individuelles semi-structurées avec les gestionnaires du SIC, les praticiens et le personnel de l'informatique, des observations participantes et non-participantes d'un nombre considérable de réunions de comité et des archives de documents divers tels que les comptes-rendus, le plan de gestion du projet SIC, les propositions de structure de gouverne du projet SIC, les étapes importantes du projet suggérées par fournisseur, les plans de communication et de formation, aussi bien que des documents issus des médias et des rapports du gouvernement. Ensuite, les données textuelles ont été analysées par l'adoption de stratégies de « tranchement temporel » (*temporal bracketing*) et d'analyse critique du discours.

Les faits saillants qui ont émergé de cette recherche sont les suivants:

- Il est bien établi qu'en dépit du caractère actuellement incontournable des technologies de l'information dans les organismes de santé, l'implantation des nouvelles technologies telles que le SIC constitue toujours un défi, en raison des difficultés à faire correspondre les technologies aux besoins particuliers de chaque organisation.

- En outre, le projet SIC de Montréal paraît plus complexe pour certaines raisons telles que :
  - La présence d'un groupe de chercheurs et de praticiens-chercheurs, qui ont lancé et ont partiellement financé le projet jusqu'à présent ;
  - La participation dans le projet non seulement d'un, mais de deux organisations très complexes, concurrentes au niveau académique, qui implantent conjointement le même SIC, un dispositif qui, bien qu'avec des résultats jusqu'à présent positifs, ralentit le processus et rend la négociation avec le fournisseur plus onéreuse ;
  - Le fait que ces deux organisations fonctionnent dans un contexte public de soins de santé, dans lequel les décideurs jouent un rôle déterminant ;
  - L'association du projet avec le dossier fortement médiatisé et non résolu des nouveaux super-hôpitaux, un dispositif qui, bien que justifiable pour des raisons budgétaires, a en grande partie contribué à la complexité politique du projet.

- En lien avec ce qui est mentionné ci-dessus, le projet SIC de Montréal n'a pas encore réalisé les deux éléments qui, d'après la littérature, semblent absolument nécessaires dans n'importe quel processus d'implantation de technologies de cette nature, à savoir un niveau adéquat de ressources financières et une participation majoritaire des utilisateurs finaux (c.-à-d. des cliniciens) dès le début du projet.

- En dépit de toutes ces contingences extrêmement difficiles et interreliées, les parties prenantes du projet SIC de ces deux hôpitaux **ont de plus en plus travaillé ensemble autour du projet SIC au niveau de sa gestion, aussi bien qu'au niveau clinique et technologique**. Dans une perspective structurationiste, il s'avère que les processus conjoints du choix du SIC et de l'implantation initiale du SIC entrepris il y a plus de quatre ans par les deux organismes, les contraint à discuter, à travailler et à repenser leurs organisations, règles et ressources respectives en recherchant une solution technologique commune significative pour tous les deux. Le chevauchement de compétences organisationnelles et de conduite de la configuration SIC supporte donc la restructuration des principes institutionnels de l'autonomie organisationnelle vers l'adoption de principes adaptés aux processus de collaboration interorganisationnelle.

- Qui plus est, de tels processus de collaboration peuvent avoir des implications institutionnelles au-delà de l'espace de collaboration que les deux *partenaires concourants* créent autour de ce projet (socio-) technologique.

- Néanmoins, comme la collaboration entre les deux hôpitaux n'a été jamais entreprise précédemment, le projet peut être interrompu à tout moment. Les difficultés d'accès aux ressources financières nécessaires à l'implantation du SIC empêcheront la participation des praticiens des deux hôpitaux au projet. Ceci pourrait être défavorable non seulement à l'implantation du SIC, mais également pour les interactions entre les hôpitaux, qui peuvent être minés et interrompues, menaçant sérieusement la possibilité d'institutionnalisation des règles et des ressources de collaboration.

En conclusion, l'intérêt pour un nouveau SIC par un nombre restreint de différents acteurs très engagés des deux hôpitaux a constitué la *ruée* technologique qui a précipité un processus de changement institutionnel sur la voie de la collaboration. Après quatre ans, ce processus se trouve dans une phase de pré-institutionnalisation. Pour pouvoir passer de la pré-institutionnalisation à l'institutionnalisation, ces acteurs doivent agir en tant qu'entrepreneurs institutionnels, c'est-à-dire qu'ils doivent pouvoir générer l'effet de levier suffisant afin d'obtenir les ressources nécessaires qui leur permettent de réaliser efficacement leur ambition d'implanter conjointement leur nouveau SIC. L'identification d'un « porteur de dossier » par hôpital (c.-à-d. une personne avec une grande réputation et bien connue dans l'organisation disponible à travailler à temps plein sur le projet), un engagement formel des dirigeants des hôpitaux pour soutenir financièrement le projet ou un meilleur positionnement du projet vis-à-vis des décideurs politiques peuvent constituer des pas en avant dans cette direction.

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INTRODUCTION

The adoption of new information technology (IT) has become an increasing trend in the health care sector since the 1970s, when the first electronic patient data management system was put into operation (Frestchner et al., 2001). Since then, efforts for implementing computerized information systems for clinical purposes have been sustained by performance-driven assumptions: besides the usual arguments of costs savings and efficiency, clinical-oriented IT are presented as unavoidable for improving quality of care, being able to better support evidence-based clinical practices and the prevention of medical errors (Baker et al., 2004; Institute of Medicine, 2000, 2003).

This increasing interest in IT in the health care sector has been accompanied by influential discourses about collaborative practices – inter-organizational and inter-professional, managerial and clinical. These discourses emerged notably during the '90s and, since then, have dominated the health care sector and the literature on health services research and policy. Discourses about collaboration have also informed the most recent health care reform movements across developed countries. In North America, for example, a concept known as *integrated delivery systems* has originated, which often appear supported by IT artifacts (software, hardware, database, network, etc.) that aim at blending all the clinical information existing in the organization. Further, the functional integration that these technologies offer is viewed by some as indispensable for achieving medical and clinical integration (see Shortell et al., 1996). Despite all these efforts, healthcare appears**,** however**,** to still be delivered in a rather fragmented (or 'silo') manner, collaborative practices being very difficult to implement.

Within this complex context, the two leading university and multi-hospital health centres located in Montreal, Quebec, Canada, MHOSPα and MHOSPψ, initiated the joint acquisition of a clinical information system (CIS) in the fall of 2001. For a number of reasons, as detailed later in this paper, this joint project represents a huge challenge. On the one hand, not only are the two institutions quite different, having different cultures and languages, and having to deal with different institutional partners and philanthropic organizations, but historically, and mostly due to their university dimension, they have been competitors within their situated political context. On the other hand, existing evidence suggests that, despite the potential benefits of a computerized system that integrates clinical information and the huge investments in terms of both time and financial resources that these systems require, most CIS implementations fail (Littlejohns et al., 2003).

With the desire to advance knowledge of the process of adopting a CIS in multi-hospital systems, we have been working with CIS stakeholders from both institutions since the beginning of their respective projects. A theoretical and methodological combination of Giddens' structuration theory and critical discourse analysis was adopted, and an in-depth qualitative field study has been conducted from October 2001, and is still in progress. Along with a number of authors, such as Berg (1999) and Williams (1997), the assumption underlying this investigation is that *technical* and *social* features of the implementation of a CIS cannot be separated as they are *mutually constituted*. Our general purpose is to examine how the decisions and (inter)actions of CIS stakeholders contribute to the *structuring* of the new technological solution over time. What is more, in-depth involvement in the field for more than four years has allowed us to observe that

the *structuration of the new CIS* has gone along with (i.e., has been *producing*) increasing *structuration of inter-organizational collaboration* at the organizational field level. In this paper, I report initial results and reflections on the intertwining of both structuration processes over the period from October 2001 to December 2005.

The remainder of the paper is organized as follows. After a brief literature review on CIS implementation processes and inter-organizational collaboration, the adopted theoretical and methodological framework, which combines structuration theory and critical discourse analysis, is introduced. The case is presented next, followed by a preliminary analysis of the empirical material generated over the period under examination. The final section of the paper discusses how the configuration of this CIS Project is restructuring the local institutional field, and puts forward some preliminary conclusions.

IMPLEMENTING A CLINICAL INFORMATION SYSTEM

In the past, organizations deciding to adopt IT usually developed *in-house applications*, i.e., customized solutions tailored to their specific requirements. Current technological trends rely on *configurable applications*, a term which refers to technologies that are highly parameterizable; that is, they are built from a broad range of components combined to meet the very specific requirements of a particular organization (Fleck, 1994). The arrangements among the components from which configurable technologies are built are usually highly complex because they are interconnected and interdependent. Altogether, the greater the configurable nature of the technology – i.e., the more it is composed of selections of components or parameters to meet local requirements – the more complex and risky its implementation and use are likely to be (Orlikowski, 2000).

A clinical information system (CIS), like the one examined in this paper, is a computerized solution that aims at supporting healthcare delivery by gathering and properly managing the entire patient's information existing in the hospital, making it available at the point of care. A CIS constitutes a typical illustration of a configurable IT in the health care sector. In order to produce a thoughtful configuration, any organization needs to develop its ability to shape the technology as well as its ability to rethink local contingencies (Pozzebon, 2003). Configurable applications thus require that both sides – technological features and organizational requirements – 'fit' with each other. This necessary fit is never easy to achieve. In this sense, the complex organizational features that characterize health care settings make this fit particularly difficult to attain. Further, very frequently, issues of inter-operability of the new system with existing ones, in and out the organization, have also to be addressed. 'Misfits' in healthcare contexts are, therefore, extremely frequent (e.g., Southon et al., 2004).

Health care organizations have traditionally been social spaces strongly characterized by power/knowledge dependencies and the protection of actors' own interests. In this type of organization, power games among organizational actors are always behind the success or failure of any process of change. Hence, if the most powerful actors in healthcare delivery, namely, the physicians, as well as other end-users such as nursing staff, perceive the CIS as ill-adapted to their requirements and needs, they do not easily conform to its use, even if managers try to make

the adoption of the new technology mandatory. Most CIS implementations fail because, despite high investments in terms of both time and financial resources, clinicians simply do not use them (e.g., Anderson, 1997; Saathoff, 2005; Sicotte et al., 1998). Also, as Klein and Sorra (1996) outline, in order to be beneficial to the organization, an innovation like a CIS needs to be used by *all organizational end-users*, not just by a few (e.g., clinician researchers). Perhaps due to all these difficult contingencies, the proportion of care hospitals that have computerized all areas is still low. Furthermore, most of the time hospital information systems have supported administrative purposes, not clinical ones (Anderson, 1997).

A CIS implementation appears, therefore, a paradoxical and complex phenomenon to investigate. On the one hand, based on prior experience, a serious threat of failure overshadows the decision to undertake such a costly, time-consuming and risky process. On the other hand, decision-makers decide to embark on such projects seduced by their high potential benefits, such as: improvement in reporting, organizing and locating clinical information; improvement of physicians' decisions by providing protocols, reminders and alerts (i.e., the enhancement of 'best practices')**;** more effective coordination and collaborative management of patient care**;** and enhancement of clinical and population health research (e.g., Institute of Medicine, 2000, 2003).

INTER-ORGANIZATIONAL COLLABORATION IN THE HEALTH CARE SECTOR

The study of the nature and development of inter-organizational relationships has attracted much interest from organizational scholars for decades. According to Galaskiewicz (1985), organizations would be inclined to maintain their independence as much as possible. Correspondingly, inter-organizational relationships would emerge in critical situations, when the survival of the organization, for any reason, would be threatened (Halpert, 1982). However, in current times of rapid and huge technological development, inter-organizational relationships of a collaborative nature have powerfully emerged (Alter and Hage, 1993). As Park noted ten years ago: "The recent development in technology and corporate strategies has spurred a surge in inter-organizational networks and interfirm collaboration, collaboration prompting a new belief that cooperation may be the new form of competition" (1996: 795).

The health care sector has not escaped this collaborative trend. Although the terms cooperation, collaboration, coordination and integration appear inter-changeable in the specialized literature, it is the label 'integrated delivery systems' (in its multiple forms) which has become popularized, either in the context of market economies (e.g., Shortell et al., 1996) or in publicly regulated systems (e.g., Denis et al., 1999; Leatt et al., 2000). However, despite the particular attention devoted by researchers and policy decision-makers, integrated delivery initiatives have frequently witnessed disappointing results (e.g., Conrad and Shortell, 1996; Friedman and Goes, 2001; Rodríguez et al., 2003). Paradoxically, in a mostly privately-funded US health care delivery, where the term integrated delivery system was coined, collaborative discourses seem to have evolved in parallel to an era of "heightened competition rather than collaboration" (Gee, 2000: 359) …

Along with organizational scholars such Gray (1985, 1989), Hardy and Phillips (1998), Lawrence et al. (1999), and Phillips et al. (2000), I conceive collaboration as *an emergent process between interdependent organizational actors, which voluntarily search together for answers to complex issues that concern them via negotiation.* Such a relationship should rely on neither market nor hierarchical but rather clan mechanisms of control (Lawrence et al., 1999; Phillips et al., 2000), which are characterized by self-interest grounded on common values (individual level), and the reciprocity of exchanges (partners' interaction level) (Ouchi, 1980). Further, both conflict and cooperation may characterize relationships of this nature because partners attempt to preserve their independence while interacting. Power dynamics are therefore a compelling issue in collaboration (Phillips et al., 2000). Mintzberg et al. (1996) have ingeniously defined such a complex process as follows:

> "Collaborations are complicated relationships that can be nuanced, intense, glorious, illicit, imbalanced, unrecognized, unrecognizable, titillating, and tiresome. The nature of a particular collaboration depends on the task and the goal, the parties involved, and its evolution over time, to name a few impinging factors. Collaboration cannot be treated as a hardened structure, a "done deal" – in theory or in practice. It is a process, not an event."

So conceptualized, process theories (e.g., structuration theory) are better suited than variance approaches to understand and explain collaboration.

THEORETICAL APPROACH

Structuration theory was elaborated by Anthony Giddens in the early '80s as an ontology of social life; that is as a general perspective to explain the nature of the social world. In response to the widespread debate in sociology over the relationship between structure and agency, in which social structure and agency have generally been conceptualized as a dichotomy in social life, Giddens proposed the notion of *duality of structure*: social structure (i.e. sets of rules and resources) only exists in and through human agency, which is viewed as the flow of people's actions (Giddens, 1984; Giddens and Pierson, 1998).

According to Giddens, in order for the structural dimensions of social life to come into existence, forms of social conduct must be constantly reproduced (but sometimes modified) across *time and space*. A time-geography context constitutes the setting for human interaction, *regionalization* being taken by Giddens "not as a wholly spatial concept but as one expressing the clustering of contexts in time-space" (Giddens, 1984: 365).

Furthermore, Giddens sees human beings as *knowledgeable* social actors; that is, they have the capacity to understand and give sense (i.e. rationalize) to what they do while they do it, as well as reflexively monitoring their own and others' conduct. Such reflexivity operates at two levels of consciousness: discursive and practical. Discursive consciousness involves the awareness of social action that is expressed discursively. Practical consciousness, in turn, concerns what social actors know about the conditions of their (inter)actions**,** but cannot give verbal expression to.

Structuration theory provides therefore a meaningful theoretical framework for understanding social life, according to which knowledgeable actors constantly produce, reproduce or transform social structures through time/space-contextualized interactions in which they mobilize what Giddens calls 'common stocks of knowledge' – i.e. interpretive schemes, allocative and authoritative resources (facilities) and norms.

Although, in its original formulation, structuration theory paid very little attention to technology (Jones and Karsten, 2003), its adoption for a better understanding of the implementation and use of new information technology has become very popular among IT scholars (e.g., Orlikowski, 1992; Orlikowski et al., 1995; Rose, 2002).

The right-side of Figure 1 illustrates the structurationist framework adopted for investigating the Montreal CIS implementation project. First, as social structure is embedded in practice, the *social nature* of a technological artifact emerges from human actions and interactions. As noted by authors like Jones (1997) Pozzebon and Pinsonneault (2005), and Walsham (1993), and despite the fact that Giddens does not neglect the human body and the physical elements of social life in his reflection, the notion of duality of structure in IT should be used with caution due to the physical component of IT since, for Giddens, social structure is mostly *memory traces* in humans' minds. Therefore, the notion of *enacted structures of technology (CIS) in use* proposed by Orlikowski (2000) is adopted for heightened precision.

Second, in order to interact with each other for configuring the CIS, organizational actors will develop and draw upon particular stocks of knowledge about that technology, i.e. they have to *make sense of it* in order to design and use it. In the case of a configurable package like a CIS, technology designers and developers are not those who implement and use it, which implies a time/space discontinuity that, as noted previously, will likely make the necessary fit between CIS functionalities and end-user requirements more difficult to attain (Wears and Berg, 2005).

Third, because end-users practices (e.g., physicians' and nurses' clinical practices) will be affected by the technical choices made during the process of configuration, the CIS end-users' knowledgeability that makes sense of their day-to-day practices should be taken into account when configuring the CIS. In this regard, the literature strongly suggests that the involvement of physicians and nurses in a CIS implementation is an organizational challenge that has to be managed from the very beginning of the project.

Finally, as noted previously, Giddens emphasizes the capacity of human agents to be aware, discursively and non-discursively, of their conduct as well as that of others. In this study, and within the theoretical framework offered by structuration theory, we accord particular attention to *actors' discursive activity* as essential for the construction of organizational reality. Discourses are considered as a meaningful collection of texts. Discourse analysis is, therefore, "the systematic study of texts (including their production, dissemination, and consumption) in order to explore the relationship between discourse and social reality" (Phillips et al., 2004: 636). In management and organization studies, discourse analysis is more specifically defined as those texts produced, disseminated and used in organizational contexts – i.e., organizational discourse (Hardy, 2001). As stated by Grant et al. (2004), organizational discourse "refers to the structured collection of texts embodied in the practices of talking and writing (as well as a wide variety of

visual representations and cultural artifacts) that bring organizationally related objects into being as these texts are produced, disseminated and consumed" (p. 3). From the existing wide variety of discursive perspectives, we adopt a critical discourse analysis approach (Fairclough, 1997) due to our interest in power dynamics in the configuration of a CIS.

The use of theoretical and methodological discursive approaches in the examination of organizational phenomena has increased in popularity in recent years (Phillips and Hardy, 2002; Grant et al., 2004), as it has in the sub-field of IT (e.g., Heracleous and Barrett, 2001). More particularly, the combination of structuration theory with critical discourse analysis has been recently proposed by Pozzebon and Pinsonneault (2005) for the study of the implementation of configurable technologies. It appears**,** therefore**,** fully consistent with longitudinally investigating the implementation of a CIS in multi-hospital systems.

In the present paper, I move forward, proposing the incorporation of structuration theory and discourse analysis for understanding the restructuration of an organizational field prompted by the adoption of a new configurable technology (see also left-side Figure 1). In this manner, the notion of *regionalization* as defined by Giddens is enhanced empirically, which allows for the examination of different macro-micro/time-space contexts in which CIS stakeholders interact during the CIS implementation process. The concept of regionalization links particular time/space zones (*locales*) with routinized social practices. Thus, when I refer to regionalization in this paper, I mean the overlapping of macro-level (inter-organizational) and micro-level (organizational) practices displayed by CIS stakeholders while configuring their new technological solution. Triggered by resource dependencies, on-going communication between organizational competitors in order to *jointly make sense* of the IT solution being configured, and the increased awareness of their *interdependence*, has generated a new dynamic that may reshape the features of their organizational field.

METHODOLOGICAL APPROACH

A case study research design is adopted, each multi-hospital system being considered a case. Due to its prospective longitudinal design, and the qualitative character of the data generated, the study is better classified as a longitudinal qualitative collective case study.

One of the methods we use for generating empirical material is *interviewing*. We regularly interview key CIS stakeholders at both sites, in particular CIS implementation committee members and end-users (i.e., physicians and nurses) who progressively participate in the CIS adoption process. At the moment of writing this text, three rounds of interviews have already been carried out. The present paper particularly concerns the last round, conducted in the fall of 2005, which focused on incremental processes of inter-organizational collaboration between both sites. A total of 20 interviews were carried out, 11 at MHOSPα and 9 at MHOSPψ. Interviewees were all CIS stakeholders involved in the CIS project at different levels from each hospital**:** CIS implementation committee members, clinicians participating in the joint clinical working group, and staff from the informatics department participating in the joint technical working group.

In the paper in which he considers the introduction of CT scanners in two radiology departments as "an occasion for structuring", Barley points out that "[t]o map emergent patterns of action and interaction accurately requires at least partial reliance on participant observation to record who interacts with whom in what ways at what times and to elicit actors' immediate interpretation of events" (Bartley, 1986: 83). This statement is consistent with the importance accorded by Giddens not only to discursive activity per se but to "the style, mode of expression or context of utterance". Further, he argues that "[w]here what agents know about what they do is restricted to what they can say about it, in whatever discursive style, a very wide area of knowledgeability is simply occluded from view. The study of practical consciousness must be incorporated into research work" (Giddens, 1984: xxx). Also, Alvesson and Deetz (1999) note that because interpretation constitutes the core of discursive analytical processes, familiarity with the context within which the case evolves is one of the elements that help discourse analysts elaborate richer interpretations. Hence, *on-site participant and non-participant observations* and *diary notes* constitute extremely valuable empirical techniques in this study, and mostly refer to the different organizational and inter-organizational group meetings that have periodically taken place in both sites since the beginning of the project in fall 2001.

Archival material also plays an important role in this investigation, particularly the minutes of the CIS implementation committee meetings at each site, which we regularly attend. In this paper, this material involves the minutes of 28 meetings held in one of the hospitals from January 2003 to November 2005, and those of the 43 meetings held in the other hospital from October 2001 to December 2005. Other texts distributed before, during and after these meetings (e.g., CIS project management plan, CIS schemes of governance structure, vendor's milestones, communication and training plans), as well as media documents and government reports complete the archive of texts.

As strategies of data analysis, and congruent with the combined theoretical frame adopted, I follow Pozzebon and Pinsonneault proposition (2005), and use temporal bracketing strategy (Langley, 1999) integrated with Fairclough's critical discourse analytical method (Fairclough, 1997). The longitudinal design of the investigation allows, in the analytical phase of the study, to identify and critically interpret the structuring effects of CIS stakeholders' discursive activity over time. This is achieved through the use of a temporal bracketing strategy, which Langley (1999) considers a direct reference to Giddens' structuration theory. Of the two sub-modalities of temporal bracketing advanced by Pozzebon and Pinsonneault, fine-grained and broad-ranged, I have adopted the latter due to the fact that I explore the progressive restructuring of the institutional field towards collaboration over an extended period of time (more than 4 years).

Following these two strategies of analysis, the period examined is first broken down into meaningful sub-periods. Then, for each sub-period identified, and following Fairclough's proposition, each discursive event is simultaneously considered text, discursive practice and social practice. Following this approach, local pieces of texts (mostly from the transcripts of interviews and minutes of the CIS implementation committee meetings) are described, then interpreted according to different discursive types (i.e., themes) and tropes (in particular images and metaphors); and finally, drawing on other complementary contextual texts (e.g., diary notes, government documents, newspaper articles) a reasonable explanation is provided, putting

particular emphasis on discussion of the power relations that plausibly sustain the production of those particular texts in their situated contexts.

Finally, these two main strategies for data analysis are complemented with the preparation of *graphical forms* (i.e. figures and tables) (Langley, 1999), which are mainly helpful for condensing information.

Before presenting the preliminary results of this investigation, I will first briefly describe the broad context that has surrounded the Montreal CIS Project since its initial steps, as well as to introduce the main actors involved in it.

THE MONTREAL CIS PROJECT – GENERAL CONTEXT AND MAIN ACTORS

Along with current trends of social interconnectedness (Castells, 1997), the health care sector is massively and increasingly investing in IT (Berner et al., 2005). Furthermore, as noted in the introduction, powerful medical scientific institutions (e.g., the Institute of Medicine from the National Academy of Sciences in the USA) are presenting IT as significant contributors to medical care and health care improvements. This pressure is even higher in health care organizations whose missions include not only the delivery of care but research and medical training as well. Such is the case in the two multi-hospital systems involved in the Montreal CIS Project.

Contrary to other CIS projects, the Montreal CIS Project did not grow out of the strategic vision of top hospital managers, but was triggered by a group of clinician scientists and university researchers operating in one of the hospitals and the Faculty of Medicine with which it is affiliated, who received a substantial strategic research program grant in July 2000 from the Canadian Foundation for Innovation. Created for a period of seven years, this program, called IRIS-Quebec, largely goes beyond single-hospital borders and joins efforts in research, clinical care and information service communities of other university hospitals in Quebec, in collaboration with various government agencies and private organizations. Its main goal is to create a clinical repository, a research data warehouse, and several research integration tools at the provincial level. Therefore, this research program requires the development of an integrated information system covering the entire health care network in order to attain its primary objective of developing a provincial data warehouse for clinical and health population research.

Besides both hospitals and IRIS-Quebec members, two policy decision-making bodies are also involved in the CIS Project, due to the public nature of the health care system in Quebec: the Quebec Ministry of Health and the Montreal Regional Health Agency. The Quebec health care system is decentralized into a number of administrative regions, the largest being that of the Montreal metropolitan area. Each region is governed by a regional agency which has full responsibility for financing (i.e. resource allocation of a budget fixed by the Ministry of Health) and organization within the area. However, due to their supra-regional scope, multi-hospital university systems like MHOSPα and MHOSPψ are regulated directly by the provincial Ministry of Health.

Finally, an important contextual element has been intimately linked to the Montreal CIS Project since its initial steps: the very controversial portfolio of the two new *mega-hospitals* (a 'single' site per hospital) into which MHOSPα and MHOSPψ will be moved by 2010. Such a portfolio, directly driven by the provincial Ministry of Health, has remained unresolved for almost a decade, despite the number of committees and special commissions put in place by successive provincial governments. What is important here is that the financial support provided by the Ministry of Health to the Montreal CIS Project is dependent upon the construction of these two new hospitals.

HOW IS THE CIS CONFIGURATION STRUCTURING INTER-ORGANIZATIONAL COLLABORATION?

The Montreal CIS Project has displayed great complexity since the very beginning of its existence. Until signing with the vendor in July 2004, this complexity was particularly evident within one of the hospital's organizational boundaries. This appeared particularly associated with the presence in this hospital CIS implementation committee (and only in this hospital) of IRIS-Quebec representatives, a presence that intensified power struggles in the defense of, at least at first sight, conflicting interests around the CIS. As noted by one of the interviewees from this MHOSP:

> *"I think the project was not clearly understood by everyone. The different components were not understood nor how they would be integrated … Because we were building the whole project! I think that, at the beginning, it was more blurred. Everyone knew what IRIS-Quebec is interested in, what […] is interested in, and Dr. […] at a clinical level. But I think that trying to put everything together, with everyone around the table, it was not evident at all how to understand the different interests, and how all that would be connected."*

Yet, what has equally affected both hospitals, and here again from the beginning of the project, is the non-availability of the necessary resources to properly implement the new CIS. At the moment of writing this text, after more than four years since the first CIS implementation committee met for the first time on October 26, 2001, the Quebec Treasury Council has not yet released the $ 32 million per hospital initially estimated for financial support of all phases of the CIS implementation.

As noted previously, such financial resources are fall under the respective new hospitals' information resources budgets. As a result, delays concerning the new hospitals portfolio have dragged out the CIS Project in both hospitals, either due to waiting for the political decision of designating the final location of one of the hospitals or, more recently, due to intensive and initially 'bitter' negotiations for the tertiary specialties that each new hospital will preserve when moving into its new location.

Furthermore, and perhaps due to the scarcity of financial resources for adequately implementing the CIS, and/or the fact that the project is led by the informatics department of both hospitals, the focus is on the technical aspects of the implementation, with organizational/clinical issues still remaining "under-estimated":

> *"For me, what is important within MHOSP, what is very important is to be able to document the majority of impacts of the implementation of the CIS. Currently, what is lacking, at MHOSP, is that it is not clear what will be asked of the different services and departments for implementing the CIS"* (Interviewee from MHOSPα).

> *"Are there things that we could do differently? I think that concerning the project management, the section relative to the management of risks, it should be a bit stronger. Because we under-estimate … Regarding the medical side, specifically the integration of physicians into the risk management associated with the CIS implementation, it needs considerable development"* (Interviewee from MHOSPψ).

Despite these intertwined issues, which have contributed to the postponing of the pilot-unit go-live date to spring 2006, the progressive creation of new spaces of inter-organizational collaboration between MHOSPα and MHOSPψ has increasingly emerged during the CIS selection, the preparation of the contract with the vendor, then a long Phase 0 of the CIS implementation, and ultimately the initial steps of the Phase 1A. In order to deeply detail the overlapping (*regionalization* in Giddens' terms) of both structuring processes (i.e., CIS configuration and inter-organizational collaboration) I have broken down the more than four years of existence of the Montreal CIS Project into four bracketed phases – see also Table 1.

First Phase – Initiating the CIS Project and Selecting the IT Solution

The need to purchase a CIS to integrate all patient information existing in the organization had been perceived in both hospitals for years. However, the huge financial investment that this type of technological solution requires had persistently obstructed its acquisition. The IRIS-Quebec being granted in 2000, its proposal to provide a substantial amount of resources for supporting the initial phases of the CIS implementation was therefore rapidly accepted by both hospitals' informatics departments. As both hospitals are located in the same city, a joint tendering process that would allow economies of scales appeared reasonable. Ultimately, this was possible thanks to the personal acquaintance between staff of both informatics departments, and then to both CEOs' endorsement the project. As stated by one of the interviewees from MHOSPα:

> *"I found that it made sense, for the economies of scale, that we launch a joint tendering process. But if it had not been ratified by the CEOs, it would have gone nowhere. So the CEOs have been really clear regarding the decision to go forward."*

This constituted the first "date" between the organizations. As noted by an interviewee from MHOSPψ:

> *"We knew each other already, and we said: "Well, we will work together for the tendering process to speed things up." […] We started to contact the purchasing department, and then we started to work a bit together. But it was clearly written in the*

> *call for applications: "After this, both MHOSPs will not be engaged in making the same choice." When I talk about this, I frequently make the link with when you date someone for the first time. You do not want to be very committed. You say: "We will go to the cinema." Followed by: "We will go to a restaurant." Finally you realize that you are more engaged than you would like …"*

Over this period, the moving of a top manager from one hospital to the position of CEO of the other one, and the sudden vacancy of the head of the informatics department at this same hospital, facilitated the nomination of the head of the computer department of the first hospital for the corresponding position at the second. This 'umbrella' position was officially created in October 2002.

At the same time, and in order to evaluate the different proposals, a number of joint committees that included physicians and nurses from both hospitals were created. The decision-making process was not without its difficulties. Offers from IT finalists according to which "a good price" (i.e. 15% of savings) would be possible if both hospitals purchased the same solution were made. As well, the Ministry of Health sent initial messages in which support of the project appeared conditional upon the implementation of a technology solution viewed as a single large redevelopment project for academic medicine in Montreal, undertaken in "complementarity". Finally, however, the CEOs of both hospitals reached their decision, in March 2003, to acquire the same CIS.

Second Phase – Negotiating the Signing of the Contract with the Vendor

Once the IT solution was selected, a long pre-implementation period began, which culminated in the signing of the contract with the vendor in July 2004. During this period, each MHOSP began elaborating the scope of the CIS implementation phase. Increasingly, documents prepared in one of the hospitals were used in the other one:

> *"It is agreed to: merge both documents (Aim and objectives of the CIS Project-Phase 1 & 2), use the document as a base for fixing the evaluation frame for the CIS, if possible for MHOSPα and MHOSPψ (meeting with researchers on May 5, 2003), and pursue the meetings for improving the document (DSH and physicians in particular, nursing already going on)"* (Minutes MHOSPψ of April 2003).

> *"[X] referred the CIS committee to the document that was sent to them along with the agenda. He asked that everyone review it and give feedback. The document was produced by the MHOSPψ but is intended to become a common document for MHOSPα and MHOSPψ. The priorities will be different between the two hospitals. [Y] indicated that everything was put into this draft document for discussion purposes and it will be cleaned up later"* (Minutes MHOSPα CIS Committee of May 2003).

In parallel, negotiating continued with ministerial policy-decision makers for definitive approval of the estimated financial investment in the CIS Project. Formal support was obtained from the Regional Agency for Health Ministry funding of the CIS Project, but although *"[d]uring the summer (2003) work was done to position funding at all levels"* (MHOSPα CIS Committee minutes of September 2003), such funding did not arrive. These circumstances placed CIS top

managers in an increasingly uncomfortable position vis-à-vis the rest of the CIS committee members and the vendor. Later, in March 2004, the CEOs of both hospitals and top CIS managers met the Director of Medical Affairs at the Ministry of Health, who:

> *"…considers the CIS Project as key for the clinical complementarity between MHOSPα and MHOSPψ, and he gives it his total support, both regarding the solution selected and the agreement negotiated. The funding for the project is tributary to the acceptation of the projects of the new hospitals. The commission should release its conclusions during the month of May"* (Minutes of the MHOSPψ CIS Committee of March 2004).

Such funding was never released. Nonetheless, signing of the contract with the vendor took place in July 2004, with the support of an IRIS-Quebec contribution of $3.5 million per hospital. An important characteristic of this contract is that:

> *"It is built into the contract that 70% of the screens (forms) will share commonality with MHOSPψ. This is a condition set by the vendor to keep the price low. We will develop the screens with MHOSPψ as much as possible"* (Minutes of the MHOSPα of October 2003).
>
> *"The members of the committee agree to aim at 100% of screen and report commonalities between MHOSPψ and MHOSPα. It is also necessary to aim as much as possible to the harmonization of the content (lab test for instance)"* (Minutes of the MHOSPψ of October 2003).

Third Phase – Increasingly Working Together During Phase 0 of the CIS Implementation
Collaboration between MHOSPα and MHOSPψ became more and more intense during this initial phase of the CIS implementation. As one of the interviewees from MHOSPψ has pointed out: *"… this had a snowball effect. It is due to this that we are in the current situation. Indeed, we started to get to know each other, then we went out together, and now we are married!!!"*

Different joint working groups, both at clinical and technical levels, were put in place during this phase, with the aim to jointly work on configuring the new solution, a standardization level of 70% being a contractual engagement to the vendor. Despite organizational cultural and linguistic differences, the joint clinical and technical work that such a high commitment for the CIS configuration implies has been extremely (and *unanimously*) successful so far, as the following quotations illustrate:

Joint Working Group	MHOSPα	MHOSPψ
Technical	*"…you see, MHOSPψ and us, at least from my point of view, we complement each other. They're strong in the technical area, the back end of… [Z] has done a lot of work in how the entries should be organized to standardize them, and to make it a lot easier to create new interfaces. We're strong at the front end, and we've helped a lot in organizing how the front end should work together. Also in the functional analysis area we're very strong. So we've helped a lot in that area. I think working together we've made a much better product. Sometimes it takes a little longer to do things, but on the other hand the product is much better and more general, so I think it's good…"*	*"In fact, we have our problems and they have their problems. We look for solutions… It is because we will have a unique system. We have problems and we communicate them to each other. We try to find a solution that is … a joint solution, or which is convenient to both."*
Clinical	*"Yeah, I think it's great that both hospitals are working together. Actually, and the most fun I think we've had is when I was on the CWG, which is the working group, when we all sat around the table as colleagues and talk about the same issues. To me, that was one of the pluses of the project, you know, when the people from MHOSPψ and MHOSPα sat around and arrived at the same decisions, or decisions that were good for both of us …"*	*"Really, from the beginning, I was pleasantly surprised by the collaboration, by the agreement. We aim at the same goal, which is to facilitate clinical work We don't beat around the bush. It is running. We have no disagreements. It is really surprising, because they have told us that 70% of screens must be the same. We reached more than 90%! It is rather … impressive. Indeed, we do the same job, so we need the same information."*

While each hospital has its own CIS implementation committee, collaboration at the CIS managerial level is equally present:

MHOSPα	**MHOSPψ**
"First of all, there are two separate cultures, so you have to be careful how suggest things and the speed with which you make decisions. Ultimately our goal is the same, which is we want a super-safe system that everyone knows how to use. How to get there depends partly on the culture, and that's been highlighted by many implementations elsewhere. The second thing is that the starting points are very different […] So there's a difference in culture and there's a different starting point. But I think those are both issues that have been dealt with properly. As long as you have respect for both those issues, and that you manage to deal with conflicts whenever there's a divergence of opinions related to it, I have no problem working together."	*"I look … from the point of view of the information, I look… from the point of view of the choice of computers in the units, the security, the sterilization … You know, there are many technical aspects ... Having a sister organization, which discusses the same problems …. When we sit down together and discuss, we often arrive at the same conclusions. We are reassured of our choices to know that a hospital in the same healthcare system, a hospital more or less of the same size, with more or less the same budgetary constraints, with the same type of clientele, with the same academic vision, reaches the same conclusions. So, for me, I find that there are a lot of advantages."*
"The work we have done, for several years, on the CIS Project, is the most beautiful example of complementary work. Complementarity like this is arrived at through negotiating. We are doing it! The CIS is the tool through which we will arrive at what the government wants. […] I trust the MHOSPψ team, how we've worked to date. We have put in place mechanisms, we know each other, we wager, we know [Chair of the MHOSPψ CIS committee], he knows [Chair of the MHOSPα CIS committee] … We don't agree all the time, that's evident, but there is something developing, we are putting it in place."	*"… it is rare that we take different or divergent decisions. So even if physically we are not together, I would say that we are together mentally, because we are repeatedly asking ourselves the same question: "What are they doing at the other site? Aha!!! Okay, so we will try to do the same." All the time, at all levels, there is a desire to do the same."*

Initially planning the go-live of pilot units for September 2005, collaboration between the two hospitals has been increased since spring 2005**.** A single specialist in charge of the elaboration of the CIS communication plan in both hospitals was named, followed by another shared professional for the elaboration and application of the CIS educational and training plan in both MHOSPs.

Further, the CIS Project has been formally introduced to other regional actors in October 2005, with the ultimate intent that the CIS acquired by MHOSPα and MHOSPψ become *the regional CIS* (and then increasing the CIS Project legitimacy vis-à-vis the Ministry of Health). Indeed, the CIS Project has received explicit support from the Montreal Regional Health Agency in its 2006-2010 informational resources regional plan (Agence de la santé et des services sociaux de Montréal, 2006). However, the expected reaction from the Ministry of Health has not yet appeared.

Fourth Phase – Preparing Phase 1A and Negotiating Clinical Complementarity

The struggle for funding is still on-going. Although a number of problems in interfacing the new solution with existing systems in both hospitals have recently been raised, the lack of financial support from the Ministry of Health has delayed the go-live of the pilot units to spring 2006, which indeed will be supported by the respective hospital operational budget. This is mainly due to disagreements among the different actors regarding the meaning of "clinical complementarity" between both hospitals, which, for the Ministry of Health, entails the concentration of medical specialties in one of the MHOSPs. This measure will have important repercussions not only on the hospital concerned, but also on the Faculty of Medicine to which the hospital is affiliated with and, ultimately, on the respective organizational partners and cultural community akin to each.

In August 2005, the Ministry of Health appointed a new Project Manager for the new hospitals' portfolio, who has clearly attributed the subsidiary nature of the funds for the CIS Project to the result of negotiations upon clinical complementarity as defined by the Ministry of Health:

> *"[X] gave the following update. [CG] is the new project manager for both MHOSPα and MHOSPψ. He has 3 areas of responsibility: (1) involvement in the construction of the new site (2) ensuring that practice plan is set up by both MHOSPs, and (3) complementarity of the clinical aspects. [CG] has indicated his support for the CIS Project. […] [X] also gave the following update regarding the financing of the CIS. He indicated that the first check for the new MHOSP site is dependent on all of the above three areas. For the clinical complementarity, the plan cannot be accepted as is for the MHOSP clinicians. […] If there is no new MHOSP site then there is no money from the government for the CIS"* (Minutes of the MHOSPα CIS committee of October 2005)**.**

Nowadays, the increasing political flavor that the CIS Project has acquired, mostly due to its intertwining with the new hospitals' portfolio, has put it *"completely out of our control"* (Interviewee from MHOSPα). In other words, such a struggle, which has been qualified by interviewees from both hospitals with a rich set of images and metaphors such as "hot political potato", "pawn", "bait", or "complementary flag" among others, is viewed as a serious threat to the implementation of the subsequent phases of the project beyond Phase 1A. This is illustrated by the following quotations:

> *"Lack of funding plus the issues of clinical complementarity, plans of practice and the building are very significant obstacles. What is seriously holding us up is clinical complementarity. All these issues need to be resolved to advance the project. This is a nasty knot to undo"* (Interviewee from MHOSPα).

> *"I think they're waiting for the money, and also they're using it as an argument to push other things that they want. There's a tendency to concentrate all the operations of one type in one unit. […] In the U.S. it's a new trend that the insurance companies are pushing to concentrate things like that, so they want all the hips done in one hospital, because that way it's going to be less expensive, and more efficient, and that trend is coming to Quebec, so they started with cataracts and they did it with hips, but they're trying to generalize that […] the only problem is a political problem […] Two faculties, two populations, two languages…"* (Interviewee from MHOSPψ).

Nonetheless, preparation of pilots units (technical CIS issues, clinicians training and communication plan) were intensified during fall 2005, even without a fixed date for their go-live at the time. Furthermore, although the new Project Manager for the new hospitals**'** portfolio: *"… supports a hasty funding of information systems key for the transition towards the new site**s** [and] the request has been submitted to the Treasury Council and the approval is expected by November 2005"* (Minutes of the MHOSPψ CIS committee of October 2005), such approval has not yet arrived.

PRELIMINARY DISCUSSION AND CONCLUSIONS

Although the information revolution that has swept our postmodern societies for the last thirty years is argued by some as one of the reasons for a decline of the medical profession (e.g. McKinlay and Marceau, 2002), most view it as a key issue for successful contemporary medicine (see for example Bates and Gawade, 2003; Gray, 1999; Shortliffe and Blois, 2001). As a result, information technology has become an *imperative* in health care organizations, as is illustrated by the following quotes from clinicians from both hospitals**:**

> *"My concern as a clinician was, we've got to, we're going electronic, that was clear way back in the late '80s, and we want to have access to that information because: Why do we have to phone for results? Why can't we just link, since it's electronic? Why can't we tie it together? Integrating all our information systems and our clinical data repositories was the way to do it"* (Interviewee from MHOSPα)**.**

> *"I think the government can decide what they want, because they're in charge, but I don't think the government has a lot of choice to start implementing this kind of big computer network, I mean, it's the way of the future. They can stall it, but they can't stop it completely, because I think it is better medicine to have computer information"* (Interviewee from MHOSPψ).

However, despite its pervasiveness, as previously stated, the implementation of new information technology like a CIS constitutes a very complex process. In general terms, this is due to both the configurable character of this technology, and the difficulties inherent to the re-thinking of local contingencies when looking for the adequate fit between technology and the organizational healthcare context.

Having said this, the Montreal CIS Project is a particularly arduous enterprise for many reasons. First of all, the project has been triggered by a group of researchers and clinician-researchers, who have partially financed the project and who, obviously, display intense research interests. In a context of strong resource dependency, such interests have been viewed mostly in opposition to purely clinical concerns. Also, there are not only one but two organizations involved, a fact which, although with positive results so far, necessarily slows the process of CIS implementation and makes the negotiation with the vendor much more complex. Furthermore, the two organizations are not modest hospitals but relatively recently merged multi-site university hospital systems, which are competitors, particularly at an academic level. In addition, they operate in a publicly-funded healthcare delivery system, within which policy decision-makers play a determinant role. Moreover, from the very beginning, and for budgetary reasons, this project has been associated with the extremely complex portfolio of new 'super-hospitals' – see also Table 2 for an overview of these particular contingencies. A significant number of powerful actors have therefore been involved in the Montreal CIS Project from its initial steps, and they have evolved in a very complex context, which has deepened the power dependencies existing among them.

There are two elements that cannot be ignored in *any* CIS implementation, namely an adequate level of financial resources and a deep involvement of end-users (i.e. clinicians) from the very beginning of the process. Consequently, besides all those features cited above, what has made this CIS Project even more complex is that, on the one hand, *it has never disposed of an adequate level of financial resources for putting in place all the phases of the CIS implementation*, and, on the other hand, this has meant (at least partly) that the scarce funds available have been largely addressed to the technological side of the project, while *under-estimating the organizational (social) side* of the implementation. As stated by interviewees from both organizations:

> *"I feel that there are many constraints around this project. There are architectural constraints; there are financial constraints the results of which are unknown. I find that this project is viewed, again, as very technological, even concerning the estimation of costs. From the beginning, I said: "We have estimated, in this project, the vendor's costs, the costs to work with [the CIS]… But it wasn't clear, the costs to computers' acquisition. In addition to these there are many other costs!"* (Interviewee from MHOSPψ).

> *"… the bottom line, what does it mean in terms of training, what does it mean in terms of processes' revision, what do we imagine this will mean? It will be adjusted and personalized. For me this is important, and it is local. Local! Why is it necessary that we do it? For obtaining adherence, for obtaining commitment, an engagement, or, in the case of the worst scenario, a total disengagement. But we will be clear. And we will stop*

> *losing time … My time, it is not so important, but the time of [CIS implementation committee] people is. […] Sending a clear message […] at the level of informatics services: "You are going to implement an information system, but it will fit nobody. Nobody will be ready to get involved in it." This is a problem that needs to be expressed"* (Interviewee from MOHOSPα).

What is important to highlight here is that, despite all these extremely difficult and intertwined contingencies which are making the Montreal CIS Project a particularly challenging enterprise, these two concurrent hospitals have increasingly worked together at managerial, as well as clinical and technological levels. Being aware of the political context within which they evolve, and the scarcity of the resources at their disposal, both MHOSPs have therefore jointly selected a CIS that is *"not the most sophisticated one"* (Interviewee from MHOSPα) but *"it is solid technology. I think it's adaptable, it's open source. It fits. I think it fits with what I would think would last a long time"* (Interviewee from MHOSPα), and it *"was a good choice, because the interface was a little simple but the potential to do research was bigger than the other ones"* (Interviewee from MHOSPψ). Afterwards, the two hospitals have jointly contractually agreed with at least 70% of shared CIS commonalities, and created a number of organizational and inter-organizational committees through which they have jointly initiated the configuration of their CIS with the vendor. Lately, in the respect of both organizational cultures, they are preparing the initial phases of its implementation. They have even taken advantage of the forced slow pace of the CIS implementation in order to properly assimilate the different changes and have avoided *"advancing the ship too quickly"* (Interviewee from MHOSPα).

How can this complex, even paradoxical phenomenon be understood? From a structurationist perspective, and more particularly through Giddens' concept of regionalization, it appears that the joint processes of selection and initial CIS implementation, undertaken by two organizational competitors more than four years ago, are compelling them to *discuss*, *work through* and *rethink* their respective organizational *sets of rules and resources* when looking for a shared technological solution *meaningful* to both organizations. There is therefore a sort of overlapping of macro-(inter-organizational) and micro-(organizational) levels of activity for CIS configuration (agency) that is triggering the restructuring of institutional principles (structure) of organizational autonomy towards those suited to collaborative inter-organizational processes (agency). Briefly stated, *collaborative practices* are the process by which the CIS is being configured and adopted, and through the *restructuration* of existing rules and resources in the organizational field, they may also be the *effect* of such an adoption. This 'duality of the structure' in the field is very well illustrated by the following quotation:

> *"I think that the principal motivation* [of working together] *concerned the legitimacy of the project. If both hospitals have the same obvious need, and they say that something must be urgently done, then this has much more political weight that if we don't do that. Working together, we have realized that we are able to work together. This wouldn't have been possible otherwise, according to the different cultures, the different languages, and so on. We have overcome those problems, and the benefits are far superior to the problems"* (Interviewee from MHOSPα).

However, even if the results of pooling efforts and expertise are satisfying these two "equal partners" so far, one cannot neglect that that they are still in the initial phases of a process of collaboration, never undertaken before, which may be stopped abruptly at any time: because *tradition* (Ouchi, 1980) of collaboration does not exist, these two organizational partners are not merely reproducing the current set of rules and resources present in their institutional field when interacting, but rather *modifying* it substantially through their interactions. Moreover, such restructuration may have consequences beyond the space of collaboration that the two hospitals are creating. As noted by Phillips et al. (2000):

> "The creative construction of new rules, practices and resources has implications beyond the boundaries of the collaborative process. As organizations work to structure their collaborative relationship, they continue to engage in their regular activities, taking their new-found concepts, ideas and practices with them into all of the routine negotiations, exchanges and relationships of their institutional fields" (p. 35).

At the present moment of the Montreal CIS Project, financial resources are necessary to *fully incorporate knowledgeable end-users* from both hospitals into the following phases of the CIS implementation. Without the necessary resources, and in terms of collaboration, actors' interactions (or *socialization*) (agency) around the CIS will be stopped, then the possibility of the new set of collaborative rules and resources (structure) becoming institutionalized would be seriously threatened. In this sense, and although most interviewees consider it almost "impossible" that the CIS Project be stopped, signs of breathlessness are already identifiable in a certain number of individuals from both organizations, who begin questioning the opportunity to go-live with pilot projects in Phase 1A without assurance of funding for the rest of the implementation phases.

Collaboration differs from both markets (price mechanism of control) and bureaucracies (control through legitimate authority) (Ouchi, 1980). In this project, powerful organizational actors have begun collaborating within a bureaucratic healthcare delivery context. Ouchi (1980) notes that partial socialization accompanied by market or bureaucratic mechanisms of control may be also effective. Greenwood et al. (2002) suggest a similar idea when noting that regulatory agencies play a significant role supporting the formation and reproduction of shared meanings and understanding, and also when pushing for "negotiated agreements between competing claims" (p. 61). What appears paradoxical in this project is that, while these two university hospitals <u>are already building collaboration</u> around the CIS Project, as desired by the Ministry of Health, the pressure that is being exerted on them, on the one hand, to *force* clinical complementarity, as understood by the provincial policy-makers, and on the other hand, to keep tying the CIS budget to the resolution of the new hospitals portfolio, may have the opposite effect. What is more, the new hospitals' project could be shortly "on the sidelines" (Lessard, 2006), due to the latest governmental costs estimations, which would go significantly beyond initial budgets. Will this mean that, after more than four years of committed joint work, the Montreal CIS Project will suffer from additional delays, and ultimately be stopped due to the lack of financial resources to progress the further phases of its implementation? Negotiations among actors concerned by both the new hospital sites, as well as by the issue of clinical complementarity currently are on-going at a high political level. Whatever decisions will be made, the CIS Project will be strongly affected. As Barley (1986) notes:

> "[…] technologies are social objects capable of triggering dynamics whose unintended and unanticipated consequences may nevertheless follow a contextual logic. Technologies do influence [inter-]organizational structures in orderly ways, but their influence depends on the specific historical process in which they are embedded" (p. 107).

In conclusion, the interest for a new CIS by a restricted and very committed number of individual actors from both hospitals has constituted the technological headlong that has precipitated a process of institutional change on the way to collaboration. After four years, this process is in a phase of pre-institutionalization. To be able to move from pre-institutionalization towards full institutionalization, these actors need to act as *institutional entrepreneurs*; that is they have to be able to leverage the sufficient resources that allow them to effectively realize their highly-valued ambition of jointly implementing their new CIS. The identification of a CIS Project Holder by hospital (i.e. a person with great reputation and well-known in the organization available to work full-time for the project), a formal commitment from hospitals top managers to financially support the project, and a better positioning of the project vis-à-vis policy decision-makers may constitute non-mutually-exclusive steps forward in this direction.

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Figure 1 – A Structurationist View of Intertwined Processes of CIS Implementation and Collaboration

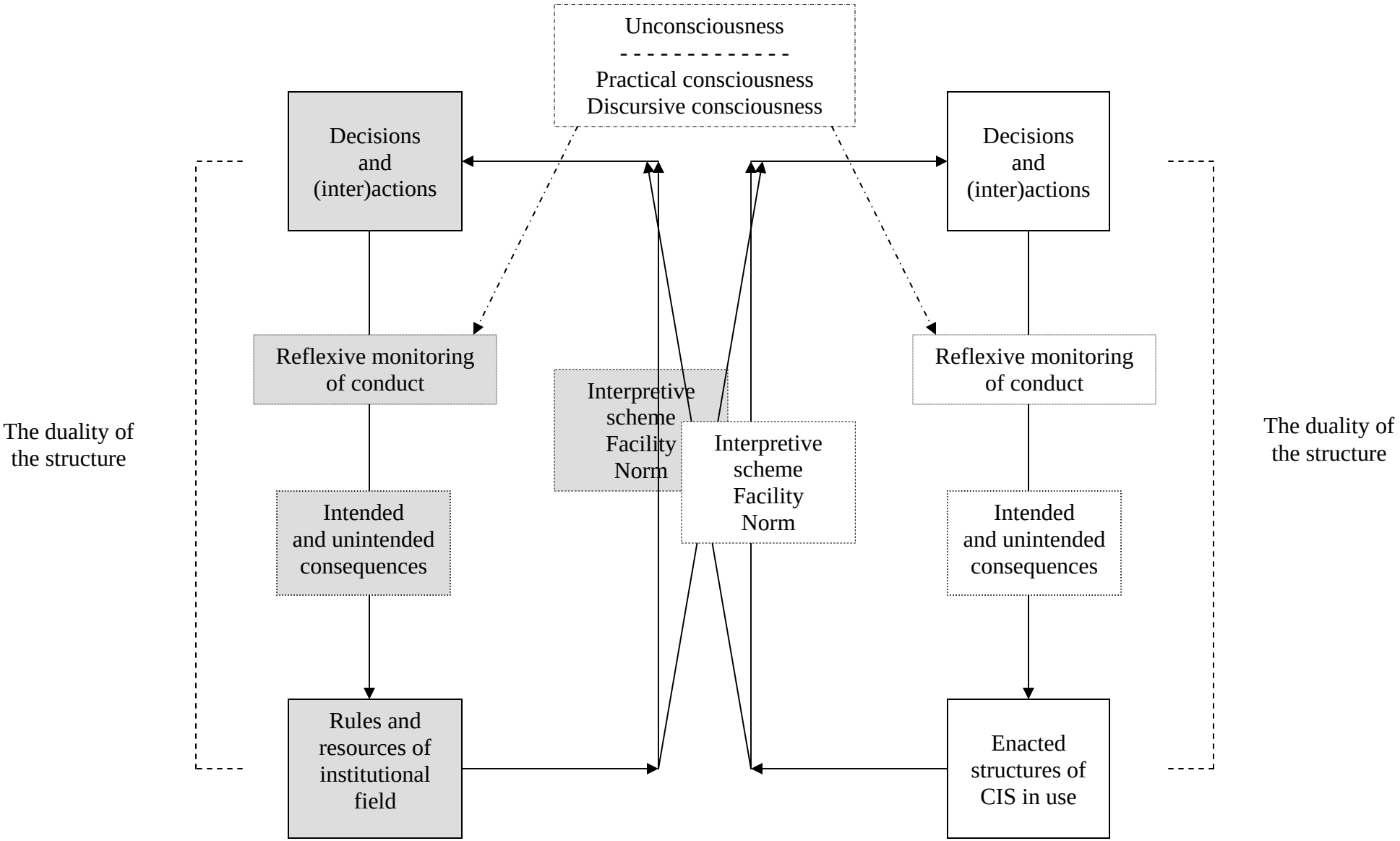

Table 1 – Temporal-Bracketed Phases of the Structuration of Collaboration

TIME

2001 2005

	PHASE 1	PHASE 2	PHASE 3	PHASE 4
DECISIONS AND (INTER)ACTIONS	Launching a joint tendering process	Negotiating the contract with the vendor	Initiating the CIS configuration	Delaying/preparing the go-live of pilot units while struggling for clinical complementarity
Discursive practices – images and metaphors	"Starting dating"	"Going out together"	"Marriage" "Sister organization" "Equal partners" "Mental togetherness"	"Complementarity flag" "Hot political potato" "Pawn" "Bait" "Growing loops" "Nasty knot to undo"
STRUCTURAL PROPERTIES OF THE ORGANIZATIONAL FIELD	▪ Joint committees for CIS selection ▪ Umbrella position of the Head of Informatics departments ▪ Acquisition of the same CIS	▪ Shared working documents ▪ Contractual engagement of at least 70% of CIS shared commonalities	▪ Co-operation at the managerial level ▪ Joint clinical working group ▪ Joint technical working group ▪ Shared human resources in communication and training	

Table 2 – Some of the Dimensions that Make the Montreal CIS Project Particularly Challenging

DIMENSION	EXCERPTS/QUOTATIONS
• Project triggered and partially financed by a group of researchers	*"IRISQ wants to see the basic solution for IRISQ addressed in phase 1A just in case the global funding for the project does not come through"* (Minutes CIS implementation committee of March 2004).
• Two organizations involved → slower processes and more complex negotiation with vendor	*"Usually, when you implement your CIS, there is the vendor and yourself. In this situation there are two clients, making the position of the client uncertain. This better positions the vendor. So there are three partners. This is a trio! Everything is done by three. Three party project management and decision-making is very complex and adds weight to everything you do. Having said this, because you cannot do things rapidly, because you must justify all the time what you are doing, this forces you to do better […] and you arrive at a better solution. It is longer, but it is always better"* (Interviewee from MHOSPψ).
• Partner organizations that are competitor multi-hospital university centres	*"[…] the medical students that we train, they get the best grades in Canada, we've been getting great grades, we publish more and more. So we're becoming more and more of a competitor …"* (Interviewee from MHOSPψ).
• Organizations that operate in a publicly-funded healthcare system → important role played by policy decision-makers	*"In a private system, it* [a CIS] *would be a need, and the budgets would have been increased a long time ago, and we would have decided to deploy as quickly as possible, never mind the cost."* (Interviewee from MHOSPα). *"Everything is slow in Quebec, and everything at the government level is slow …"* (Interviewee from MHOSPψ).
• Due to resource dependencies, technological project associated with the extremely politicized hospital-new sites portfolio	"[There are] *two possibilities of funding. First possibility: the operational budget. This budget, not possible because it drains from nursing care, and from physicians to give it to information technology … We cannot come up with a success story like this. […] The other possibility, the technological transfer associated with the construction of the new sites"* (Interviewee from MHOSPα).