The Implementation of Configurable Technology: Negotiations Between Global Principles and Local Contexts

Par : Marlei Pozzebon

Cahier du GReSI no 04-07
Avril 2004
The Implementation of Configurable Technology: Negotiations Between Global Principles and Local Contexts

Marlei Pozzebon, Professeure adjointe
Service de l’enseignement de technologies de l’information
HEC Montreal
3000, chemin de la Côte-Sainte-Catherine
Montreal, Québec, Canada, H3T 2A7
tél : (514) 340-6754
fax : (514) 340-6132
marlei.pozzebon@hec.ca

Prière de faire parvenir toute correspondance à :
marlei.pozzebon@hec.ca
The Implementation of Configurable Technology: Negotiations Between Global Principles and Local Contexts
Marlei Pozzebon

Résumé

Parmi les nouvelles formes de technologies qui envahissent la recherche et la pratique en Systèmes d'Information, les SI configurables réfèrent aux technologies assemblées à partir d'un éventail de composantes afin de répondre aux exigences spécifiques d'un client et de son entreprise. Des progiciels comme ERP sont de bons exemples d'IS configurables parce qu'ils fournissent souvent des centaines et même des milliers de caractéristiques spéciales et d'éléments de données qui peuvent être combinés de multiples façons. Ils ne doivent pas être perçus indépendamment de la représentation qu'en donnent les intermédiaires externes (médiateurs) qui « parlent » au nom de la technologie en fournissant des images, des descriptions, des politiques, des modèles et, très souvent, des « solutions ». Dans ce texte, j'essaie de comprendre l'implantation de solutions configurables selon un point de vue de critique interprétative. À l'aide de sept études de cas rétrospectives, j'examine la relation établie par les clients et les consultants pendant le processus de configuration, au cours duquel on négocie quant aux prévisions de fonctionnement de la technologie. Divers degrés de dépendances sont mutuellement construits, entretenus et transformés à long terme, ce qui influence la négociation globale-locale et les résultats du projet. La contribution principale de cette recherche est la reconnaissance de différents schémas de médiation, c'est-à-dire différents types de relations client-consultant, ainsi que des différents types de trajectoires que ces schémas peuvent entraîner dans la négociation globale-locale. J'examine aussi les résultats du projet en termes d'ajustement et de satisfaction. J'identifie enfin les stratégies de médiation qui pourraient aider les entreprises à améliorer la négociation globale-locale, et, je l'espère, à accroître les bénéfices à retirer en menant des projets aussi coûteux et risqués.

Abstract

Among the new forms of technologies that overwhelm Information Systems (IS) research and practice, configurable IS refer to technologies that are built up from a range of components to meet the very specific requirements of a particular client organization. Software packages like ERP are good illustrations of configurable IS because they typically provide hundreds or even thousands of discrete features and data items that can be combined in multiple ways. They cannot be seen independently from their representations through external intermediaries (mediators), who “speak” for the technology by providing images, descriptions, policies, templates and, very often, “solutions.” In this paper, I try to understand the implementation of configurable solutions from a critical-interpretive view. Using seven retrospective case studies, I investigate the relationship built by clients and consultants during the configurational process, where visions of how the technology should operate are negotiated. Different degrees of dependencies are mutually constructed, maintained and transformed in the long run, influencing the global-local negotiation and the project results. The main contribution of this research is the recognition of different patterns of mediation, i.e., different types of client-consultant relationships, and of different types of trajectories in terms of global-local negotiation these patterns are likely to produce. I also examine the project results in terms of fit and satisfaction. Finally, I identify mediating strategies that may help organizations improve global-local negotiation and, hopefully, improve the benefit of embarking on such costly and risky projects.

Mot-clés
IS Implementation, Configurable Technology Implementation, ERP Implementation, Mediation Process, Global-local Negotiation, Structuration Theory, Critical Discourse Analysis.
1. Introduction

To the same extent that advanced software packages become more sophisticated and flexible, their configuration becomes more complex and risky. “The broad flexibility of modern software can be both the boon and bane of technology implementation,” Fichman and Moses contend, because it offers users a profusion of functionality but demands that they choose well from this multiplicity to ensure that their resulting configuration is not only internally consistent but also consistent with organization processes and policies, whether existing or new (1999, p. 40). The present research focuses on configurable information systems (IS), which refer to these advanced software packages that are highly parameterizable and are built from a range of components to meet the very specific requirements of a particular organization. They cannot be seen independently of their representation through external intermediaries, who “speak” for the technology by providing images, descriptions, demonstrations, policies and templates (Bloomfield and Danieli, 1995; Orlikowski et al., 1995). Software packages like ERP are good illustrations of configurable IS because they typically provide hundreds or even thousands of discrete features and data items that can be combined in multiple ways.

Configurability is an important trend in IS, drawing its popularity from the hope of benefit from increased economies of scale and access to cumulative expertise about organizational practices “embedded” into these software packages. After developing in-house solutions for decades or selecting “turnkey” packages (packages ready for immediate use without possibilities for parameterization), organizations are increasingly relying on software of a different nature: far from being simply a tool to automate and speed up current ways of working, the technology is becoming a means to enable new policies and ways of organizing (Fichman and Moses, 1999). Indeed, modern configurable software is often seen as providing “universal or global solutions” and embedding “best practices” (Williams, 1997).

At the same time that organizations have been encouraged by technology developers and vendors to implement information technology (IT) solutions that are expected to optimize their business processes and profitability, the complexity and risks characterizing their configuration have been downplayed (Swan et al., 2000). What often goes unsaid is that organizations should be able to carry out a difficult and ambiguous negotiation in order to benefit from “best practices” and effectiveness that configurable technologies are supposed to engender. Each new configuration being built requires an entire process of negotiation, necessarily mediated in several ways: from the initial vendor’s advertising and demonstrations to consultants’ interventions during configuration and operationalization. The project team should acquire knowledge and skills to shape an “effective” configuration through manipulation of parameters and switches, a process called global-local translation (Williams, 1997), which presupposes an intimate knowledge of the configurable software and demands an intimate knowledge of the functional business process being automated. Global and local should be blended in such a way that the final solution is workable without losing either the accumulated knowledge embedded in the design of such technologies or the existing and equally important local knowledge spread across the organization. I use the term technology-configuring mediation to refer to the process

---

1 Global-local translation can be seen as the translation of global principles and multiple choices into local requirements and contexts.
characterized by a socially constructed relationship between clients and consultants, where visions of how the technology should operate are negotiated.

The research question guiding this empirical research is: *How does the mediation process influence the negotiation between global principles and local contexts during the implementation of configurable IS, and how does such a negotiation influence the success of the implemented technology?* Underlying this question are a set of basic assumptions I hold about the organizational phenomenon related to the implementation of a configurable technology. First, technologies are not taken for granted but are seen as socially constructed over time. Each choice regarding the configuration of a given technology reflects social and organizational values and interests. Second, different people interpret the same technology differently. Although holding individual assumptions, expectations and knowledge, people also tend to form coalitions and subgroups that usually share interpretive frames about a technology. Consequently, interpretive frames, conflicting or convergent, influence how individuals and groups of individuals interpret and make decisions regarding the implementation and use of a new technology. Third, when the technology is configurable, the intervention (mediation) of external consultants is always required (at least in the initial phases). Therefore, the client-consultant relationship occupies an important role. Fourth, although the consequences of technology implementation are always situated and emergent (rendering unpredictable the results of mutual influences between people and technology), this does not imply that each situation is completely unique. On the contrary, because problems and solutions associated with the same technology tend to be recurrent, some patterns can be recognized (Orlikowski, 2000), even if they do not emerge in a deterministic way. My intent is to recognize some of these patterns and help improve our knowledge of the global-local negotiation that characterizes the implementation of configurable IS. As per Walsham (1995), the processual mechanisms I aim to identify are presented as tendencies and valuable explanations without being wholly predictive for future situations.

Precisely because the purpose of configurable technologies is more ambitious, the never-easy task of implementation is becoming much more complicated. What should be taken into account when IS implementation involves highly configurable technologies? Few studies, if any, have focused on understanding the nature of the relationship established between consultants and clients during the configuration of an ERP package and how the type of relationship established influences the negotiation between local contexts and requirements and the universal and global principles supposedly “embedded” in design. This question remains relatively misunderstood and the contribution of this research is to shed some light on how organizations may increase the value of implementing configurable technologies. I recognize different patterns of mediation, i.e., different types of client-consultant relationships, and I see different types of trajectories in terms of the global-local negotiation these patterns are likely to produce. I also examine the project results in terms of configurational fit to local context and clients’ satisfaction. Finally, I identify mediating strategies that may help organizations improve global-local negotiations and, hopefully, improve the benefit of embarking on such costly and risky projects.
2. Literature Review

2.1 Configurable IS Implementation

Configurable technologies refer to those technologies that are highly parameterizable: they are built up from a range of components to meet the very specific requirements of a particular organization (Fleck, 1994). The concept of configurable technology covers a wide variety of technologies, from robots to large computer systems, and has also begun to be applied with respect to various applications of IS (Fleck, 1993). Previous research on configurable IS is not extensive. Fleck (1993, 1994) provides an initial systematization of the concept of configuration, recognizing configurable technologies as distinct from what he calls generic systems, the former being less stable and more open to the contingencies of each application than the latter. Fleck’s conceptualization of configurations points to the process by which local contingencies and specific requirements and needs are gradually accommodated and embedded into a particular configuration, in a process he calls “crystallizing contingencies.” Fleck’s work is clearly influenced by the notions of trajectories and technology stabilization as formulated by Callon (1987) and Pinch and Bijker (1984).

Because the focus of this paper is on implementation, and implementation is but one phase among others in information systems development (ISD), this investigation does not include stages such as design, selection, post-implementation and use. I do however recognize their importance, especially that of the package selection: much frustration, investment without return and failure could be avoided in the selection phase (Butler, 1999; Janson and Subramanian, 1996; Montazemi et al., 1996; Sprott, 2000). I understand implementation as an organizational learning (Leonard-Barton, 1988) and a political process that is likely to involve high levels of political negotiation, alliance building, conflict resolution and compromise of objectives (McLoughlin et al., 2000). Talking specifically about configurable IS implementation, we can discuss local configurational processes, a collection of activities required to adapt generic models of the “optimum” relationship between technological and human/organizational resources to the particular production and organizational environment of a specific enterprise. Such configurational activities have the effect of sustaining or transforming the manner in which material resources are turned into outputs (McLoughlin et al., 2000).

Configurable IT is particularly well-illustrated by advanced packaged software like ERP packages: a range of software modules, data structures and parameters must be selected, assembled and tailored to meet local requirements (Fleck, 1993; Markus and Tanis, 2000). They are complex and ambiguous; in addition to the global-local translation which all configurable technologies require (Williams, 1997), ERP projects also involve standardization across a range of technological platforms, departments and even organizations. ERP represents a historically situated technological development, covering about 30 years, which largely corresponds to a particular vision of total control over material flow within manufacturing (Clausen and Koch, 1999; Koch, 2000a). Its pervasiveness in large firms is unprecedented. By 1997, ERP packages already accounted for over half the world-installed base of software applications (Gable et al., 1997).
The opportunities and risks related to ERP projects are two inseparable sides of the same phenomenon, and both great benefits and huge failures have been reported (Davenport, 1998; Markus and Tanis, 2000). The literature on ERP is gradually reaching enormous proportions. I outline here the work of researchers that focus on the configurable facet of ERP packages (Clausen and Koch, 1999; Dawson et al., 2000; Hislop et al., 2000; Koch, 2000a, 2000b; McLoughlin, 1997; McLoughlin and Harris, 1997; Swan et al., 2000; Williams, 1997). Some of these authors characterize ERP packages as very general tools that should be configured to a specific type of business. The extent of customization determines the length of the implementation, which can sometimes be extended and very complex (Bingi et al., 1999). Other authors specify that such configurability is within limits, reminding us that the generic nature of such tools is, in effect, confined within limited boundaries. ERP packages give their users only certain options: “configuration is that these packages give you, for instance, ten ways to do something” (Lee and Lee, 2000, p: 285). If users do not find what they want and need in that repository of options, customization may be required. From this viewpoint, ERP packages suffer from technical limitations; occasionally ERP possibilities do not fit business rules that cannot be changed without serious negative business implications (Markus et al., 2000; Markus and Tanis, 2000; Soh et al., 2000; Taylor, 1998).

2.2 Mediation Process

Configurable IS are neither unproblematically available nor easily implemented. To different degrees, it involves intense negotiation among a wide network of players. For example, ERP projects involve not only internal players from different departments and hierarchical levels, but also a network of external players like software vendors, external contractors or systems integrators, independent consultants, vendors of ERP product extensions, supporting hardware, software and telecommunication capabilities, etc. (Markus and Tanis, 2000). Some of these players, especially consultants from vendor software or third-party consulting firms, act as mediators in the sense that they directly influence users’ interpretations and decisions by providing them with images, descriptions, demonstrations, policies and templates (Orlikowski et al., 1995). They “speak” for the technology, strongly influencing the users’ understandings of it (Bloomfield and Danieli, 1995). On the other hand, the users’ assumptions, expectations, knowledge and experience also influence the mediators’ strategies.

In the implementation of a configurable technology, neither the organization’s requirements nor the software capabilities should be taken for granted because they are both socially constructed and mediated (Bloomfield and Danieli, 1995). I suggest the concept of mediation as central, defining technology-configuring mediation as the process through which clients and consultants jointly construct a relationship and negotiate how the configurable technology will work. Technology-configuring mediation is composed of a set of activities (meetings, training, prototyping, conversations, and product demonstrations) or vehicles (documents, manuals, consultancy reports, training material, and advertising) that influence the way people implement configurable technologies. These activities take place in a scenario of intense negotiation, the result of which is an arrangement that not only reflects a given vision of organizing, but that also might please or empower some of the actors involved and disappoint or demote others.

We have conducted an extensive literature review of ERP implementation, which is available upon request.
Past research on technology mediation has identified different types of interventions — such as champions (Beath, 1991; Howell and Higgins, 1990), chauffeurs (Culnan, 1983), expert users (Nardi and Miller, 1990), system staff (Bjorn-Andersen et al., 1986), tailors (Trigg and Bodker, 1994), facilitators (Kraemer and King, 1988) — which provide valuable insights. Yet, most of “classifications” are not directly related to technology-configuring mediation. For instance, champions, chauffeurs, expert users and tailors intervene once technology is in place and in use. Intermediaries and surrogates (Keil and Carmel, 1995) help make the link between the design and the future user, although not focusing on implementation. Administrators, champions and trainers influence adoption and use, but they do not directly mediate in the configuration of a technology. As previously discussed, the implementation of configurable IS cannot be read independently of its representation through intermediaries that help to configure the components and parameters embedded in the technology. These intermediaries are often consultants. Consequently, when the focus is on the interventions that mediate configurable IS implementation, the role played by consultants and their relationship with clients becomes central.

2.3 Technology-Configuring Mediation: Consultant’s Role

Numerous classifications have been proposed by both practitioner and academic literature to characterize the consultant’s role: therapist (Gilbert, 1998), psychoanalyst (Czander and Eisold, 2003) or doctor (Llewellyn, 2002); expert (Lee, 2002) or guru (Clarke and Salaman, 1998; Jackson, 1999); facilitator (Lundberg, 1994), pair-of-hands (Long, 1999) or coach (Bennett, 2001, Washburn, 1995); collaborative (Long, 1999) or interdependent (Williams, 2001). Behind all these classifications, we can find the influence of Schein’s work3, which is seen as a landmark in consultancy literature. Schein (1988, 1999) identifies three ways consultants work with line managers: in an expert role, a pair-of-hands role, or a collaborative role. These three categories essentially encompass all the different labels described above. Block (1999) provides a detailed description of these three roles:

♦ The expert role characterizes a relationship where the client elects to play an inactive or passive role, expecting to hold the consultant responsible for results. Decisions on how to proceed are made by consultants, based on their expert judgment. Information needed for problem analysis is gathered by consultants. Technical control rests with consultants and collaboration is not required. Two-way communication is limited. Consultants plan and implement the main events; clients judge and evaluate after the fact.

♦ The pair-of-hands role characterizes a relationship where the client decides to retain full control (an active role) and to see the consultant as a coach, an extra “pair of hands” who is expected to supply specialized knowledge to implement action plans toward the achievement of goals defined by the client. The consultant takes a passive role. Decisions on how to proceed are made by clients, based on their judgment and take into account consultants’ eventual recommendations. Two-way communication is limited. Clients specify tasks for consultants to implement; clients judge and evaluate the consultants’ intervention as the process evolves.

3 Schein’s classification of consultant’s role was first published in the 1960’s.
The collaborative role characterizes a relationship where the consultants’ specialized knowledge is added to the client’s knowledge of the organization. Consultants and clients play active roles. They are partners. Decision-making is bilateral and control issues become matters for discussion and negotiation. Communication is two-way. Implementation responsibilities are determined by discussion.

Without decreasing the relevance of Schein’s work, most critical studies on consultancy outline that the consultant-client relationship transcends any simplistic notion of one-way influence of fixed roles. For instance, Kaarst-Brown (1999) proposes five “roles” of the external consultant that take into account how the exercise of, and source of power can be seen in the symbolic role of the external consultant. From his view, to the same extent that consultants can manipulate, the client to serve their own needs can also manipulate them.

Compared to the vast literature available on general management consultancy, few studies investigate the role of management consultants specializing in IT within organizations. Gable (1996) proposed a multidimensional model of client success when engaging external consultants, identifying three main areas of assessment: the consultant’s recommendations, client learning and consultant performance. From a different perspective, constructivist, Bloomfield defined consultancy practice in relation to technology as constitutively socio-political: we cannot separate socio-political skills (e.g., the sales pitch, winning contracts, persuasion and communication, negotiating between different organizational factions) and technical skills (implementing hardware or software, information requirements analysis). Consultancy is seen as an exercise of power, articulated through discursive and symbolic resources (Bloomfield and Best, 1992; Bloomfield and Danieli, 1995; Bloomfield and Vurdubakis, 1994). Although critical regarding the consultant’s role, dualist positions are avoided. The relationship depends on a mutual understanding between consultants and clients; this is not a given, but depends on their discursively negotiated identities.

2.4 Technology-Configuring Mediation: Client’s Role

While the consultant’s role is fundamental to understanding technology-configuring mediation, it involves interactions with clients. Therefore, I cannot neglect the client’s role, especially that of clients who will work on configurational activities. The literature on ISD suggests that what represents a challenge for the “packages context” is exactly what has occupied a central position regarding “in-house and customized software contexts,” end-user participation.

The effect of user participation on system success is a controversial IS area. Conventional wisdom indicates that user participation is critical to the successful development of IS, but researchers have failed to demonstrate its benefits. A meta-analysis trying to resolve the inconsistent findings accumulated in the literature was recently provided by Hwang and Thorn (1999) and supports the view that, overall, user participation is beneficial to system development, helping to produce high quality systems, which in turn will cause user satisfaction. The efforts to measure and establish causal links between user participation and system success have been furthered by the work of several researchers such as Baroudi et al. (1986), Ives Olson (1984), Doll and Torkzadeh (1989, 1990), Franz and Robey (1986), Robey et al., (1989), and recently by Barki and Hartwick (1994), who proposed user participation and user involvement as two distinct constructs and also found that user involvement plays an intervening role in the participation-success link.
A critical view of the role of user participation in IS development has been pursued by other groups of researchers, who do not isolate user participation from the wider political context of the organization (Asaro, 2000; Land and Hirschheim, 1983; Mumford and Henshall, 1983; Mumford and Wier, 1979). From this critical view, the notion of user participation takes on a different meaning when analyzed in conjunction with the notion of empowerment - the capacity for participation does not empower users unless they also have the ability to act accordingly (Asaro, 2000). In this vein, Kawalek and Wood-Harper’s (2002) work on user participation in ERP implementations suggests that, although user participation is emphasized as an important feature to gather local intelligence about particular local needs at different project sites, often the project’s ultimate outcomes (i.e., its standard solutions) are already known from the beginning, which means that the system would be implemented regardless of user input. User participation is maintained as a critical factor, not because it will be taken into account as a system requirement, but because it will provide legitimacy to project management and an instrument to control the whole project. The interesting paradox they highlight is that user participation, far from being a way to explore end-user meanings and power relations, can be seen as a prerequisite for control and standardization.

In an effort to develop a critical appreciation of participatory practices that focus on configuration implementation, I extend previous work on the subject and propose an analysis of the clients’ interactions with consultants in terms of breadth and depth.

♦ Client participation depth refers to client’s degree of empowerment. Empowerment represents the ability to influence the project outcomes. On one hand, we can talk about pseudo or passive participation, where clients are engaged only to supply information for configurational purposes (Howcroft and Wilson, 2003). On the other hand, we can talk about empowered or active participation, when clients have their power increased to guide their judgment, which essentially also requires more knowledge (Hardy and Leiba-O’Sullivan, 1998). The more users are empowered in terms of their recognition of their ability to configure the package (knowledge), their direct responsibility regarding the configuration process and their ability to influence the configuration results (power), the greater their level of satisfaction is likely to be.

♦ In addition to the role occupied by clients regarding the nature of their participation, I found it important to consider a second dimension - client participation breadth - which is concerned with who is involved or at least “listened to” during the ERP configuration. The scope of client participation can vary from very selective (only a selected team is involved) to very comprehensive (attempt to reach all future end-users). Most of the time, project decisions are the privilege of a selected team; the “involvement” of the others is limited to “agreeing” and “following” (Howcroft and Wilson, 2003). Such a limited involvement is often justified by project management “feasibility” reasons (Asaro, 2000). In these cases, only selected business analysts and some key-users participate in the configuration and the voice of all others is not really taken into account. In other cases, when the scope of participation is comprehensive, even if only selected business analysts and some key-users can directly participate in configurational activities, the voices of all end-users are listened to and influence the configuration.

I suggest that, when we are trying to implement a configuration, because local knowledge is essential to best adapt the global principles to specific requirements, the depth and breadth of
client participation are two important axes of analysis. These two dimensions of participation did not emerge from the initial literature review but from empirical analysis, reflection and return to critical literature as the investigation evolved.

2.5 Technology-Configuring Mediation: Negotiating Global and Local

In brief, the mediation that characterizes technology configuration is a process through which clients and consultants interact and negotiate their roles while configuring a new solution (Figure 1). This negotiation results in different types of client-consultant relationships, which may range from the relationship between the indispensable-consultant and the dependent-client to relationships where the client can become more independent, and to those with different degrees of cooperation. Fincham (1999) emphasizes the importance of not generalizing all client-consultant relationships as a set of fixed dependencies, a premise that shows deep implications for the discussion of my results.

Figure 1 - Client and Consultant Roles

<table>
<thead>
<tr>
<th>Consultant’s role</th>
<th>Client’s role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expert</td>
<td>Pseudo or Passive</td>
</tr>
<tr>
<td>Pair-of-hands, coach</td>
<td>Empowered or Active</td>
</tr>
<tr>
<td>Collaborative, partner</td>
<td>Comprehensive Participation</td>
</tr>
</tbody>
</table>

In constructing their relationship, consultants and clients play a central role in the global-local negotiation, a fundamental aspect of configurable IS implementation. Universal or global principles refer to generalizable features that might be divorced from particular settings and applied more widely (Williams, 1997). The global-local debate has been often situated within the problematic of globalization (O’Bada, 2002; Rolland and Monteiro, 2002). However, the problematic emphasized by global-local discussion – i.e., the danger of mechanistically or simplistically transferring global practices without careful attention to local conditions – is not exclusive to the relationship between developed and developing countries, but may exist in any country, industry or context. In the IT area, this problematic is typically illustrated by configurable technologies, which are supposed to embed universal or global principles (in the case of ERP packages: “best practices”). Software vendors invest millions and millions of dollars in R&D in order to design and continuously improve these technological artifacts, learning from

---

4 O’Bada (2002) summarizes two streams of thought that dominate the global-local debate in globalization literature: (1) institutional school focuses on cultural and ideological convergence – homogenization (McNeely, 1990) – and their supporters claim that universal or global solutions have a worldwide penetration (Cvetkovich and Keller, 1997; Huntington, 1993; Tomlinson, 1991), with positive (McNeely, 1990) and negative (Hannerz, 1991) consequences; (2) interactive approaches focus on “mutual influence” – the relationship between global and local is redefined in terms of universalism-particularism interpenetration (Axtmann, 1997; Held et al., 1999; Howes, 1996; Robertson, 1992).
successive implementations. When configuring these packages, people try to work multiple choices into local requirements. Fleck (1994) summarizes the situation with the fundamental implementation equation: successful implementation requires generic technological knowledge + local practical knowledge. Consultants are supposed to have cumulative expertise (stocks of generic technological knowledge) whereas the stocks of local practical knowledge are highly contingent on each particular firm and depend on the firm’s employees (Fleck, 1994). Overconfidence in global principles and neglect of the local context and vice-versa are likely to result in poor solutions. The likelihood of successful configurable IS implementation increases when global principles take the local context carefully into account (Fichman and Moses, 1999; Grudin, 1991; Keil and Carmel, 1995; Kiggundu, 1990; Korpela et al., 2000; Lucas et al., 1988; Montazemi et al., 1996; O’Bada, 2002; Wu, 1990). Although recent research shows the importance of the local context and of adapting IT-based practices when implementing IS (Walsham, 2000), the nature of the process where global and local are negotiated is still poorly understood (O’Bada, 2002; Rolland and Monteiro, 2002; Swan et al., 2000; Williams, 1997), and can be seen as a fruitful cue for research on configurable tools.

3. Theoretical Framework

I combine a structurationist perspective of technology (Orlikowski, 1992, 2000; Walsham, 1993, 2002) with social shaping views of technology, especially those adopting a political account that integrates macro and historical analyses (Clausen and Koch, 1999, Koch, 2000a, Williams, 1987). Structuration theory is an interesting way of seeing the interaction of IT and organizations. Structuration theory is a process theory that accommodates multiple levels of analysis, is contextually and temporally situated, and avoids the blinders of non-historical accounts of social phenomena (Orlikowski and Robey, 1991). Since Anthony Giddens reformulated the relationship between agency and structure in such an unconventional way (Giddens, 1984), a number of organizational researchers have adopted and used structuration theory to study the relation between IT and human action (Jones, 1997). It is beyond the scope of this paper to present Giddens’ ideas in depth, these ideas having already produced interesting results in IS research. According to Jones, we already have “good evidence that the perspective that structuration offers is a fruitful one for the analysis of IS and this does not need to be ‘proved’ again” (1997, p.128).

According to a recent work based on a structurational lens, there are always boundary conditions on how people use the physical properties of artifacts (Orlikowski, 2000). People can (even if they do not) redefine the meaning, properties and applications of a given technology after development. It seems the continuous development of increasingly configurable tools provides opportunity to improve flexibility in the way technologies are implemented. However, the more sophisticated and flexible the technology is, the more complex and risky its configuration (Fichman and Moses, 1999). The implementation of configurable IS depends on intense negotiation involving a complicated network of players. This complexity leads me to look at the kind of contribution social shaping studies could bring to a structurationist framework. Political

---

5 Social shaping approaches can be divided into two broad categories: socio-economic shaping of technology (e.g., MacKenzie and Wajcman 1997; Williams, 1997) and social construction of technology (e.g., Pinch and Bijker, 1984; Bijker and Law, 1992).

6 If the reader wants to go deeply into Giddens’ social theory, the following references can be useful: Cohen, 1989; Giddens, 1979, 1984, 1990; Giddens and Pierson, 1998; Held and Thompson, 1989; Jones, 1997; Turner, 1991.
views of IT implementation\(^7\) outline opportunities where technology can be interpreted or re-interpreted in different ways by identifying occasions and spaces open for negotiation and change. They purposively incorporate a broader, complicated and heterogeneous network of diverse players (Clausen and Koch, 1999; Koch, 2000a). They pay special attention to the range of influence that vendor choices made during the design phase can have on future selection and implementation, as well as the range of influence that organizational choices made during the implementation phase can have on future use.

Figure 2 represents a broad theoretical lens, which identifies occasions for configurable IS negotiation by incorporating three inextricably linked levels of analysis: segment, organization, and individual. The notion of segment is related to the network of interdependencies that the developer/vendor, other related vendors, consultants and their customers tend to develop over time (Clausen and Koch, 1999). Returning to ERP as an example, the SAP-segment is composed of the SAP vendor and all the customers, partners, vendors and other players involved in the SAP marketplace\(^8\). The segment level (in its economic, social and demographic aspects) is only one possibility among several in terms of macro levels of analysis. Because my focus is on configurable packages, I believe client-organizations are strongly dependent in terms of expertise and maturity on their segment (the vendor and the network of consultants and group of users). As Figure 2 shows, the mediation process is at the core of this multilevel framework.

### 3.1 Interpretive Frames

The introduction of new IS in a firm can be seen as an opportunity to change information flow, resource allocation and responsibility attributions. “IS are drawn on to provide meaning, to

---

\(^7\) The recent special issue of *Technology Analysis & Strategic Management* (2000: 20(1)) and the book *Innovation, organizational change and technology* (edited by McLoughlin and Harris, 1997) provide a set of papers on technology and political processes within management and organizations and are centred on the social shaping of technology.

\(^8\) The SAP has an equivalent expression to define segment: ecosystem SAP, which refers to a dynamic set of customers, vendors and partners.
exercise power, and to legitimize actions” (Walsham, 2002, p. 362). For this reason, by implementing a new IS, users can reproduce, transform, adapt and even reinvent their organizational practices. Users act in the world on the basis of how they interpret and re-interpret it. Therefore, one can talk about interpretive frames. Interpretive frames are mental models that shape people's interpretations, influencing their actions and decisions. The idea of interpretive frames is similar to those of interpretive schemes (Giddens, 1984; Bartunek, 1984), technological frames (Orlikowski and Gash, 1994, McLoughlin et al. (2000), and provinces of meaning (Ranson et al., 1980; Weick (1993); and so on. Table 1 shows previous research on interpretive frames.

<table>
<thead>
<tr>
<th>Denomination</th>
<th>Examples of studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive maps</td>
<td>Bougnon et al. (1977); Eden (1992)</td>
</tr>
<tr>
<td>Interpretive schemes</td>
<td>Bartunek (1984); Giddens (1984)</td>
</tr>
<tr>
<td>Interpretive frames</td>
<td>Bartunek and Moch (1987)</td>
</tr>
<tr>
<td>Frames</td>
<td>Goffman (1974)</td>
</tr>
<tr>
<td>Mental models</td>
<td>Argyris and Schon (1978); Schutz (1970)</td>
</tr>
<tr>
<td>Provinces of meaning</td>
<td>Ranson et al. (1980); Weick (1993)</td>
</tr>
<tr>
<td>Technological frames</td>
<td>Gallivan (1995); McLoughlin et al. (2000); Orlikowski and Gash (1994); Yoshiota et al. (1994); Davidson (2002)</td>
</tr>
</tbody>
</table>

Orlikowski and Gash (1994) have suggested technological frames as particularly useful for examining how and why people act around IT, describing their approach as cognitive and establishing a distinction between cognitive and political perspectives. Accordingly, while the former helps to explain contradictory outcomes due to different interpretations of a technology, the latter helps to explain particular outcomes due to the loss or gain of power. In this vein, a recent work on requirements determination also adopted technological frames as a socio-cognitive perspective complementary to analysis of power (Davidson, 2002).

Several authors do not corroborate such a disconnection between cognitive and political dimensions, believing that interpretations and power could not be separated. Gallivan (1995), Giddens (1984), McLoughlin et al. (2000) and Ranson et al. (1980) are some examples. What Orlikowski and Gash (1994) call “frame incongruence” and “divergent technological frames,” McLoughlin et al. call “frame dominance” and “competing accounts,” essentially because interpretive frames represent competing or converging accounts, which can be related to competing or converging interests regarding the outcomes of a new technology being implemented. This view of the inseparability of cognitive and political aspects is supported by Giddens: although separated for analytical reasons, meaning and power are intrinsically related - frames of meaning incorporate differentials of power.

Similarly, Ranson et al. (1980) propose that organizational members create “provinces of meanings,” which represent the basis of their orientation (Ranson et al., 1980). Although individually held, interpretive frames, articulated with value preferences and sectional interests, are shared across groups (Gallivan, 1995). Therefore, different stakeholder groups are likely to
have different interpretive frames, which reveal more than different perceptions and knowledge: they reveal different expectations and interests. The resolution of competing frames depends on dependencies of power and domination. In other words, the results of the conflict of groups holding conflicting perspectives will depend in part on the comparative power of these groups to have their perspective heard (Ranson et al., 1980). Figure 3 shows the articulation of meaning and power within the multilevel framework previously showed in Figure 2.

Figure 3 - Articulating Meaning and Power within the Multilevel Framework

A recent literature review on power and information technology research (Jasperson et al., 2002) shows that the relationship between power/knowledge was not often applied by IS researchers. Rare exceptions are Bloomfield (Bloomfield and Combs, 1992; Bloomfield and Danieli, 1995), Gallivan (1995) and McLoughlin et al. (2000). Different from IS literature, organization studies literature has from long published studies on power/knowledge relations and the forms of subjectivity that reside therein (Coombs et al., 1992; Alvesson and 2000). These writings are strongly influenced by the work of Giddens (1976, 1979, 84) and especially Foucault (1979, 1980, 1982). Because power/knowledge relations emerged as an output of this research, not as an input during literature review, I am currently looking for literature in both management studies and organization theory that will help me to refine the understanding of such a relationship in my further investigations in IS.

Transferring this discussion to technology-configuring mediation, the interpretations clients develop around configurable technologies are necessarily influenced by the mediation consultants exert (at least in the initial phases of the project). When I talk about interpretive frames, I am talking about stocks of knowledge, value preferences, sectional interests, expectation, assumptions, etc. (Gallivan, 1995; Orlikowski and Gash, 1994). “Stocks of knowledge” are especially relevant for studying configurable technologies, which are supposed to embody cumulative expertise from several (in some cases, hundreds or thousands) previous implementations. In order to be able to benefit from such cumulative expertise, local stocks of knowledge (how the organization actually works and wishes to work in the future) should be blended with global stocks of knowledge (what functionalities the configurable tool offers).
However, neither global nor local are given; the global primarily depends on consultants’ knowledge and experience whereas the local depends on clients’ dominant “provinces of meanings” and interests. In my investigation, when I refer to global and local, I am referring to global and local stocks of knowledge, thus, to interpretive frames. An understanding of interpretive frames seems crucial to understanding mediation but how are we to grasp interpretive frames?

3.2 Grasping Interpretive Frames: the Contribution of Critical Discourse Analytical Techniques

Interpretive frames are difficult to grasp, especially because they are often taken for granted. Accepting that stocks of knowledge, values, interests, expectations, and assumptions are all symbolically expressed through language, the analysis of people’s discursive articulation might help us to explore interpretive frames (Orlikowski and Gash, 1984, Ranson et al., 1980). I found in critical discourse analysis a complementary theoretical approach9 to structuration theory and political views of IT implementation: discourses are the principal means by which different coalitions of clients and consultants create a coherent “reality” that frames their sense of where they are going.

Discourse analysis has a long history in sociolinguistics (Titscher et al., 2000), is beginning to hold in organization studies (Grant et al. 2001; Phillips and Hardy, 2002), and can be seen as emergent in IS as well10 (Alvarez, 2001, 2002; Heracleous and Barret, 2001). Discourse analysis involves ways of thinking about discourse (conceptual elements) and ways of treating discourse as data (methodological elements) quite distinct from most qualitative approaches (Wood and Kroger, 2002). Through its analytical techniques, discourse analysis allows us to identify key ideas embedded in interpretive frames and how these ideas go on to shape and influence people’s actions and decisions. When critical, discourse analysis also helps to illuminate the nature of power relations and their influence on organizational processes (Grant et al., 2001).

Several reasons converged to reinforce my choice of critical discourse analysis (CDA) as a complementary approach. First, CDA has been suggested as a powerful methodology and perspective for studying social phenomena (Hardy, 2001). Second, CDA reflects the constructivist epistemology underlying my research project; in order to explore the discursive production of social reality, discourse analysis is fundamentally interpretive (Phillips and Hardy, 2002). Third, because its techniques uncover multiple meanings and representations, critical discourse analytical techniques become very helpful when multiple players, from multiple levels of analysis, are represented. In brief, it fits with the critical purpose of my project as well as with my multiple-level lens. CDA seems to be particularly powerful in highlighting multiple voices and perspectives, such as those of consultants and clients working on the project implementation, helping to demystify taken for granted assumptions and to reveal their consequences in terms of sustained inequalities of power and stocks of knowledge (Fairelough, 1995). What it is important to stress is that CDA is not the main theoretical perspective of this research, primarily because

---

9 Critical discourse analysis has been presented as both a theoretical perspective and a methodology. In addition, “using a discursive approach can allow researchers to build on and complement other bodies of theoretical work by introducing new ideas, new concepts and new challenges” (Phillips and Hardy, 2002, p. 16).

10 The theme of the IFIP WG 8.2 Working Conference, Barcelona, Catalonia, Spain, 12-14 December 2002, was Organizational Discourse about Information Technology.
the research question does not focus on discursive practices and my object of analysis is not discourse itself. CDA is applied as complementary because it helps me to explore my research question with the help of its critical constructivist rationale and its analytical techniques.

4. Research Methods

By articulating a structurationist framework with political views and CDA’s analytical techniques, this investigation is essentially interpretive and critical. Interpretive approaches adopt the stance that knowledge is a social construction and that theory provides ways of making sense of the world (Klein and Myers, 2001). Interpretive studies generally attempt to understand phenomena through the meanings that people assign to them (Myers, 2002). In addition to taking an interpretive view, I seek to develop in this study a critical appreciation of the way in which IT are implicated in organizational activity. Being critical about interpreting IT means that, in addition to understanding the context and process of IS from different interpretations arising from social interactions, researchers will avoid unreflective accounts by connecting these interpretations to broader considerations of social power and control (Doolin, 1998). Walsham (1993) takes a similar position in his leading book about interpretivism in IS research. Under a broad interpretive umbrella, he has included concerns raised by critical theory, such as power and control. It is worth noting that to adopt a critical interpretive view does not necessarily mean to rely heavily on the critical theory of Habermas and the Frankfurt School (Cecez-Kecmanovic, 2001), but to be critically reflective while utilizing whatever theoretical framework is chosen (Doolin, 1998). The full development of all the potential relationships between interpretivism and critical theory has been suggested as one of the most fruitful avenues for future research (Klein, 1999).

In-depth case study has been suggested as one of the most appropriate research strategies for conducting empirical research in the interpretive tradition (Walsham, 1993) and the benefits of using in-depth cases studies are likely to be strengthened when they are also longitudinal and comparative (Pettigrew, 1990). This study has been conceived as a combination of one longitudinal prospective case study (in-depth) with seven retrospective case studies (limited depth). In addition, a pilot study was previously carried out over four months. Due to considerations of length, the longitudinal case study is developed elsewhere. In the present paper, I describe the results of the analyses of the retrospective case studies.

Although I have used several methods for interacting with empirical materials, such as observational techniques and documentary analysis, interviews constitute the most important manner in which I collected empirical material\textsuperscript{11}. The guidelines used for the interviews are in Appendix 2. All interviews were taped and transcribed verbatim. N-Vivo is the software used for the qualitative data analysis. Table 2 summarizes the number of interviews as well as other empirical material sources.

\footnotesize{\textsuperscript{11} I have carefully built the interviews following useful guidelines such as those provided by Berg (2001: Chapter 4), Glesne (1999: Chapter 4), Mason (1997: Chapter 3) and Patton (1990: Chapter 7).}
The Implementation of Configurable Technology: Negotiations Between Global Principles and Local Contexts
Marlei Pozzebon

Table 2 - Empirical Material Collection

<table>
<thead>
<tr>
<th>METHODS</th>
<th>Total duration</th>
<th>Total interviews</th>
<th>Documentary analysis</th>
<th>On-Site observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pilot Study</td>
<td>4 months (Nov/01- Mar/02)</td>
<td>24</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>7 Retrospective Case studies</td>
<td>10 months (Dec/01- Sept/02)</td>
<td>55</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Total</td>
<td>10 months</td>
<td>79</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The pilot study was built from 24 interviews with senior practitioners working on ERP projects; the interviewees are from client-organizations, software vendor and consulting agencies, from 11 different firms. They were all invited based on their experience with, and knowledge of ERP configuration. All the interviewees have at least 5 years of experience with ERP implementation, most of them having accumulated 8 to 20 years of experience in the IS field. In addition, they have recently participated directly, as business analysts or directors, in decisions regarding the configuration of ERP packages in large companies.

The pilot study allowed me to identify different patterns of client-consultant relationships, going from relationships where the client is highly dependent on the consultant to relationships where the client is virtually autonomous. Between these poles, different degrees of cooperation or mutual dependency between client and consultant exist. These three patterns of mediation guided the selection of seven ERP projects. Ideally, interpretive investigations would involve extensive and intensive participant observation and real-time interviews. When this is not possible, the data collected must be proven adequate for recognizing, at least at a moderate level, the different contextual elements (Orlikowski, 1996). Retrospective case studies based on retrospective interviews and documentary analyses have been used by several researchers and have proven to be valuable (e.g., Carroll, 1995; Denis et al., 1996; Sutton and Hargadon, 1996).

In order to increase the possibility of cross-case analysis, several criteria guided the selection of the seven cases. My sample has the following characteristics: (1) all projects deal with the same type of software package: ERP/SAP; (2) all projects are developed at big companies with at least 800 employees; (3) all projects had at least one “go live” and the last “go live” or upgrade was not earlier than 2000; (4) all projects have a huge scope and complexity, with at least 8 SAP modules implemented; (5) all projects, to different degrees, made use of third-party consultancy and vendor consultancy. I did not restrict the cases to one industry or country. This diversity was intentional. Regarding different industries, I was curious about the influence of different industries on the segment level (for instance, SAP is maturer in some industries than others). On the other hand, some cases allow intra-industry comparisons (for instance, two projects take place in hospitals and another two in aerospace firms). Finally, I was curious about the evolution of the mediation process in different countries, so I conducted two cases outside Canada, one in Brazil and another in Portugal, where I could benefit from the use of my native language.

12 Initially, I have chosen two cases in each pattern, i.e., six cases. A great opportunity to carry out an additional case emerged, totalling seven cases. In summary, the seven cases are based on the retrospective study but were selected based on the information gathered from the pilot study.
The Implementation of Configurable Technology: Negotiations Between Global Principles and Local Contexts
Marlei Pozzebon

The semi-structured interviews involved both consultants and clients. With respect to clients, I invited people that have participated directly, as business analysts, in the decisions regarding the configuration of the ERP and that have directly interacted with external consultants. I tried to interview one business analyst from each of the most important modules implemented in each project. In five cases, I had also the opportunity to interview the project director. Table 3 shows the main characteristics of the final sample of projects and interviewees. Case profiles with detailed information about their histories and contexts are available upon request.

Table 3 - Overview of Retrospective Case Studies

<table>
<thead>
<tr>
<th>Project and Country</th>
<th>Industry</th>
<th>Client-Consultant Relationship</th>
<th>Project’s Characteristics</th>
<th>Number of Interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>HOSP1 Canada (National Company)</td>
<td>Hospital Health Services</td>
<td>Client is consultant-dependant; Project lead by Consultant</td>
<td>Project duration = 8 months Begin=2001; Go-live=2002 Big Bang; Low customization Low training (client)</td>
<td>6 business analysts 1 project director 1 consultant Total: 8</td>
</tr>
<tr>
<td>HOSP2 Canada (National Company)</td>
<td>Hospital Health Services</td>
<td>Client is consultant-dependant Project lead by Consultant</td>
<td>Project duration = 6 months Begin=1999; Go-live=2000 Big Bang; Low customization Low training (client)</td>
<td>4 business analysts 1 project director 1 consultant Total: 6</td>
</tr>
<tr>
<td>NAVAL Portugal (National Company)</td>
<td>Naval Repair</td>
<td>Client is consultant-dependant Project lead by Consultant</td>
<td>Project duration = 26 months Begin=1999; Go-live=2001 Big Bang; High customization Low training (client)</td>
<td>4 business analysts 1 project director 4 consultants Total: 9</td>
</tr>
<tr>
<td>AERO1 Canada (Multinational Company)</td>
<td>Aerospace Manufacturing</td>
<td>Mutual client-consultant dependency Project led by Consultant and Client</td>
<td>Project duration = 36 months Begin=1996; Go-live=2000 Big Bang; Low to medium customization; Intense training (client)</td>
<td>4 business analysts 3 consultants Total: 7</td>
</tr>
<tr>
<td>AERO2 Canada (Multinational Company)</td>
<td>Aerospace Repair</td>
<td>Mutual client-consultant dependency Project led by Consultant and Client</td>
<td>Project duration = 18 months Begin=1998; Go-live=2000 Phased Implementation; Low to medium customization; Intense training (client)</td>
<td>4 business analysts 4 consultants Total: 8</td>
</tr>
<tr>
<td>ENERGY Canada (National Company)</td>
<td>Energy Services</td>
<td>Client is Autonomous Project led by Client (business analysts)</td>
<td>Project duration = 24 months Begin=1996; Go-live=1998; Upgrade=2000; Big Bang; Vanilla Intense training (client)</td>
<td>7 business analysts 1 project director 2 consultants Total: 10</td>
</tr>
<tr>
<td>MOTO Brazil (Multinational Company)</td>
<td>Chain Saw Manufacturing</td>
<td>Client is Autonomous Project led by Client (business analysts)</td>
<td>Project duration = 18 months Begin=1996; Go-live=1997; Last go-live = 2001 Phased Implementation; Vanilla Intense training (client)</td>
<td>5 business analysts 1 project director 1 consultant Total: 7</td>
</tr>
</tbody>
</table>

4.1 Data Analysis
I have been pursuing one mode of analysis, critical discourse analysis, CDA (Phillips and Hardy, 2002; Wood and Kroger, 2000). The term CDA is far from implying a homogeneous method. To critically analyse discourses, I have supported my methodology over several sources, like Alvesson and Deetz (2000), Phillips and Hardy (2002), Titscher et al. (2000), and Wood and Kroger (2000). All these authors stress the important work developed by Norman Fairclough, who proposes a form of CDA conducted according to three dimensions - textual level, discursive

---

1 All company and project names are pseudonyms.
practice and social practice - and which follows three phases - description, interpretation and explanation (Fairclough, 1995). The interpretation phase can involve a variety of concepts and strategies, which can overlap with each other: analytical concepts, positioning, agent-patient distinctions, footing, facework, narrative, metaphor, and reframing, among others (Wood and Kroger, 2000). In this study, I have emphasized the use of metaphors (when the analyst tries to recognize a wide variety of metaphors and how they influence human interpretations, decisions and actions) with the “similarity and difference” strategy (when the analyst comes across accounts that seem either similar to previous accounts or different and potentially inconsistent or contradictory) (Wood and Kroger, 2000).

Metaphor analysis is a powerful approach to understanding how people define the projects in which they are involved, their roles and those of other actors, as well as their understanding of global-local negotiation. The essence of this type of analysis is to make critical connections between the way people express their experience and understanding of one thing in terms of another, and the influence of this in their construction of reality. The identification of metaphors goes through the identification of comparisons (a project is compared to a “car without driver”) and analogies (“that would be quite suicidal for an organization” to refer to the choice of the integrator). Although one can say that metaphors are everywhere, I have focused my analysis on central metaphors. In addition, sometimes clear metaphors were not identified but, nevertheless, the image, picture or expression used by the interviewee seemed quite relevant. In these cases, I use the notions of representations or images to take them into account.

My first attempt was to generate, for each project (each case), an overview of the interviewees’ interpretations. The emphasis during the analysis was not on linguistic structure (qualities of speech such as intonation, volume or the use of verbs) but on the metaphors, representations and images interviewees used to describe their experiences and feelings. I began by analyzing the discourses articulated by different client members, trying to identify how they described their own roles and the roles of consultants, and how they made sense of the ERP project they participated in and of the negotiation they developed as the project evolved. Following CDA analytical suggestions, I paid special attention to several questions raised by the discourse: What is different from one interview to another? What could be missing? What is taken for granted? What is contradictory? What are the analogies and comparisons (metaphors), images and representations? What could the multiple meanings of a turn of phrase be? Next, I proceeded in the same way regarding the consultant’s interviews. With several interviews representing similar and different roles, I began to build a kind of puzzle for each case, trying to understand emerging consensus and contradictions.

After identifying a repertoire of interpretations from clients and consultants within each specific case, I built cross-case comparisons, looking for similarities and differences (Figure 4). “Similarity and difference” strategies are not specific to CDA; rather they represent a widespread
The Implementation of Configurable Technology: Negotiations Between Global Principles and Local Contexts

Marlei Pozzebon

analytical technique applied by almost all traditional qualitative approaches. Once again, the particularity of this strategy, when applied from a critical perspective, is that the analyst comes across accounts that seem either similar to previous accounts or different, looking for potentially inconsistent, contradictory, missing, multiple or taken for granted meanings (Fairclough, 1995; Wood and Kroger, 2000).

Figure 4 - The Analytical Schema within and across Interviews and Cases

An illustration of this type of analysis is presented in Appendix 1. The columns represent, respectively: the source material (the text column), the description of these units of discourse according to different themes (the theme column), the interpretation in terms of metaphors, images and representation (the interpretation column), and the connection between different discourses and the context (the explanation column).

The above analytical procedure has some common points with Fairclough’s *intertextual analysis*. The initial reading of interviews suggests that participants draw upon a repertoire of interpretations (metaphors, representations, images) in relation to a particular theme (for example, the consultant’s role). Following the identification of these interpretations across interviewees, I have identified their social functions\(^{17}\) (what interests or values they represent), how they operate according to different actors (e.g., client versus consultant roles), different contexts (e.g., different cases, different projects), and how they relate to the broad context (e.g., SAP-segment and industry). This last step corresponds to “explanation.” We may term this “intertextuality” because it implies an iterative analysis that follows the initial reading and seeks to understand each particular story (from each interview), how it interacts with other stories and with their broad context (the 3-dimensional perspective), helping to work up a critical appreciation of the phenomenon by interactively following the description, interpretation and explanation steps. The value of intertextual analysis is to take researchers beyond the simple examination of verbal and written interactions and to allow them to appreciate the importance of “who uses language, how, why and when” (Grant et al., 2001).

\(^{17}\) “Discourse analysis is concerned with the identification of social functions, whereas many qualitative approaches are concerned with the generation of a set of interrelated categories” (Wood and Kroger, 2000, p. 99).
5. Research Findings

In keeping with a critical interpretive approach, I found myself immersed in a mass of 79 interviews\(^\text{18}\) and mountains of research notes produced from seven retrospective case studies. Guided by the research question: *How does the mediation process influence the negotiation between global principles and local contexts during the implementation of configurable IS, and how does that negotiation influence the success of the implemented technology?*, I have tried to analyze and make sense of all this empirical material using CDA analytical techniques as previously described. The main findings are presented below.

5.1 Patterns of Mediation: Connections between Power and Knowledge

Figure 5 shows the seven projects identified with three types of client-consultant relationship: the client is consultant-dependent (dependency-pattern), the client is autonomous (autonomy-pattern), and a mutual client-consultant dependency exists (cooperation-pattern).

The horizontal axis indicates the degree of internal governance regarding the ERP projects, i.e., the degree of *dependence* or *autonomy* of clients vis-à-vis consultants during the implementation of a configurable tool. Recalling Schein’s classification, this axis represents who leads the project and who is responsible for project results. It represents a power dimension. For instance, clients from MOTO are very autonomous in relation to the consultants - the client leads the project - whereas clients from HOSP2 are very dependent on the consultants - the consultant leads the project. The vertical axis represents a knowledge dimension and indicates the degree of deployed technical knowledge transfer from consultants or vendors to clients prior to, or during the configurational activities. Because knowledge of the technology is crucial to the implementation of configurable technologies, such initial arrangements are likely to be important for understanding the evolving mediation process. Not surprisingly, there is a consistent convergence between degrees of power over the project and knowledge transfer: exercises of power and the access, application or development of knowledge are intimately related to each other (Alvesson and Skoldberg, 2000). The retention of stocks of technical knowledge regarding configurable technologies is the basis of the exercise of power for consultants and vendors.

---

\(^{18}\) These 79 interviews represent an average of 80 hours of tape recording and 1100 pages of verbatim transcripts.
In three cases, the client is highly dependent on external consultancy (HOSP1, HOSP2 and NAVAL). This situation resulted from the decision of total outsourcing of the IT function and of the ERP project. In these cases, responsibility for the project implementation and results were in the consultants’ hands. Short technical training was provided to clients because they were not allowed to configure directly. The client’s role was, rather, to provide relevant information to the consultants who managed the configuration.

Two cases represent the situation where the client is highly independent of external consultancy (ENERGY and MOTO). This situation resulted from the client’s decisions to guard internal governance over the IT function and over the ERP project. A lot of time and money was put into training and preparing clients to assume the configurational activities. Consultants were hired to explicitly transfer their knowledge and expertise, and their relevance to the project quickly decreased as the project evolved. After going live, they were eventually hired to help with specific problems.

Finally, two cases (AERO1 and AERO2) represent a mixed situation regarding dependency and project control: the project team included clients working together with consultants (from an outsourcing firm). Both had been trained and were able to configure. For contractual reasons, the consultants were formally responsible for the configuration and the clients were not allowed to configure. However, because the clients had acquired enough knowledge to configure, very often they ended up configuring even if they were not formally authorized to do so.

It is worth recognizing that Figure 5 portrays the configurational phase in a static mode, a picture that could correspond to the initial phases but which could change in subsequent phases. Although this initial balance between power over the project and stocks of knowledge of the technology being implemented strongly influences the type of relationship being constructed, arrangements between stocks of knowledge and power may, and are likely to, change as the process evolves. Therefore, one of the contributions of this research refers to mechanisms of changing such a balance in order to produce more benefits for clients.
5.2 Three Patterns of Mediation, Three Trajectories of Global-Local Negotiation

Figure 6 illustrates three trajectories in terms of global-local negotiation - non-sharing, partial sharing and mutual sharing - I have drawn from each pattern of mediation - the dependency-pattern, the autonomy-pattern and the collaboration-pattern. The two lines illustrating each trajectory represent the path of consultants’ and users’ interpretive frames throughout the evolution of the mediation process. In order to have some degree of global-local sharing, the two lines must converge, to have points of contact, “communicate” or understand the other’s “language,” to have some stocks of knowledge in common, etc. In the dependency-pattern the two lines do not cross each other; in the autonomy-pattern they cross because there is a unidirectional move from users toward global knowledge; and in the cooperation-pattern they cross because there is a bidirectional move from users to global knowledge and from consultants towards local context.

Understanding these three trajectories helps shed some light on the nature of configurable technology implementation’s process and results. One of the motives for adopting configurable tools is to benefit from the cumulative expertise “embedded” in their design, motivation reinforced by the vendor’s promise of continuous improvement. Configurable IS success is likely to increase when the implementation of global principles takes the local context carefully into account: each configuration requires “chemistry” between generic features-multiple choices, and local contexts-particular requirements. What can we learn from these three trajectories?
In the next subsections, I describe each of these patterns individually. I have organized the results into three parts. First, I present the Project launching, where the establishment of roles among clients and consultants (“establishing roles”) and of the rules that will guide the projects (“establishing rules”) are described. Second, I describe the process of technology-configuring mediation, when the relationship between clients and consultants evolves (“evolving client-consultant relationship”), certain mediating strategies emerge or are suggested by the actors involved (“mediating strategies”) and, gradually, a new configuration takes form (“consolidating a configuration”). Finally, I present the overall project results.
5.3 Dependency Roads

Figure 7 - The Dependency-pattern and the Non-sharing Trajectory

<table>
<thead>
<tr>
<th>Project launching</th>
<th>Technology-configuring mediation</th>
<th>Project results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishing roles:</td>
<td>Evolving client-consultant relationship</td>
<td>- Overall poor fit</td>
</tr>
<tr>
<td>Consultant = experts, authorities; Client = passive information providers</td>
<td>- Lack of global-local sharing: consultant does not delve into local context; client does not learn technical and global principles.</td>
<td></td>
</tr>
<tr>
<td>Establishing rules:</td>
<td>Mediating strategies:</td>
<td>- Overall low satisfaction</td>
</tr>
<tr>
<td>- Consultants hold control over the project and responsibility for results.</td>
<td>- Presence of mediating strategies such as “ateliers of integration,” which take place at the beginning of the configuration process. Lack of mediating strategies that decrease dependency or that help global and local converge: global and local are “separate” from the beginning and there are no strategies in place to trigger a timely “dialogue” or convergence between the consultant’s and the client’s interpretive frames.</td>
<td></td>
</tr>
<tr>
<td>- Technical knowledge transfer from consultant to client is not seen as necessary.</td>
<td>Consolidating a configuration:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Client cannot challenge consultant expertise and consultants cannot judge the information provided by the client.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- “Blind” decision-making process, inability to negotiate thoughtful configurable alternatives during the phase where the foundations of the system (configuration) are established</td>
<td></td>
</tr>
</tbody>
</table>
Project launching

Establishing roles

The dependency-pattern is characterized by the clear dependency of the client on consultant. The nature of roles negotiated before the Project launching at HOSP1, HOSP2 and NAVAL was similar: consultants are engaged as powerful experts who are responsible for results and the business analysts (i.e., clients) have their role limited to that of passive information providers. Once top management has decided and signed a contract with a consulting firm, consultants arrive at the client’s physical location and begin the project.

We started in October 99. We prepared the premises. We had to set up a room for training… about ten people arrived on the spot, so we had to find a room for… they would stay for six months. (Business analyst, HOSP1)

One of the first meetings we had, then we were introduced at once to 30, 40, 50 people… that arrived PAF! …The army arrived at HOSP2 to take charge of the project. (Business analyst, HOSP2)

Establishing rules

From the projects’ launching, the top management of HOSP1, HOSP2 and NAVAL delegated a great amount of control over the project to consultants (power dimension), who became formally responsible for all technical aspects of configuration (knowledge dimension). The underlying logic of firms fitting this pattern is that their internal departments lack leading-edge technology expertise and resources to put in place the IT applications they aim to implement and it may not be profitable to invest in developing technological expertise internally (Roy and Aubert, 2002). Instead, leading-edge technological expertise can by provided by external “partners.” As a consequence, a partnership with an outsourcing IT-provider is seen as (or “sold” to them as) an avenue to gain economy-of-scale efficiencies and technology expertise.

Then, they [the consulting firm] made an assessment; they presented several scenarios taking our context into account. We decided to follow their recommendation: a global outsourcing contract. (Project director, NAVAL)

Well, we had two choices, either outsource or train resources that would become competent in order to support all users. But that is not possible, because it’s… it takes about one year to train someone for the entire configuration, and we are not able… So, we have an outsourcing contract… it is recurrent… so for 5 to 10 years… (Project director, HOSP1)

I don’t think that in healthcare we can escape this [outsourcing] … We are tied, we are obligated we can’t do anything else but depend on that company for 95%. Because in healthcare, more and more, we don’t wanna have graduates in computer science to take care of… So we take the problem, and we say to someone external “you take care of it.” Then we go with them to 95 %. (Project analyst, HOSP2)

An interesting image or metaphor that represents the launching of the dependency-pattern is offered by HOSP2’s project director, who compares consultants to the police. Such a role is imposed on business analysts, key-users and end-users by client top management, who has accepted a compromise: settling for a standard model (SAP standards) and a dependency
relationship in order to benefit from future improvements and upgrades as well as expected reduced costs. The use of this image of the police (who interrogate, uphold the law, and enforce the rules) also helps explain why business analysts, from both client top management and consulting firm perspectives, should “answer questions” without necessarily challenging the consultants’ propositions: a standard solution should be implemented. Consultants enforce the rules (perhaps even make them) and the clients must accept and follow them.

The decision was to use SAP standards… (…) So, consultants are like SAP “guards,” and they stress the necessity to keep standards and that we shouldn’t ask for changes in the application… A little like the police... (Project director, HOSP2)

This initial arrangement of power and knowledge, indeed a top management decision, strongly affects the mediation process that follows. The first and most important consequence is that consultants will not delve into the local context and business analysts will not learn about package features and possibilities (global knowledge) before or even during the implementation.

**Technology-configuring mediation**

**Evolving client-consultant relationship**

The roles of business analysts and consultants are reinforced and consolidated during the implementation process in accordance with the above organizational choice. Consultants are engaged as *experts, authorities*, and the expertise they will provide is seen as an *alternative to knowledge transfer*. This explains why *poor knowledge transfer* from technology vendor or consulting firm to client-organization is a characteristic shared by all three projects. Indeed, what is planned and sanctioned by these three firms is some training to give an overview and to prepare a business analyst to use ERP packages, not to configure them.

Well … regarding the configuration task, we did not learn anything … It was only the integrator… (Business analyst, HOSP1)

But I think what we need is customized training, not only an overview. There are several aspects that I did not understand that I still do not understand (…) There were training sessions, I cannot tell you that there were not. I attended one. But it was an initial overview for users… (Business analyst, NAVAL).

To the same extent that consultants are engaged as *experts*, the business analysts from HOSP1, HOSP2 and NAVAL are seen as *passive information providers*. They are involved in the project to supply information for configurational purposes. They are not “empowered” for judging and selecting configurational alternatives because this empowerment essentially depends on their knowledge about the functionalities “embedded” in technology design.

As described in the literature review section, in order to develop a critical appreciation of participatory practices with a focus on *configuration*, I found it useful to analyze client interaction with consultants in terms of *breadth* and *depth*. Regarding client *participation depth* - the extent to which clients are engaged only to supply information for configurational purposes or have their power increased to guide their judgment (which essentially requires knowledge) - I recognize that it was basically low, i.e., *pseudo participation* characterizes business analysts from HOSP1, HOSP2 and NAVAL. The lack of knowledge transfer and training decreases their ability to purposively influence the configurational decisions. Their main role is to provide “accurate” information for the consultants’ inquiries.
They [consultants] knew the software and started to configure, and using the information we gave them … they asked us questions about our current functionality … then, we gave them answers… (Business analyst, HOSP2)

Sometimes describing themselves as *victims* of top-down decisions, the vast majority of business analysts disliked their powerlessness in the face of consultants who, definitively, led the project. Although they supplied consultants with information to direct the configuration, business analysts did not feel really “listened to”. In the end, consultants did what they thought was right for the project. The business analysts’ ability to challenge the consultant’s solutions is limited by their restricted access to technical knowledge.

I find it dangerous. Yes indeed… we [clients] stand by as if we didn’t know anything. We get the impression that we know nothing, nothing … (Business analyst, HOSP2)

We did not have anything, we did not know anything, we did not master the application. There was not one person in the firm who mastered the application (Business analysts, NAVAL)

But it’s true (for sure) that if my people had followed the 5-week SAP course, and implemented, there they could have argued more with the integrator… “Oops! I didn’t learn that in my course … you’re trying to fool me!”… Then, for sure, the discussion would have been at another level. (Business analyst, HOSP1)

Client *participation breadth* concerns those directly involved in the ERP configuration: (a) only selected business analysts; (b) selected business analysts and key-users; or (c) selected business analysts and key-users and the remaining end-users were invited to participate (or at least were actively listened to). At NAVAL and HOSP2, only business analysts have directly interacted with consultants and participated in configurational decision-making, i.e., *client participation breadth* was low. At HOSP1 the breadth was slightly greater, helping to shed some light on the relationship between the nature of client participation and project results, as I describe later. This hospital is characterized by a strong participative culture. Regarding the ERP project, although the end-users did not directly participate in the configuration with the business analysts and consultants, they were all invited, on a weekly basis, to validate the most important configurational decisions. The union was invited to be represented and to participate. Such a participative context helped to decrease end-users’ feelings of passivity and powerlessness. After going live, HOSP1’s end-users began to appropriate the system, increasing very quickly their knowledge of how to use the system’s functionalities.

Because we wanted to implement a system that would meet our needs… It’s not just the heads of departments, the executives, we involved union members, we said “you will participate! You’re going to tell us on a daily basis…” It is also important to involve… that’s why we involved everybody… the shop floor, the end-users… It’s more difficult to

---

19 “Validate” can be seen as having an awareness of decisions before or after they are to be put in operation. If it is after, this is management simply paying lip service to the end-users and just pretending they have any input. Essentially it’s rubber-stamping. It is one thing to give them the chance to voice their opinion(s), but quite another to give them that opportunity only after their opinion(s) have no effect. Now, if the decision-makers actually didn’t finalize the decision until they had the concurrence of the end-users, then that’s a different story. (Asaro, 2000; Howcroft and Wilson, 2003)
manage, but in the end… people are more satisfied with the solution. (Business analyst, HOSP1)

This way we had, as you can see, an approach of participation… working groups were made of clients, employees, and always one consultant … it was always like that. It is the values of HOSP1: the concept of participation and the responsibility of the people… Of course, it’s all great a principle, but all depends on each manager, with his team, who must try to implement this… but it was a great opportunity for a big change, to say… it must come from the ground, from the employees, in all our projects, not only from this project… (Business analyst, HOSP1)

In order to legitimize their position as project leaders and experts, consultants mobilize arguments, i.e.: “we have technical and industry knowledge and we are able to propose ways of doing things that are better than the existing ones” (even if they do not really know the local practices they will replace!). It is clear that consultants try to negotiate their identity as experts in an unequal power relationship with business analysts. They have the formal authorization to determine the project outcomes; they retain knowledge of the technical features of the configuration and future clients’ disagreements regarding configurational decisions are likely to be seen as a “lack of understanding” or the classic “resistance to change.”

I would tell you that the consultant needs to manage as much as possible… and… as much as possible as long as it makes sense … I think you must listen to the client’s needs, because they [the client] are right in their processes, they know them… On the other hand, there are all the questions of the resistance to change and… there are things we must be sure they need to have changes made. (Consultant, HOSP2)

Yes, we [business analysts] said… “You know, HOSP1 is big, it’s a university hospital, we do research… it’s much bigger than a regional hospital.” “A hospital is still a hospital.” but you know they [consultants] didn’t really believe us… Then there was some friction… Knowledge of the environment is important; it’s essential. It’s essential, because otherwise, a lot of time is wasted… I didn’t know SAP, and they didn’t know the hospital environment. (Business analyst, HOSP1)

Top management from HOSP1, HOSP2 and NAVAL define their relationship with the consulting firms as “strategic partnerships.” From the perspective of business analysts from these firms, however, the client-consultant relationship is not perceived as a partnership, but as a dangerous source of domination and dependency. The metaphors and images produced by them to describe these ERP projects - a car without driver, a questionable journey - and to describe the consulting firms - an army that lands and occupies an organization, two gangs never a team - are quite instructive.

But it was like two gangs. The gang of HOSP2, and the gang of X [consulting firm]. I’m not sure that they formed a team, not at all. And maybe it was a mistake, it seems clear… (Business analyst, HOSP2)

Mediating strategies

As previously discussed, even though not “directly” configuring, business analysts selected for working on ERP implementation do provide information to consultants and help them make configurational decisions. “Ateliers of integration” are often carried out in the very beginning of
The Implementation of Configurable Technology:
Negotiations Between Global Principles and Local Contexts
Marlei Pozzebon

ERP projects, prior to configurational activities, with the goal of getting clients and consultants used to working together.

We had two or three activities… at one time, everybody… went bowling, later we went out to eat … to create team spirit… another time, we went to the culinary institute, one evening, we prepared a meal and we ate afterwards… (Business analyst, HOSP1)

However, these initiatives do not compensate for the lack of mutual understanding regarding their respective “languages.” Indeed, making interpretive frames of distinct groups to converge or to be shared requires time and purposive efforts. In the dependency-pattern, a typical interaction between consultant and clients can be recognized as “unilateral”: consultants lead structured meetings, trying to promptly explain their vision of the package’s functionalities (stocks of global or generic knowledge), but retaining technical knowledge, and trying to acquire or gather from business analysts information about end-user requirements and particular needs (stocks of local or practical knowledge).

That’s it… So they arrived with questions and they showed us a little how the system works. They wanted to know how we function and they showed us what the system they were developing did. We leaned on their expertise because… as we told them “we didn’t know anything about the system… but we know what we want… and you’re going to tell us the best way the system can meet our requirements.” The integrator role was to tell us “so according to us, the best way for you to use SAP is going to be this way.” (Business analyst, HOSP1)

How the project worked? We can tell you that in October, November, December, we never had access to the screens to see SAP, not at all. We just had some briefing to tell how we function in a hospital, bla! bla! bla… we called it… I don’t remember the word … a big document … Ha! …It was the famous blueprint… Indeed!!! We fooled around, I really mean it… we procrastinated on the blueprint during October, November, December, three months lost… (Business analyst, HOSP2)

The classic “system-analyst/end-user” communication problem emerged; the lack of mutual understanding works as a barrier to communication and knowledge sharing.

The consultants knew SAP very well, but they did not know our business. They had difficulties understanding the client language. (Consultant, NAVAL)

They [consultants] had many difficulties in following what we wanted. (Business analyst, NAVAL)

Business analysts from HOSP1, HOSP2 and NAVAL suggest that some degree of local-global chemistry needs to be reached before the more important configurational decisions are made because the logic of any configurable package is established before the first go-live. Once the main foundations of the configuration are established, future departures from such foundations are costly and time-consuming. Of course, much can be improved after implementation, but the consequences of ill-fitting configurational foundations seem to be difficult to reverse. After going-live, people will be able to improve, to extend, to adjust the configuration, but not radically modify its foundations. Therefore, if clients do not wish to rework the configuration almost entirely, the configurational choices made during the first phases of implementation are crucial.
So… they don’t know the maintenance at hospitals, so I supplied them with that, the vision, the structure… and I learned, I started to know the capacities of the software… …At a certain moment, you give direction, orientation, and when you finally know capacities, you just say “wow… I should have done it like this, I should have readjusted that…!” They configured the system during this time… so, at a certain point going back is not always easy.” (Business analyst, HOSP2)

Business analysts clearly express their wish to empower their roles. They would like to visualize the consequences of their choices before the foundations of the configuration are established. Some strategies they suggested are customized training (previously quoted) and to create conditions for business analysts to familiarize themselves with the ERP system from the beginning of the configurational activities.

October, November, December… we never had access to the screens to see SAP, three months lost… never going into SAP and then in December… so we had December, January, February left… not even that, January, February, March to get into SAP, learn SAP, modify SAP and go live. (Business analyst HOSP2)

[business analysts]: “Listen, open this box, explain it to us, and give us more information!” [consultants]: “No!” Therefore, for us [business analysts], it was total ignorance of the application… (Business Analysts, NAVAL)

What is important, and the integrators must get it, is: “give us the system as quickly as possible…” even if it’s not configured to our requirements, we could play with it, do things to make it… We started April 1st, we had received the system on March 27. But why didn’t we get the system 6 months earlier when we started? I didn’t care how it was developed, but I wanted to see… I would have liked to play with it, to get used to it. First, to get used to the screens, the content, see other possibilities… maybe I would have said “it’s perfect the way it is! You don’t have to change it!” But no… (Business Analyst, HOSP1)

In addition to creating mediating strategies to help clients learn about the package functionalities and to visualize the consequences of their choices, clients also suggested that a period of “sharing” between consultants and clients should take place before starting the project.

The consultant arrives with kits, he demonstrates that the kits worked there and there, and so… But kits... they do not work for everybody. The organizational culture can be different, there are degrees of achievement that are totally different within an organization, you might be further along than another organization, in your decision process or your management ways… you cannot take the kits. Therefore, the consultant needs to know your culture, he must learn, he has to see… Thus, there must be a period of discussion, interaction, observation. This, we… the clients, we do not ask for it but we should. (Business analyst, HOSP1)

Likewise, the interviewees suggest that the learning process should also concern the consultants. In the three cases, the consultant arrives in the organization and starts to lead the implementation process without allocating time and effort to learning about the client. The global-local sharing requires some degree of trust and communication, which cannot be reached without the participant’s “humbleness” during the interactions.
The Implementation of Configurable Technology: Negotiations Between Global Principles and Local Contexts
Marlei Pozzebon

It’s not true that you can trust them… I’ve been negotiating for 35 years now; you cannot trust an individual who sits here for the first time in your office. This is not true! Communication links have to be established, points of exchange, common points, and things you have in common, so you can make good negotiations. If you don’t have that, it’s not existent, forget it! It’s the same principle in my book… Me… when I entrust my department which is running well, I want to make sure that nobody is going to guide me, we have points in common, we understand each other when we talk… (Business Analyst, HOSP1)

Consolidating a configuration
At HOSP1, HOSP2 and NAVAL, from the beginning of the implementation up until going live, consultants and business analysts were not able to negotiate thoughtful configurational decisions: consultants did not develop an enhanced appreciation of local context; business analysts could not visualize the consequences of the information they provided and could not learn and explore the range of package functionalities. In the dependency-pattern, I could not find mediating strategies put in place to trigger an approximation or a dialogue between client and consultant interpretive frames - the local and the global. Even in the situation where clients were invited to participate fully in the implementation (e.g., HOSP2), no form of synergy with consultants emerged.

When we do not know, we do not implement. (Business analyst, NAVAL)

They [consultants] come with an expertise vision, which is indeed big, and then they do not want to get over it. Because if they get out of it… (Business analyst, HOSP1)

Once again, the image of “two gangs” is quite meaningful.

But it was like two gangs… (Business analyst, HOSP2)

Because both client requirements and consultant solutions are mutually constructed, the actors involved need to share each other’s expertise to some degree, or the entire negotiation might be conducted as a kind of blind process or unilateral dialogue. In NAVAL, HOSP1 and HOSP2 projects, neither side meets the conditions necessary to blend organizational requirements and software capabilities because local and global knowledge remain “separate” from the beginning of the process and no purposive strategy is put in place to enable them to converge. They helped to produce a non-sharing trajectory. As I discuss later, the client and the consultant can trigger several mediating strategies, like intensive training, prototyping and brainstorming, which can help global and local converge and create some synergy. The absence of such mediating strategies prevents a configuration that takes both sides into account. Instead, what emerges from the dependency-pattern is that global-local negotiation reflects knowledge and power dependencies: the configuration being implemented tends to reflect the consultants’ business models without careful regard to local context. Indeed, the big risk in the dependency-pattern is that the consultant’s vision of best practices is almost mechanically transferred into the local context.

Project results
In all three cases of the dependency-pattern, I found a situation where business analysts are increasingly aware and apprehensive of their dependence on external expertise and deeply unsatisfied regarding the project results, especially in terms of fit with their requirements and
their wish to improve organizational practices. The mediation process evolved, reinforcing the pattern of dependency and revealing increasing dissatisfaction. From the business analysts’ point of view, the level of satisfaction is low and the system fit is perceived as poor in all three projects. HOSP2 and NAVAL exhibit the lowest levels of satisfaction.

No, it did not work out well at all. Unfortunately, people [end-users] lost confidence in the system... completely. We are four months later... and it still doesn’t work well. They do not trust it anymore. They don’t like it. (Business analyst, HOSP2)

We still have many, many problems. We had... we are changing part of the parameterization, to adjust it. We still need to adjust; with the problems we have, adjustments are required. In fact, we are still having troubles. (Business analyst, NAVAL)

Compared to HOSP2 and NAVAL, HOSP1 exhibits the highest levels of satisfaction, but they still claim that they “would like to go further than they went.” Because they are essentially consultant-dependent, the extent of their success essentially relied on the consultant’s scope of expertise and experience.

It’s costly because we redo... So I... This is the most difficult aspect of the project. Because I... I cannot guarantee that the configuration has always been optimal. It depends on the expertise held by the integrator. (Project director, HOSP1)

They [the business analysts] were convinced they could go very far with the system... but we also went at the integrator’s pace... according to the expertise of his resources, he could get us further or was limited to the competency of his resources. (...) We asked the integrator for changes, and he said: “it’s not possible!” Later we found the system could do it... (Business analyst, HOSP1)

The implementation at HOSP1 indeed suffered seriously from the lack of accumulated expertise and “tested” business models in their segment, the Quebec healthcare industry. The business analysts participating in project HOSP1 were open to rethinking their practices and changing them if needed, but they suggested that neither the technology nor the consultants were able to lead them “as far as they wanted to go.” In addition, the scarcity of experienced consultants in the market represented a potential risk to them. They lost all “their” expertise suddenly, because the only expert consultant in their sector, facing pressures from external demands, decided to leave the project. The consulting firm was not able to guarantee a replacement of the same calibre. As I will discuss later, the vulnerability of firms that have not developed internal expertise increases when the segment they are entering is not mature.

“Does the integrator have the necessary expertise... how far has he gone in the study of the functionality to offer us a product” ...so, we always have this conflict. Does the integrator know less than we wanted or did the application provider take us in? (Project director, HOSP1)

In NAVAL, HOSP1 and HOSP2, consultants lost part of their legitimacy as the project evolved and ended up being perceived by business analysts as deceiving drivers unable to bring “best practices” to their organization. On their side, business analysts remained very uncomfortable with the feeling of heavy dependency and powerlessness. To different degrees, resistance and
misunderstanding characterized the ongoing mediation process of these three projects and dissatisfaction was perceived with regards to the results.

What I regret, and it’s always the same problem, is that the consultants’ firm implementing the system does not listen to our needs. They don’t want to know what you do… they want to implement in a reasonable time, as quickly as possible, and “Goodbye! You’ll sort it out.” (Business analyst, HOSP1)

Regarding top management, project directors from NAVAL, HOSP1 and HOSP2 seem to rethink their “strategic partnership,” revealing their awareness that they are moving along a dependency road. NAVAL is revising its strategy:

In terms of knowledge transfer from X [consulting firm] to our employees, we have a specific training plan for our key-users, so that they will be able to parameterize minimally… This is a strategic adjustment. We assume that, because our strategy was… we no longer have IT people in our company. But today, we are able to see that with solutions like SAP, such a situation is not advantageous and the costs are extremely high. Our discomfort is serious. (Project director, NAVAL)

HOSP1 and HOSP2 project directors’ assessments of their initial choices also suggest the importance of having purposive strategies that help people from the client-firm to visualize and to understand the solution they are adopting.

Then, if we do a post-mortem compared with where we are now, it’s a gap we can notice; we missed throughout the project… not to have had a complete presentation of the applications in integrated mode… to see… an example… we imagine what the system can really do. (Project director, HOSP2)

If I had to renegotiate with the integrator, I would tell him: “we will agree to receive your experts and host them for a month with internal resources, and then you’re going to explain what the configuration you suggest is like! Then, we’re going to switch.” Whereas the integrator arrived and said: “Ok, we start configuration! We provide training, we meet personnel and we say ‘This is the template! This is what we are going to implement!’” (Project director, HOSP1)

In turn, consulting firms see their relationship with the client as a “rentable partnership;” because technical knowledge transfer was not carried out, after implementation consultants remain indispensable to the client. To the extent that they enlarge their network of clients, they increase their benefit from economies of scale. It is not by chance that arguments about “best practices” and the valuable experience they have accumulated from previous implementations are used to convince potential clients that these partnerships are advantageous to both sides of the relationship.

Er… we do have a little bias toward ASP, we want to influence the client’s process as much as possible… ok, then we want to know their process, but we do not want to change the process we have already configured… (Consultant, HOSP2)

The claim was to use SAP standards… thus, to customize the least possible, so that later, the partner [the consulting firm] could support the applications of many clients, when making an update or a modification, there must be a basic standardisation… to make it easier for them. (Project director, HOSP2)
Summary

Technical decisions cannot be separated from organizational decisions because each technical decision regarding configuration represents a different way of organizing (Bloomfield and Danieli, 1995). Successful implementation involving configurable technologies requires a kind of chemistry between generic technology knowledge and local practical knowledge (Fleck, 1994). In the dependency-pattern, global-local chemistry is not achieved. The mutually constructed client-consultant relationship is characterized by the absence of encounter. Global-local negotiation is, therefore, a sort of blind decision-making process. The key metaphors, representations and images dominating the dependency-pattern - the police, an army, two gangs, victims, deceiving drivers - show that the initial arrangement of power/knowledge is reflected in discourses and strongly influences all implementation participants, consultants and clients. Consultants were unable to offer configurable solutions based on local particularities. Clients were unable to challenge consultants’ visions based on alternative package possibilities. They did not form a team and could not make thoughtful configurational decisions with greater awareness of the organizational consequences of their choices.

The dependency trajectory is especially dangerous for one side of the client-consultant relationship: the client side. The dependency-pattern is a first illustration of how ERP project results depend on the nature of global-local negotiation, which is in turn influenced by the pattern of mediation (client-consultant roles and relationship) negotiated from the project launching. When global and local are clearly separated from the beginning of the process, the perspective of benefiting from cumulative expertise and economies of scale may be a fallacy. Analysis of these three cases suggests that this pattern of mediation is likely to be more cost-effective for consulting firms than for client-organizations.
5.4 When Autonomy is Essential

Figure 8 - The Autonomy-pattern and the Partial-sharing Trajectory

<table>
<thead>
<tr>
<th>T0: Project launching</th>
<th>Configurational activities</th>
<th>T1: Go-Live</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project launching</td>
<td>Technology-configuring mediation</td>
<td>Project results</td>
</tr>
<tr>
<td>Establishing roles:</td>
<td>Evolving client-consultant relationship:</td>
<td>- Overall poor fit</td>
</tr>
<tr>
<td>Consultant = temporary coach, pair-of-hands; Client = active project leader</td>
<td>- Partial global-local sharing - consultant does not delve into the local context; client learns technical and global principles.</td>
<td>- Overall low satisfaction</td>
</tr>
<tr>
<td>Establishing rules:</td>
<td>- Two-way communication is limited - client retains local knowledge, acquires technical knowledge and gathers additional information about global knowledge from temporary coaches (the consultants).</td>
<td></td>
</tr>
<tr>
<td>- Client holds control over the project and responsibility for results</td>
<td>Mediating strategies:</td>
<td></td>
</tr>
<tr>
<td>- Technical knowledge transfer from consultant to client is seen as essential.</td>
<td>- Presence of mediating strategies that increase autonomy - intensive training before and from the project launching; prototyping as knowledge transfer tool; the creation of a network of key-users to reach end-users; client’s participation in group of users (segment level).</td>
<td></td>
</tr>
<tr>
<td>Consolidating a configuration:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Clients can challenge consultant expertise but consultants cannot easily challenge clients - they have little control over and little knowledge of the context.</td>
<td>- “Incremental” decision-making process, partial ability to negotiate thoughtful configurable alternatives during the phase where the foundations of the system (configuration) are established.</td>
<td></td>
</tr>
</tbody>
</table>
Project launching
Establishing roles

The autonomy-pattern is characterized by the clear autonomy of the client regarding external consultancy. The nature of roles negotiated from the beginning of the project at MOTO and ENERGY was similar: clients have an active role, they are uncontestable leaders. They define the project’s goals and the consultants are engaged as temporary coaches who hold responsibility for transferring their knowledge and experience to clients, as required.

Yes, we work in knowledge transfer mode; we are there just to guide the client (…) We want them to be as autonomous as possible and to be able to evolve afterwards. (Consultant, ENERGY)

Interestingly, there is an inversion of roles from the previous pattern. In the dependency-pattern, clients were seen as passive information providers. In the autonomy-pattern, consultants hold a passive and secondary role, working as information providers regarding their experience in the industry.

They were secondary. They always were secondary. The consulting always was secondary. (Business analysts, MOTO)

Establishing rules

From the Project launching, the top management of ENERGY and MOTO kept total control over the project (power dimension) and assumed responsibility for technical aspects of configuration (knowledge dimension) and project results. The two companies from the autonomy-pattern elected the avenue of autonomy regarding external consultancy. Arguments like the promise of economy-of-scale efficiencies and technological expertise from an external partner do not seduce the top management of either company. Quite the opposite, autonomy is seen as essential.

What is interesting for my investigation is that ENERGY and MOTO are quite different in several aspects: country, industry, size, organizational culture. ENERGY is a project developed by a Canadian company from the service sector, with more than 20,000 employees. MOTO is a Brazilian subsidiary of a German company that produces chainsaws and other manufactured products, with around 900 employees. ENERGY and MOTO have well-defined missions, objectives and values, strongly disseminated across all hierarchical levels. Despite their important differences, their ERP experiences were very similar, especially regarding the knowledge/power pattern they followed. In addition, the interviewees’ metaphors, representations and images are quite comparable; they all refer to autonomy as the keyword for both projects. Discourses from both organizations reveal strong convictions about “never losing their autonomy,” which is seen as “the basis of their organizational culture.” In both projects, all interviewees spoke of the importance of being autonomous and the danger of becoming dependent on external expertise. In both cases they believe that investment in intensive training for their employees is much less expensive than investing in “readily applicable” external expertise, which creates dependency in the long term and ends up being much more expensive, in the long run.

Culturally speaking, it’s all according to the rules and the way ENERGY takes over the necessary leadership in a project. Er… if I compare it to the experiences in other projects, other than SAP, usually the externals are there to perform knowledge transfer. The
externals are more there to make up for the workload or for a particular problem. (Business analyst, ENERGY)

Many firms are outsourcing... but they are in the hands of consultants. For anything they need to have done, they must call the consultant. I am sure that the cost is higher. The way we [client] found to manage the project gives us peace of mind today, any problem we have our personnel solve. We do not need to ask for consultancy. We have autonomy. (Business analyst, MOTO)

From their perspective, the key to autonomy is knowledge transfer. Intense knowledge transfer from consultants and/or vendors to clients is planned before and throughout the configurational activities. ENERGY and MOTO have invested a great amount of time and money in training their employees to be able to lead the configuration of their ERP projects. MOTO’s project director synthesizes two general rules of project success: independence from consultancy and internal qualification.

We definitely believe in these two ideas: independence from external consulting and internal qualification… You save money, a lot of money! You can renew your process, you get your people involved, the holistic vision of each employee increases, because when he (she) enters an order, he (she) knows where this operation will end. Do you understand me? This... is not a cake recipe. It’s basic! (Business analyst, MOTO)

**Technology-configuring mediation**

**Evolving client-consultant relationship**

Once the project is launched, the relationship between consultant and clients is strongly influenced by the roles initially established. Although such a process is dynamic and may change over time, in the autonomy-pattern I could observe a reinforcement of initial roles. Clients assume their active role and consolidate their position as unquestionable leaders. They define the project’s goals and the consultants are expected to supply specialized knowledge to help them to achieve those goals.

So consultants are there, for the most part, to meet a very specific need… a precise question, a very precise problem for which we need… But generally speaking, people doing configuration are autonomous… We don’t pretend to know everything… obviously we don’t know everything about SAP but we know enough to be autonomous. (Business analyst, ENERGY)

First and foremost, autonomy in the medium and long term is seen as essential. However, it is acknowledged that a certain degree of dependency on external consultancy was necessary during the first few months of the project, but such dependency quickly disappeared. The autonomy-pattern offers a clear example of power/knowledge duality. At the very beginning of both projects, consultants had a certain power because the knowledge transfer was still evolving. ENERGY’s business analysts, for instance, describe this initial feeling of dependency as very uncomfortable. However, insofar as the project evolved, the knowledge transfer allowed business analysts to feel more and more independent. They were able to configure by themselves, trying different configurations and discovering alternatives that even the consultants had not found.

The project manager said at the beginning of the project: “it’s normal that you don’t know this and we trust consultants… later we still trust consultants but we have to take
over leadership of the project…” Then he has… rapidly in the project, we must take over all the… People of ENERGY must take over. (Business analyst, ENERGY)

Consultants should offer a bridge between the organization and the industry, but they are not the bridge, as is the case in the dependency-pattern. Instead, they are seen as a tool for the knowledge transfer required for building that bridge.

There [configurational activities], it was only the ENERGY employees. Consultants were not admissible for configuration. This is unusual. Consultants found this very difficult! (Little laughs.) (Business analyst, ENERGY)

Good consultants, from the perspectives of these autonomous clients, are those who have become proficient in the best practices “available” in the marketplace and are skilled enough to communicate and teach them.

I believe the consultant, today, in an ERP project, is welcome to teach but not to do. With a consultant who arrives in a firm and starts configuring directly, the firm is destined to be dependent on him. If the consultant arrives and explains to a group a billing process, for instance, “you do this, you do that,” like a trainer, like a professor, there is no problem. It is a training experience, if the consultant tries to define the billing process for you, then you have a problem. (Business analyst, MOTO)

Attempts to unilaterally impose “best practices” are rejected, because business analysts feel able to challenge consultant’s visions. Indeed, consultants “must be challenged,” because the potential and flexibility of ERP are seen as directly proportional to the scope of expertise and experience of each consultant. The cumulative expertise “available” on ERP packages cannot be taken for granted but depends on the “window” each consultant represents. Each consultant works as a “filter” between the generic package functionalities and the client-firm requirements. They tend to offer solutions within the scope of their expertise and previous experience. Consultants’ openness to dialog with both their clients and other consultants from their segment plays a crucial role in the scope of such a “filter” or “window.” Once again, I stress the close link each configuration “history” has within its segment.

Sure, I’ve always defined it… a system... there’s like… you have a window in which you can operate, and we try to operate as much as possible within the entire window… to get the most functionalities (...) I did not blame the software, there are also consultants you are working with. You know… they also have experience of the system, they have windows… and… the say “yes, the system allows it, we are going to go for it!”, later you pay the price for it...! It’s software, there’s a price to pay. (Business Analyst, ENERGY)

Regarding client participation depth, in both cases it is high, i.e., we have “empowered” participation. MOTO and ENERGY top management recognize that empowerment guarantees access to knowledge and vice-versa. They believe that it is not only profitable but also crucial to invest in internal expertise with respect to ERP packages, or the firm will neither be able to put an optimized solution into operation nor to improve its use over time.

Regarding client participation breadth, ENERGY and MOTO illustrate two different trajectories, which illuminate interesting aspects in the relationship between the nature of client participation in the project and the project results in terms of satisfaction. At MOTO, client participation breadth was great. MOTO put in place a strategy of comprehensive end-user involvement,
centered on the role of key-users. After business analysts were trained to configure SAP externally (“SAP certification”), they, in turn, trained a network of key-users, and these key-users trained the end-users, in a “cascade” effect. In addition, key-users have an organizationally sanctioned mandate to continuously learn and explore additional SAP functionalities, discuss them in their departments and, when approved, to implement them. As I describe below, MOTO also exhibited the highest satisfaction levels regarding all end-user subgroups, compared to all other projects investigated in this research project.

The other masterpiece we did was... They [top management] gave us the possibility, at all managerial units, to develop key-users. It was a “jump.” We could choose who the key-users would be. I got the right direction. Everybody got it. We took key people, people that love computers, and they were prepared to operate and change the software. Today, we maintain this philosophy of key-users. (Business analyst, MOTO)

ENERGY exhibits a different story. In contrast to MOTO, its client participation breadth was low. The alleged reasons relate to company size (20,000 employees) and project scope (it replaces 150 legacy systems). Participation was the privilege of people selected to be members of the project team and ENERGY’s top managers claimed that to reach all end-users would be too time-consuming. The following quotations illustrate the lack of representation of end-users’ voices in configurational decisions.

The end-users are supposed to participate in configuration; that’s theory. In practice, we cannot ask 7,000 users to take part in configuration. At ENERGY, we have 7,000 ERP end-users… There are only 250, 300 people that have been directly involved in the project. Those people find it flexible… but the other 6,700 who were obligated to submit to the new processes find it less flexible. (Business analysts, ENERGY)

We didn’t really work collectively… We wouldn’t look for their approval, we tried to find the best maintenance practices, according to what the module allowed, at that point... to look for the best practices and implement them in the field of facilities and vehicles. We wouldn’t ask for permission to do maintenance in this or that way… Proceeding this way… it had advantages and drawbacks. The advantage was that we could proceed at a pace that allowed us to respect the deadline and the [forecasted] project cost. On the other hand, it caused a lot of frustration on the side of end-users at ENERGY, because they felt we imposed ways of doing… and they lost control, a little bit, of their responsibility, as people in charge of certain domains… (Business analyst, ENERGY)

Mediating strategies

In the autonomy-pattern, the challenge of finding a good configuration taking into account global principles and local requirements is partially met using the combination of several mediating strategies that contribute to the increase of independence of external consultancy and to greater global-local sharing, even if unilaterally. In order to win autonomy, knowledge transfer is seen as fundamental. MOTO and ENERGY offer different strategies to perform knowledge transfer.

MOTO decided to train their business analysts intensively before the beginning of the project. Often, companies implementing ERP packages schedule the training sessions during the implementation, and that was the case in almost all projects I investigated. MOTO relied on training provided by the ERP vendor, the same type of training consultants undergo (in SAP
language, this is called “certification”). In doing so, MOTO created conditions for “empowering” the interactions of their business analysts with consultants from the very beginning of the project.

No, before! Before starting to configure any module, we selected people and sent them for intensive training. In the project planning and schedule, we did not even have item training, because training had been carried out before. People were ready when the project began. People come to work with us prepared... directly…. (Business analyst, MOTO)

In addition, MOTO gave rise to a network of key-users, as previously described. They created a process of continuous learning, where people have formal authorization from their top management to spend a certain amount of time every day exploring SAP functionalities and new releases. ENERGY put into action a different strategy. Although they also trained their business analysts using SAP certification, the main tool for knowledge transfer was prototyping. Prototyping is described by most participatory design researchers as one of the more powerful methods for matching technological features to clients’ requirements by creating an intermediate representation which is technically feasible and affords practical interpretation (Asaro, 2000). Prototyping was applied by ENERGY as a knowledge transfer mechanism between consultants and clients, a learning tool that allows clients to “prototype” before starting the “real” configuration.

In the methodology we used, our first prototype was a prototype that was… which essentially relied on learning the technology, and also becoming familiar with the tool. It was part of the learning process in addition to make a mental construction, to see in practical terms… Because when the time comes to explain to the people what ERP is, even if I talk for one hour, it’s not visible, people don’t see it already. (Business Analyst, ENERGY)

Because if we don’t do it [prototyping], in this case we start to talk about concepts for months and months and it’s only at the very end that the user can eventually see what he really bought... what he really... what the process really looks like? Instead, by prototyping, by doing two prototypes… In the beginning we take the simplest processes, and then, we go from the start to the end… so the user can see from concept to reality… after three months of experiencing the complete process... And, in addition he has experienced the whole implementation of his process in SAP, so he knows the conception of the process, he knows the configuration of the process, the single tests, the integrated tests of his process… He saw, he experienced the complete cycle. It’s almost like living a complete implementation in three months. When the second comes, they [users] know exactly what to expect... When we create a second prototype, they [users] experience it again, and after that, we go into implementation. This way, it’s as if we have practiced the implementation twice before the actual implementation. In addition to having better knowledge of the process, better knowledge of the tool, they [users] know the methodology that we use for implementation better. (Consultant, ENERGY)

The development of prototypes was also applied by MOTO as a kind of “laboratory” to visualize and test different configurational choices before putting them into operation. The main benefit of prototyping, in this case, is that people can analyze each given technical choice in terms of organizational consequences within specific contexts. The prototype was applied by MOTO
business analysts to discuss the use of each new functionality with people involved, within each department.

I parameterized the module, prepared it. I said “it could be like that… who is the manager involved?” “Ah, it’s Luciano in purchasing.” I took the module, went there, presented him with the changes, asked for suggestions for improvements, and changes. He gave me suggestions; he said, “Look, this cannot be like this… but like that.” I went back, changed again, presented to him again, and finally put into operation and showed it to him. “What do you think? Is it OK? Is it not OK? In reality, I did not make decisions alone. I was, in reality, a tool for him. He knew, for instance, that I was changing things in his area, but that he was involved. (Business analyst, MOTO)

I see prototyping as a device that helps to visualize the global-local negotiation involved in configuring. It allows business analysts to progressively combine their knowledge of local processes and contexts with technical knowledge. They are aware that they cannot acquire the knowledge of all package functionalities in a short period of time, but they think in terms of long-term learning and increasing autonomy.

The third mediating strategy found in the autonomy-pattern, especially at ENERGY, is the participation of clients in “groups of users.” This strategy can be seen as typical of the configurational technologies context and it is related to the segment level. Regarding the cumulative knowledge that successive ERP implementations can produce, the participation in meetings that group a number of current ERP users together represents an opportunity to discuss best practices, to gain access to “global” principles, etc. ENERGY uses such a strategy to share their knowledge and doubts with other skilled and expert ERP clients and claims to get several benefits from such participation.

**Consolidating a configuration**

The technology-configuring mediation process found in the autonomy-pattern is characterized by the uncontestable leadership of clients. The trajectory it produces is characterized by a kind of “unidirectional move”: clients develop an increased understanding of package possibilities and logic (technical expertise) and consultant “language.” Clients look for “best practices,” taking into account their knowledge of local contexts and requirements and the acquired technical knowledge. The configurational decisions are made within a context of an incremental decision-making process, i.e., business analysts make configurational decisions by incremental improvements identified in the course of configuring a technology. They are learning to the extent that they are configuring and vice-versa.

Consultants do not undergo a similar process. Because their presence within an organization is seen as temporary, they do not have the opportunity to increase their knowledge of local contexts. The phase of configuration is built up with good conditions for global-local sharing. However, because global-local sharing is somehow unidirectional, many global aspects might be lost. The risk of this pattern is that the ability and power of the consultant to challenge the client’s configurational decisions is slight. If clients make poor decisions and equivocal plans, perhaps they will pay the price. Simultaneously, the benefit from certain consultants’ expertise may be wasted on some clients.
Project results

Satisfaction levels and perception of system fit were high among clients involved in the configuration. Not surprisingly, project team members were proud and highly satisfied with the project results. Strong feelings of autonomy and powerlessness characterized these users’ discursive practices. Client discourses reveal a strong sense of pride in their own performance during the project; they see themselves as skilled and autonomous configurators. Differing from dependency-pattern, people from autonomy-pattern never talk using the passive voice or articulate ideas about “unavoidable trends” or being “victims.” Quite the opposite, they verbalize their positions as active actors within a performing organization that actively chooses its alternatives rather than undergoing external pressures.

It was a big challenge and now we are proud, without doubts. And people in Germany [SAP] respect us a lot. “Nothing is impossible.” (Business analyst, MOTO)

Regarding the remaining end-users, their level of satisfaction depends on the extent to which they were also involved in the project. MOTO shows greater involvement and greater end-user satisfaction. ENERGY exhibited lower levels and their end-users were, indeed, highly unsatisfied. A survey taken two years after going-live indicated that resistance and low levels of satisfaction persisted in many organizational sectors. The main reason: end-users were not involved in the project from the beginning and almost all configurational decisions were made without discussion or even their acknowledgement.

If we talk about respect for deadlines, respect for budgets, for functionality… the system is functional it was functional from the start, it never really had big technical problems, transactional… all that. It is a success… If I a take the end-users stand… oh dear, we’re a far cry from this. (Business analyst, ENERGY)

The tool, as such, works very, very well. There is no problem. Technology is running… But people using it, that’s the problem… (Business analysts, ENERGY)

Summary

Overall, I suggest that the autonomy-pattern produced a promising trajectory in terms of global-local negotiation. ENERGY and MOTO approaches helped to blend global principles and local contexts as a joint effort where clients led the project supported by consultants, whose role was defined as secondary. In contrast to the dependency-pattern, where the interaction between consultants and clients was conflictual and a synergetic team was not built, the autonomy-pattern allows interaction between clients and consultants in a controlled way; clients are able to blend “global” and “local” because they know the local, they know the global to different degrees, and even when they ignore some aspects of global, they are able to challenge consultants’ expertise and benefit from their experience. They still must trust consultants regarding their particular know-how, knowledge of the industry’s best practices and new versions and functionalities, but they do not feel dependent on them.

The key representations and images dominating the autonomy-pattern - autonomy is essential - show that the initial arrangement of power/knowledge is reflected in discourses - we are autonomous - and also strongly influences all implementation participants, consultants and clients. Clients are able to look for, and find good configurational solutions because they have enough knowledge of local particularities and can foresee the organizational consequences of
their alternatives. Consultants accept their defined role as temporary coaches, and they know that transferring their technical knowledge is crucial to their permanency in the project.

Because both client requirements and package capabilities are mutually constructed, the actors involved need to share each other’s expertise to some degree. The autonomy-pattern exhibited a trajectory of partial local-global sharing, but several mediating strategies were put in place to help the negotiation of global and local: intensive training before starting the project, prototyping as a tool for knowledge transfer, a network of key-users disseminating and communicating internally, user participation in groups, etc. All these strategies can help global and local converge, create some synergy and decrease the risk of having the consultant’s vision almost mechanically transferred to the local context, as occurred in the dependency-pattern. However, the autonomy-pattern also has its disadvantages: the client-organization can lose the opportunity to implement interesting functionalities that they did not have time and opportunity to learn.
5.5 Mutual Cooperation – a Fragile Synergy

Figure 9 - Cooperation-pattern and Mutual-sharing Trajectory

<table>
<thead>
<tr>
<th>Project launching</th>
<th>Technology-configuring mediation</th>
<th>Project results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishing roles: Consultant = partner; Client = partner</td>
<td>Evolving client-consultant relationship: - Strong global-local sharing - consultant delves into local context; client learns global principles. - Two-way communication - consultant gathers local knowledge; client acquires technical and global knowledge. - Despite the synergy produced by this mutual-sharing trajectory, it appears to be fragile. Although they could be particular to AERO1 and AERO2, political conflicts emerged as the process evolved and the clients increased their global knowledge - Who controls the project? Mediating strategies: - Presence of mediating strategies increases cooperation - intensive training, prototyping, cyclical brainstorming sessions, and participation in user groups. Consolidating a configuration: - Client can challenge consultant solutions and consultant can challenge client requirements. - “Reflective” decision-making process - ability to negotiate thoughtful configurable alternatives during the phase where the foundations of the system (configuration) are established.</td>
<td>- Overall good fit - Overall good satisfaction</td>
</tr>
</tbody>
</table>
Project launching

Establishing roles

The cooperation-pattern is characterized by a mutual dependency between consultants and clients. The nature of roles negotiated from the beginning of the ERP project at AERO1 and AERO2 reflects their aim of having a mixed project team: business analysts were selected from each department and progressively trained in SAP to share with consultants the configurational activities. Both business analysts and consultants are invited to assume a collaborative role. Both are considered partners, with shared responsibilities. In this type of relationship, consultants should not build solutions for business analysts, but use their special expertise, skills and previous experience to participate with business analysts in the search for good configurational solutions. The key assumption of the cooperation-pattern is that business analysts must be actively involved in requirement determination and configurational choices, and co-responsible for project results. The cooperation-pattern differs from previous patterns regarding an explicit polarity between passive and active roles. In the cooperation-pattern, all parties assume active roles.

Because cooperation between consultants and business analysts is sought, consultants are seen as people who will bring in new ideas without influencing the decision-making process too much.

What we expect from a consultant is that he has gathered experience in other companies, in similar businesses… So you look at things, you have an idea of what you would like to have, but maybe he’ll lead you… If there is a good partnership, he can bring you new ideas or points of view, this can be more interesting than what you had before. So… up to now, we’ve had good consultants… (Business analyst, AERO1)

I think that usually a consultant should not influence, that is to say a good consultant is someone who is able, in my opinion, to draw different options from pros and cons. A consultant should never decide… in my opinion. On the other hand, he should clearly explain what are the pros and the cons. (…) But it is not a direct influence. That is to say… the consultant never makes the decision, the client does… (Business analyst, AERO2)

Consultants are neither simply knowledge transfer “tools” (as in the autonomy-pattern) nor unchallenged experts (as in the dependency-pattern), but configurational partners. In addition, the presence of consultants within the organization is not seen as temporary, but as permanent. Consultants are likely to stay for a long time working full-time within the client-firm, creating conditions for consultants to develop a solid appreciation of the local context.

Establishing rules

Cooperation-pattern includes two projects performed by two big companies from the aerospace industry. AERO1 and AERO2 decided to outsource the IT function a few years ago (AERO1 in 1999 and AERO2 in 1997) with the particularity that their IT employees were engaged by the respective outsourcing-firms: O-FIRM1 and O-FIRM2. As a result, at least during the first years that followed, the outsourcing-firms employed consultants who were former employees of their clients as well as other external consultants. With time, the ratio of ex-employees to external consultants decreased.
AERO1 outsourced, they sold the expertise to O-FIRM1 and all the IT people were sent to O-FIRM1, they were our people before… who were training on computers, so a synergy was already there. We had, eventually, also people who came from outside, consultants… (Business analyst, AERO1)

Regarding the rules put in place, I found elements from both dependency and autonomy patterns. Similar to the dependency-pattern, consultants had formal responsibility for technical aspects of configuration and for project results. Officially, consultants were sanctioned by the top management of the client-firm to control the ERP project.

Because those people [the consultants]… as you know, the configurators must go into SAP, which is configurable, and change the parameters… (Consultant, AERO1)

At the same time, consultants were supposed to make all configurational decisions together with clients. Making decisions “together” means making decisions after sharing ideas, discussion and final agreement, which differs from unilateral information gathering and the “blind” decision-making process that characterized the dependency-pattern. Instead of passive information providers, clients are seen as active configurational partners. In order for them to assume such a position, technical knowledge transfer from consulting firms and vendors to clients was carried out. However, this knowledge transfer was not really intense at the very beginning of the project, but proved to be necessary as the project evolved.

Technology-configuring mediation

Evolving client-consultant relationship

The cooperation-pattern is a complex and ambiguous pattern of mediation: the roles of business analysts and consultants show a clear transformation during the implementation process. Although they are both seen as partners from the beginning of the implementation until post-implementation, this role of “partners” took on different nuances as the project evolved. I could perceive that business analysts were somewhat “weaker” at the beginning of the project, when their technical knowledge was still limited. Although formal control of the project was in the consultants’ hands, it was also clear that business analysts had to be involved in the decisions being made and to share the responsibility with the consultants; they were likely to work as a team. One of the expressions of such a shared responsibility is that clients and consultants were evaluated together regarding the project results.

What happened is that we [consultants] were part of… with the business people, we worked really as a team… we were really a team… (Consultant, AERO1)

In order to be able to involve business analysts in configurational decisions, technical knowledge transfer was intensified as the project evolved. As business analysts increased their knowledge and skills regarding configuration, they began to interact with consultants with more confidence. The cooperation-pattern produced a mutual-sharing trajectory: consultants and clients were progressively able to share their knowledge, and this allowed the emergence of a strong synergy. Local requirements and global principles could be shared and blended.

The AERO2’s business analyst said “OK this is the model this is what we need to do” but then the O-FIRM2 was able to say: “well ok this is the tool we can come up with.” This makes a very strong team. (Consultant, AERO2)
The Implementation of Configurable Technology:
Negotiations Between Global Principles and Local Contexts

However, from a certain moment in the configurational phase (I cannot precisely define when because it emerged progressively), business analysts started to take control over the project. Formally, control over configuration (i.e., physical modification of the package, parameterization) was still with consultants. In practice, business analysts began to be more and more assertive in their configurational decisions. The legitimacy of consultants as the formal “configuration owners” was called into question. As their technical knowledge increased, business analysts became much more active than they were in the beginning.

Similarly, consultants began the project with more power. They had more training and technical knowledge than business analysts in the project’s first months. Then they went through a phase where they increased their knowledge of the local context and developed their ability to make insightful suggestions to their partners. However, after a while, consultants started to undertake configurational decisions made by empowered business analysts. They started to perceive their role as configuration owners as less legitimate. After a while, political tensions characterized both projects.

The trajectory followed by AERO1 and AERO2 reinforces the idea of indissociability of knowledge and power during the configurational activities. Taking AERO2 as an illustration, during the first months of ERP configuration, their business analysts were not able to configure SAP and they felt quite insecure when invited by consultants to make configurational decisions. The following passage clearly shows the problem of configurable technologies: you cannot decide if you do not know the package functionalities, because each choice represents business rules with several complex organizational consequences.

Consultants told them… “Now, you have to make a decision!” “How do you want us to configure?” and not knowing what SAP configuration is, it was difficult for them to make a decision. They could say, “Look! In the company we want it to run this way! The process is as follows…” but as far as SAP configuration was concerned, they had many more problems… people in the project, at that moment, people at AERO2 were dependent on consultants and they didn’t like this situation… Nobody was comfortable with that, I think… (Business analyst, AERO2)

As a result, business analysts started to exert pressure on top management in order to increase their access to SAP training and education, and they got it. In order to have time to learn, they planned the first go-live as a kind of “mini go-live,” which represented to business analysts a great opportunity to learn in a true “laboratory.” During this period, business analysts increased their knowledge of SAP technical functionalities. Their ability to manage the project and their power also increased over time. When the second and most important go-live arrived, business analysts were already “running the ship.”

So, what they did is that people from AERO2 took SAP courses and they improved technically with SAP and they started configuration with SAP. So, technically they were in an even position with consultants so they could challenge consultants decisions by saying “why did you configure like that, it’s going to have an impact there, at this place?” so, it was easier to manage and easier to control, having a technical knowledge. The dynamics were very different… at the first go live we had the impression that consultants were… leading but at the second go live it was AERO2 who led. (Business analyst, AERO2)
It was clear to AERO2’s business analysts that their power to do a good job in relation to the configurational activities depended on their knowledge of the package combined with their knowledge on the local context. Concurrently, they could benefit from the complementary knowledge, experience and advice of their partners, the consultants. A similar situation was experienced at AERO1: during the project, business analysts increased their knowledge of SAP configuration and ended up, to different degrees, able to configure by themselves.

What is intriguing is that, for a certain period of time, the pattern of mediation exhibited by AERO1 and AERO2 seems to have been optimal. Interviewees representing both sides of the relationship, clients and consultants, articulated discourses that such a team composition represented a strong synergy. The combination of local-global knowledge was balanced. On the one hand, business analysts knew the local context very well and were training to learn the SAP functionalities. On the other hand, the consultants had a strong expertise in SAP functionalities and, to differing degrees, a solid knowledge of the local context, especially those who had been AERO1 and AERO2 employees prior to the outsourcing. Even those consultants who were not “ex-employees” ended up developing a good knowledge of the local context because they were allocated to work full-time in the physical facilities of AERO1 and AERO2.

They [business analysts] come to us with refined requirements. It’s not an unrefined requirement saying “I want to do something” and we are not spending days investigating to finally say, “you can’t do that.” The AERO2 people have the expertise; they know SAP. (Business analyst, AERO2)

They [business analysts] are the people that are going to define the business process and the O-FIRM2 people are the ones that are going to say this how to do it on SAP. But they have to have SAP knowledge on the AERO2 side as well before they even come with the request or else they barge in saying I want to do something completely out of this world but SAP can’t even handle it. So they have been trained, not enough to be certified, but are trained in each module. They work on request; we have meetings and discuss new projects or enhancements and where to go. (Consultant, AERO2)

Such a synergy between global experience and local knowledge is promising in helping to produce good configurational results. However, what could have been an ideal cooperation process ended up showing a fragile side: who owns the project? Who are the leaders? I could perceive in both AERO1 and AERO2 an increasing discomfort regarding the role of project owner. As clients acquire more knowledge, they look for more and more control over the project and start to ask: why should we wait for the consultants’ approval if we feel confident about our configurational decisions? Why are consultants still the only ones formally allowed to configure when, ultimately, business analysts are making most of the important configurational decisions?

Because we don’t… we don’t have control anymore … we click on the button to say “yes, it is approved…” to transfer it from an environment to the other, but we cannot say “yes, it can or cannot be done…” It’s the business analyst who comes to the meeting, who decides if they want it or not. We lost control… (Consultant, AERO1)

In both cases, business analysts were empowered by the expertise they had acquired. As business analysts increased their technical expertise, they also reinforced their claims that “they have legitimacy to define their business processes.” A kind of ambiguity emerged at AERO1 and AERO2: their business analysts were not authorized to configure because, for contractual
reasons, the outsourcing-firm is the only one formally responsible for configuration and project results. In practice, each day business analysts were more able to configure, and they started making almost all configurational decisions and controlling the project. What had started out as a strong synergy began to be a source of conflicts. Comparing AERO1 and AERO2, I could perceive that the political tension between consultants and business analysts was stronger in AERO1 than in AERO2. In the former, the fight for control was becoming more explicit.

So, we know, for me, it’s clear… Because what is happening is that AERO1 invested in business analysts to train them… For instance… consider that there’s training on SAP, on “customizing” or something like that. They are going to make sure that their business analysts are present… they are going to make sure that business analysts are doing cross-training among them… These people, in our “test unit” environment, they are able to modify the configuration… they have access and they are going to do it. Ok… now we’ve lost control over… (Consultant, AERO1)

But I think that we really have to define our business requirements to determine the best practices at AERO1, and not be guided by what anyone did before… (Business analyst, AERO1)

Consultants felt increasingly insecure because business analysts’ pressures to change the rules of the game and formally assume control over the project were strong. Facing this, I could perceive a dangerous trend for the mutual-sharing trajectory: consultants start to hide some of their expertise in order to retain some power.

We had to work with them [business analysts] on the engineering project … so, we went to see our management, we said, “Look, we want rules… How do we deal with these people?” Because they are stealing our knowledge and we don’t know how to work with them. We don’t know how much we can or cannot say! (Consultant, AERO1)

Regarding AERO2, the firm still retains some signs of the initial partnership, synergy and cooperation, but the political conflicts are also emerging concerning consultants and business analysts.

The only problem is… The biggest downfall is that O-FIRM2 is responsible for the system worldwide. So if it crashes and the system goes down, the job gets stopped, and we get charged. So, when it comes to the configuration and changes, O-FIRM2 should be the only one that should have a key to be able to control it. In my module that’s true. In some of the other modules it’s not… AERO2 personnel actually have a configuration key and they can go in and change the system, as they like. There is… it’s a little bit of a fine line to say you shouldn’t do that because we are responsible for the system. (Consultant, AERO2)

Regarding client participation depth, as previously described, both cases were characterized by increasing “empowered” participation. Regarding client participation breadth, I found in AERO1 and AERO2 a situation similar to ENERGY: although the business analysts were empowered, the end-users were less involved, helping to explain mixed satisfaction levels regarding the configuration put in use. In the case of AERO1, the involvement of key-users and end-users varied a lot from one department to another. AERO1 had mixed client participation breadth, from slight to great.
In the case of AERO2, the first phase of implementation was characterized by very low key-user and end-user involvement. Giving the worst results in terms of satisfaction level of almost all these users, AERO2 changed their strategy and they have tried to improve the systems functionalities by involving key-users and end-users directly in decision-making. In brief, AERO2 showed very little client participation breadth in the beginning, but the comprehensiveness of participation is increasing to the extent that key-users and end-users have been invited to participate. As a result, AERO2’s overall satisfaction levels are increasing.

Mediating strategies

In the cooperation-pattern, I could recognize four mediating strategies that helped increase the synergy of consultant and client interactions during the configurational activities. The first is the intense training that clients experienced as the project evolved. The second is the knowledge of local context consultants developed over time or, it is important to note, that they already had, in some situations, being former employees.

The second strategy is the use of visualization techniques like prototyping. AERO1 and AERO2 use prototyping and test environments, especially to verify how new configurational choices interact with the already defined ones and what their consequences are. The use of prototyping was especially intensive at AERO2 and its use was different from that applied by ENERGY. To ENERGY, prototyping was a knowledge transfer tool between consultants and business analysts. At AERO2, prototyping was a validation and communication tool between the project team (consultants and business analysts together) and the key-users and other end-users. Prototyping was used during the configuration but it continued to be used during the post-implementation.

We try to do some... yes, try to do little demos, an environment in which of course we can configure and make changes... and later show them... “So this is an example of what you are requesting...” What I also try to do with people is, when changes are made, ...before sending them directly into production, we have our quality environment, we have tests to perform ... it’s not just testing by yourself, you call the person... the user or the person responsible, and say “Come! We are going to do it together... You are going to tell me if it’s correct, if we need to perform other tests that I might not have seen...” or that the person has not thought about, but that need... that it would be helpful to have... before sending it to production and hearing: “I’ve got a problem something is not working!” (quiet laughter). (...) (Consultant, AERO2)

Er... so, sure in the beginning, people can’t figure out what the module does... because we can talk about it, but when we have nothing to show to people, it’s difficult to figure out... so I’d tell you that before seeing the product, it was difficult for them to know if it was going to meet the requirements or not... It’s the reason why I’ve made a prototype to show them... “This is the way it’s going to run. Do you think it’s alright?” I think that it’s an essential stage... It takes a bit more time but later you gain time... Because it’s difficult... the risk of not prototyping is to reach the end of the project, and have somebody say “No, it’s not what I wanted!” So, with a prototype... risk is limited... (Business Analyst, AERO2)

The third mediating strategy is a novelty regarding previous patterns: the use of cyclical brainstorming sessions. AERO1 and AERO2 organized meetings in the form of brainstorming between business analysts and consultants, all from different modules and with different degrees
of knowledge, in order to solve problems and difficulties, to discuss doubts and surprises, to share new ideas and discoveries. Internal workshops and brainstorming sessions are useful for increasing the share of local and global expertise. Such a mediating strategy differs from traditional “ateliers,” which are led by consultants and work according to the “traditional” logic expert-to-information provider dialogue where two-way communication is limited.

We have what are called integration meetings, and this is for consultants and clients for each module, every week. We go into a room, and we discuss new applications and requirements. We discuss our new projects, we can try to envision that there will be… on the other teams or if they have solutions we can provide answers. That’s weekly meetings… (Consultant, AERO2)

If you had a little… if you wanted to make a report or wanted… you absolutely had to make a modification, you had to go, there was… At a certain time, there was this so called “change control post”… and you had go there and justify… before any job was done, justify why you had to modify it, and people in the room had to challenge you… everybody could be challenged… and everybody in the room had to agree… (Business Analyst, AERO1)

Finally, as at ENERGY, business analysts from AERO1 and AERO2 found great value in participating within a group of users.

**Consolidating a configuration**

Dependency and autonomy patterns showed, in different ways, limited two-way communication. The cooperation-pattern is different: it shows bidirectional communication and mutual learning processes. Both sides - consultants and clients - were able to challenge each other because they had developed an increased understanding of the other’s scope of expertise (global and local knowledge). For this reason, I call it a mutual-sharing trajectory. Because there is *mutual cooperation*, the global-local chemistry is substantial.

The configurational decisions are made within a context of *shared knowledge*. Such a synergy is perceived as beneficial. Configurational decisions are informed by thoughtful, reflective negotiation between local context and global principles. However, a “paradox” emerged: responsibility over the project formally remained in consultants’ hands, but clients had increased their knowledge about global principles and felt able to manage the configuration.

Taken together, the way AERO1 and AERO2 deal with “best practices” reflects the mutual-sharing trajectory: “best practices” were the object of intense discussion because both global and local were taken into account from both sides. Best practices are important to the extent that they are tailored by internal members who know the organizational context. As a result, the global-local negotiation took the local context carefully into consideration. Instead of taking best practices for granted, people think that a good configuration needs to respect the standards proposed by the configurable technology as much as possible (or you cannot benefit from future upgrades), but it needs to respect local requirements as well. The universality of SAP solutions is put into question. The big benefit of SAP is integration, which does not necessarily reflect best practices in each specific process or function.
We did a little bit of a mix. Some areas did change their business processes and for others, we changed SAP so they kept the process as it was… We did a little of both… (Consultant, AERO2)

I think that best practices do exist but up to a certain point in the sense that… SAP, the way it works, if you take SAP, you can find… at every module you’re going to find another ERP that is better than SAP. Definitely… definitely… there are best practices…. But what makes SAP so powerful is its integration. So, it depends on how do we describe… Are there really best practices? No. (Consultant, AERO1)

SAP is very large and we can apply it in different ways, in order to meet the requirements of each company… It’s not about having a model that we can take… one specific model to replicate somewhere else, no not at all… No, we have to respect every company’s culture, effectively. (Consultant, AERO2)

**Project results**

Satisfaction levels and perceptions of system fit were high regarding people involved in the configuration. Business analysts felt increasingly autonomous but frustrated with the lack of formal autonomy to lead the project: a mixture of knowledge autonomy and powerlessness characterized their discursive practices. In turn, consultants felt vulnerable because their legitimacy as project leaders was in danger. Regarding the remaining end-users, the cooperation-pattern shows varied satisfaction levels according to end-user involvement: in both projects end-user satisfaction levels increased as end-users became more deeply involved.

Use is now very good … at the very beginning it was hard, there was a lot of resistance and the reason was that before SAP, all the systems they had were written at AERO2 for AERO2 with their own applications in mind… It was clear to their business and then for a guy who used to work in the shop to go into SAP a guy that used to work on the shop… he would spend 3 to 4 times more time trying to use SAP than with the old system. (...) When we first went live, it was not good. A lot of resistance, a lot of people were upset. After going-live, we made a lot of enhancements over a year and a half, and we implemented these enhancements to make the system user-friendly and now it’s a lot better … it’s much more accepted, the results were starting to come back (Consultant, AERO2)

Initially, the level of dissatisfaction was relatively… I’d say high. So er… then, with time the level of dissatisfaction maybe diminished because yes, we solved some problems. But there is still a certain level of dissatisfaction. (Business analyst, AERO1)

The examination of interviewees’ answers about satisfaction indicates some issues not previously discussed. The satisfaction levels vary considerably among different stakeholders. Top management and business analysts are reported to be satisfied. End-users from the bottom levels reportedly express lower levels of satisfaction, and perhaps … resignation.

Satisfaction, it depends! There are many people who are very, very satisfied because they really can work in integration with other departments. Instead of fetching information each time… getting false information that is not valid or biased, they have everything in the system, they interact directly. On the other hand, there are other people saying that the
system is too rigid… they have a lot of problems; for sure it’s not simple… So we have many people reacting differently but… (Consultant, AERO2)

I think at go-live or following go-live, people’s and management’s general perception of the project is that it was a success… It did work very well… yes, with problems, but that… that always happens. Today considering management’s support of the SAP team still in place, I would say that management still thinks it’s a success… At the end-user’s level, I think that when SAP came up there were mixed feelings… Maybe half of them said… or I don’t know how many, but there were quite a few who said “it’s very good!” there are others saying “it’s awful”… and it depended a lot on the department they were working in. Because SAP manages to meet requirements of certain departments, but for others there are weaknesses. (Consultant, AERO2)

In both cases, I perceive feelings of sorrow and disappointment regarding the past top management decision to outsource the IT function. Both business analysts and consultants agree that the synergy was better when all project team members worked for the same company.

AERO2 outsourced their IT function, and unfortunately, this group [IT department] was also outsourced, and I think that today everybody is realizing that it was a big mistake, but nobody is going to… [say it] (Consultant, AERO2)

No, I would not have outsourced… especially the configuration side. The business and the configuration I would have kept it together with the same… in the same company… (Consultant, AERO1)

Personally, I think it must be a mix of… I think a mix is a good thing, but I’d rather have kept people internally. (Business analyst, AERO1)

Summary

The cooperation-pattern is a complex and ambiguous pattern of mediation because, as I describe below, there is a tension between the formal power that is delegated to external consultants and the informal power that is accredited to business analysts. In addition, both sides are supposed to acquire technical knowledge, making the negotiation of configurational choices richer but also more polemical.

The metaphors, images and representations applied to describe their projects reflect the initial synergy and the later conflict that emerged. When people describe the project’s beginning, they use verbs like sharing, collaborating, rethinking and nouns like team and partner with great frequency. However, when talking about more recent periods, words like tension, downfall and theft start to emerge in different discourses. The mediation process is characterized by rich knowledge sharing but a fragile synergy - fragile because it is menaced by political conflicts. Both sides started to fight for project control (power/knowledge duality). In one project, I could observe that consultants started to subtly “obstruct” the knowledge transfer for fear of totally losing control. The latent conflict of the cooperation-pattern helps to illustrate the indissociability of power/knowledge connections. As clients increase their knowledge of how to configure, they increase their pressure to take the control of the project.

Although I would suggest global-local negotiation, I found the cooperation-pattern to be one of the most promising of the three patterns under investigation, the political conflicts though make me wonder about its sustainability in the long run. Comparing cooperation and autonomy
patterns, in the autonomy-pattern, the global-local synergy is likely to be lower because the learning process was somewhat unidirectional and only one side of the negotiation is able to speak both languages. At the same time, the political positions are clear; there is less ambiguity regarding who is the legitimate to project leader. In the cooperation-pattern, the global-local synergy is likely to be higher because the learning process was bidirectional and both sides of the negotiation are able to challenge each other. At the same time, the political positions are conflicting; there is a break in the coherence between knowledge and power.

6. Discussion
The results previously described allow us to understand the structuring of a new configuration as a mediation process where knowledge and power dependencies are created and recreated over time by clients and consultants, the entire process being bordered by internal and external contextual constraints. Extending the work of several authors (Fleck, 1993; Gable, 1996; Williams, 1997, O’Bada, 2000; Walsham, 2000; Rolland and Monteiro, 2002), I propose that each new configuration being implemented requires global-local sharing. However, at the beginning of most projects, global and local are likely to be unconnected. In structurationist terms, there is a time-space distantiation between design/development and implementation/use of IT. Global principles are created and recreated through designers’/vendors’/consultants’ interpretive frames; local requirements are created and recreated through business-analysts’/end-users’ interpretive frames. When involved in a given project involving configurable IS, all these actors tend to understand the technology and the organization from their own interpretive frames and from the “filters” or “windows” through which they regard each other. Clients “read” generic package functionalities through interactions with consultants, and consultants “read” local requirements through interactions with clients. In view of this, any process of global-local negotiation is necessarily ambiguous and subject to multiple interpretations. The type of mediation process built up might help or hinder global-local sharing and the negotiation of thoughtful configurational choices.

♦ The dependency-pattern suggests that when dependence on external expertise is negotiated and accepted from the beginning of the process, global-local sharing is not likely to take place, configurational choices are likely to be somewhat “blind,” and project results are likely to especially please one group of stakeholders: consultants, who hold the power and knowledge over the project and consolidate their role as indispensable experts. Organizations moving toward the dependency-pattern are embarking on dependency roads that can bypass the benefits of configurational technologies because of the lack of timely global-local sharing. From my interaction with empirical material, I suggest that, to the extent that client-firm decision-makers started to be aware of the dependency their pattern provoked, they also began to redirect their projects toward the cooperation-pattern, i.e., they are willing to increase internal expertise in order to challenge consultant’s configurational decisions and to more purposively influence the project outcomes.

♦ The autonomy-pattern suggests that autonomy from external expertise depends on keeping power and knowledge together within the organization. In order to make configurational...
decisions that take into account local and global, clients need to learn how to configure the technology and become able to lead the project, to challenge external expertise and to influence purposively project outcomes. *When autonomy is seen as essential*, organizations take the risk of losing some global principles they did not have the time and opportunity to learn, but they benefit from the incremental knowledge they develop and might produce more valuable configurations than they would have in the dependency-pattern.

In turn, the cooperation-pattern gives us a taste of how difficult it is to manage the imbalance between knowledge and power. As they increase their knowledge and feel able to configure, clients try to take control of the project. The conflict over who holds power and knowledge is likely to break the nice synergy between local and global - the *mutual cooperation* - if not purposively addressed. Although the cooperation-pattern is still evolving and I cannot anticipate what will finally happen in terms of the consequences of political conflicts, one hypothesis is that these firms are going toward the autonomy-pattern, i.e., they will end up finding benefit from total governance over their IT projects and will change the role of their consultants that of partners to that of coaches or simply to a “pair-of-hands.”

The recognition of these patterns and their expected implications is a first step to improving configurable technology implementation. Contrary to previous authors who have presented cognitive and political accounts as distinct or complementary (Davidson, 2002; Orlikowski and Gash, 1994), the above three patterns of mediation suggest that knowledge and power are intrinsically connected. Power and knowledge are not identical but matching concepts: the exercise of power and the application/development of knowledge have an intimate relationship with each other (Alvesson and Skoldberg, 2000). These results corroborate Gable’s (1996) advice of the value of improving client understanding and independence. Ranson et al. (1980) see power as a “capacity to determine outcomes,” a capacity grounded in differential access to material and structural resources. Individuals and groups are more or less powerful whether or not they control and manipulate scarce resources. The knowledge required to implement configurable IS can be seen as a scarce and expensive resource. Herein lies an important aspect to be taken into account by the various stakeholders involved in the adoption of configurable IS: organizational members need to develop internal expertise to be able to influence the system outcomes, and this influence over the system outcomes is the route to finding benefit from its use. If top management does not guarantee their employees access to the expertise required to make configurational choices, the organization will become very dependent on external expertise and is likely to lose control of the project outcomes. Project results might not correspond to their needs and expectations. This was especially illustrated by the dependency-pattern: top management of HOSP1, HOSP2 and NAVAL initially decided not to invest in developing technological expertise internally, and they all regret such a decision when considering their project results.

6.1 Mediating Strategies that Help Increase Global and Local Sharing

Patterns of mediation are dynamic processes. As emphasized by Fincham (1999), it is important not to generalize all client-consultant relationships as a set of fixed dependencies; they may shift in one direction or another over time. One of the main contributions of my empirical investigation is the presentation of a number of mediating strategies that may help to shift power/knowledge dependencies and to increase global-local sharing. In previous sections, these mediating strategies were identified as long as each pattern was described. Now, they are
organized in Table 4 according to four categories: (a) strategies that help interpretive frames - global and local - converge; (b) strategies that help the visualization of what is being negotiated - global and local interpretive frames; (c) strategies that help sustain the sharing of global and local interpretive frames; and (d) strategies that help benefit from the accumulated knowledge progressively produced and reproduced within each segment by the network of actors involved, comprised of a number of consultants, clients and vendors.

Table 4 - Mediating Strategies that Increase Global-local Sharing

| ♦ Making global-local converge: |
| o Regarding clients - (1) formal and informal training before the beginning of the configurational activities; (2) organizationally-sanctioned time allocation to interact with the technology and learn about it. |
| o Regarding consultants - (1) intense local immersion; (2) interactions with clients before beginning the configuration; (3) techniques to develop sensitivity to local context and organizational culture. |

| ♦ visualization): |
| o Regarding clients and consultants - (1) prototyping as knowledge transfer tool. |
| o Regarding implementation team members (clients and consultants) and end-users - (1) prototyping and environment tests as communication and validation tools. |

| ♦ |
| o Regarding clients and consultants - (1) periodic brainstorming sessions or workshops among implementation team members (different from traditional “ateliers” led by consultants). |
| o Regarding implementation team and end-users - (1) periodic meetings, which are open to all employees (where they can really express their opinions and are “listened” to); (2) sustained and empowered network of key-users that directly interact with all other end-users (cascade effect). |

| ♦ |
| o Regarding clients - (1) participation in group of users; (2) informal networking. |
| o Regarding the consultants - (1) networking and knowledge sharing with other consultants; (2) participation at group of users. |

**Making global-local converge**

As intensively discussed, it is preferable that the process of mutual learning between client and consultant precede the making of important configurational decisions. The convergence of global and local must at least start to take place before the beginning of the configurational activities. In order to get more power and purposively influence the project’s outcomes, clients need to
The Implementation of Configurable Technology: Negotiations Between Global Principles and Local Contexts

Marlei Pozzebon

develop technical knowledge about the technology. As strongly suggested by HOSP2 and NAVAL interviewees, client interaction with the technology, as well as consultants must start from the beginning of configurational activities. The learning process involving clients may take several forms, especially formal and informal training (e.g., MOTO, ENERGY, AERO1, AERO2) and organizationally-sanctioned time allocation for their employees to interact with the technology and to learn about it (e.g., MOTO). My purpose is not to discuss each form of learning process here (which can be addressed by future research), but to stress their main goal: to create conditions for “empowered” interactions for clients with consultants from the beginning and as the project evolves.

Mediating strategies should also concern the consultants. Learning processes that address local context ideally imply intense immersion into local settings (e.g., AERO1, AERO2). When this is not possible, interactions with clients before the beginning of the configurational activities are suitable (e.g., ENERGY). In addition, several consulting firms exhibit a preoccupation with developing and increasing the sensitivity of their consultants to local context and organizational culture. Truly “listening” to clients’ requirements is recommended by all clients interviewed, but is not often demonstrated by external consultants. Future research on ERP projects might systematize strategies to improve these most wanted consulting abilities.

Visualizing global-local negotiation

Students of participatory practices had long emphasized the “communication problem” between users and analysts, who tend to talk past one another. Recognizing the barriers to achieving user-analyst mutual understanding, a great deal of literature has proposed techniques for representing user practices and needs as well as representing analyst propositions and solutions. In the context of configurable packages, prototyping represents a powerful mediating strategy that allows clients and consultants to represent configurational alternatives and to simulate their practical consequences. Prototyping is a way of communicating and visualizing global and local functionalities; it is technically feasible and affords practical interpretation (Asaro, 2000).

It is surprising that all literature about ERP implementation does not place importance on prototyping. Future research could explore more purposively the contribution of prototyping in successful ERP projects. According to my investigation, prototyping has been successfully applied in ERP projects with two purposes:

♦ as a knowledge transfer mechanism between consultants and clients, a learning tool that allows clients to “prototype” before starting the “true” configuration, a device for visualizing global-local negotiation (e.g., ENERGY);

♦ as a validation and communication tool between project team members (consultants and business analysts) and end-users during implementation and even after going-live, a device for visualizing organizational consequences of configurational choices (e.g., MOTO, AERO1, AERO2).

21 Asaro (2000) provides a good review of participatory practices, including the most prominent schools like European Participatory Design and Joint Application Design.
Sustaining global-local sharing

In addition to visualization techniques, workshops or brainstorming sessions are useful for sustaining global-local sharing, allowing the participants to accumulate local-global expertise and benefit from a certain synergy. In order to organize brainstorming sessions, consultants and business analysts from different modules and with different degrees of knowledge are invited to share their doubts, difficulties, discoveries, surprises, etc. Such a mediating strategy differs from traditional “ateliers,” which are led by consultants and work according to the “traditional” logic expert-information provider dialogue. AERO2’s weekly meetings provided a good illustration of this strategy.

In addition to improving the interaction between consultants and business analysts, it is important also to improve the interaction between project team members (consultants and business analysts) and the end-users. MOTO provides a helpful illustration with a network of key-users. Project managers selected employees from all departments affected by the ERP implementation, who were empowered to work as a bridge between project team members and end-users. These key-users were not only intensively trained, but also had daily time (organizationally sanctioned) allocated to exploring the package functionalities and to discussing them with their colleagues. Developing a network in form of “cascade,” MOTO created a communication line from project directors and business analysts to key-users and end-users that helped to align the concepts and representations of both workers and configurators “around a common discourse and set of practices through which the desired technological artifact can emerge, evolve and become useful” (Asaro, 2000, p. 284). In addition, such a network needs to be sustained after implementation, the period during which the benefit of a good initial configuration is likely to increase exponentially.

Finally, another strategy to increase the communication between project team members and end-users are periodic meetings where all important aspects that affect end-user work-life are discussed before implementation. Although this strategy seems evident, because of time constraints, it is not often put into place. An illustration of this mediating strategy is provided by HOSP1 and the lack of one is seen in ENERGY.

Benefiting from segment incremental learning

Participation in user group meetings is a powerful mediating strategy that allows clients to benefit from cumulative learning from their segment. These meetings offer an opportunity to meet people who are confronted and/or have already overcome similar and different barriers of configuration implementation. Participation in user groups is one of the best ways for clients to reach the cumulative expertise of their segment, to discuss best practices, to share their expectations, problems, discoveries, trials. It is also a place to form coalitions in order to put pressure on the vendor and force improvements to the technologies they bought (Pozzebon, 2001). Different from customized IS development, the social shaping of configurable IS occurs at the segment level (Clausen and Koch, 1999). Not all clients are aware of their power to promote technological changes through participation in user groups and coalitions with other firms. For instance, clients from ENERGY and AERO1 have participated intensively in the ASUG (Americas’ SAP Users’ Group), which was created in 1990 and involves more than 1,300 corporate and 30,000 individual members. ASUG’s mission is to continuously educate its
members, facilitate networking among colleagues and SAP representatives, and influence future SAP product releases and direction.

Although these institutionalized user groups constitute a valuable way of accessing and sharing global knowledge and form a collective power to resolve problems, they are ultimately driven and managed by the IT vendor. Several interviewees (e.g., AERO1, MOTO) have mentioned informal networking as very important to escape from a vendor’s exercise of power and to share information about failures, problems and weaknesses not often discussed when vendors are present.

Consultants may also benefit from participation in user groups. However, the best tool for allowing consultants to benefit from cumulative expertise in their segment is networking with other consultants. The network of relationships consultants build within their segment provides them with a rich source of additional expertise from a range of experiences and problems they have not yet had.

6.2 The Meaning of Configuration “Success”

The outcomes of any IS project are as dynamic as the process that produced them. From my perspective, the setting up of any “predictive” association between patterns of mediation and project success is not realistic and, indeed, did not find resonance with my underlying critical and interpretive premises. My efforts to recognize some patterns of mediation help to increase the understanding of how global and local are negotiated and how such a negotiation might influence project results. I would say that certain conditions regarding the mediation process are suitable and even necessary, but not sufficient to guarantee project success. Consequently, the theoretical explanations I have developed help to identify similarities and differences among situated implementations and to suggest ways of intervening without having the ambition of being predictive.

We can adopt different perspectives when discussing the results or outcomes of an IS project. DeLone and McLean’s quest for the dependent variable illustrates the preoccupation driving researchers who espouse a positivistic approach. For them, in order to make a contribution to practice, IS research must clearly define an objective outcome measure. Despite this aim, DeLone and McLean’s comprehensive review of different IS success measures indicates the existence of as many measures as there are studies. The authors conclude with a model of temporal and causal interdependencies that consolidate the several different measures into six major categories: system quality, information quality, use, user satisfaction, individual impact and organizational impact (DeLone and McLean, 1992). These six broad categories suggest that IS success is a multidimensional construct and that a good “measure” of IS success would probably be some weighted average among its components.

Five years later, Seddon (1997) extended DeLone and McLean’s model, positing that different individuals are likely to evaluate IS success in different ways. By repositioning the previous conceptualization, the author claims that IS success is a value judgment made by an individual, from the point of view of some stakeholder. Therefore, the effort of determining a global organizational measure of IS success is suggested as doubtful. Following in this vein, a two-dimensional matrix for classifying IS effectiveness measures in a particular context was proposed (Seddon et al., 1999) and includes a rich set of dimensions that must be taken into account when measuring IS success: (a) the stakeholder perspective, (b) the type of system being
evaluated, (c) the purpose of the evaluation, (d) the time frame employed, (e) the types of data being used (objective or perceptual), and (f) against which referent effectiveness is being judged. These are presented as relevant when IS effectiveness is to be measured. Recently, Markus and Tanis (2000) proposed a discussion of configuration (ERP) success that converges with several aspects of Seddon’s matrix.

I have drawn a portrait of configuration “success” by asking questions about configuration fit to clients’ requirements and user satisfaction, two classical “measures” of IS success (DeLone and McLean, 1992; Goodhue and Thompson, 1995; McGill et al., 2003). Because the interviews are semi-structured, a single question often triggered long and interesting discussions. I have asked myself what is different when evaluating “success” from a critical interpretive perspective. My first conclusion is that, from an interpretive account, the effort is not to define a dependent variable that can be objectively measured (which means that even perceptual measures will ultimately be quantified and manipulated statistically), but to attempt to understand the IS project outcome in a way that respects the different meanings people assign to them in particular contexts. These meanings are not quantified, but qualified. From a critical interpretive perspective, more than taking into account different interpretations and contexts, the researcher would attempt to connect these different interpretations to the relative power each individual holds in the organization. Different stakeholders are likely to have different appraisals of IS success because they hold different interests and expectations regarding the project outcomes. Briefly, each judgment of success or failure is not taken for granted but qualitatively considered and critically connected to its context.

The project results summarized in Table 5 suggest that the concept of configuration success depends on the perspective of whoever is being asked about it (top management, end-users\(^\text{22}\), project team members (business analysts and key-users), etc.). Not all clients produced identical judgments about project results. However, people from the same stakeholder group are likely to share more similar judgments than people from different stakeholder groups. The aggregation of individual perceptions in order to trace an overall perception by a stakeholder group or organizational level of analysis is a well-known practice, but it cannot be taken as an “objective measure” of such a higher level. For instance, the assessment that the dependency-pattern shows overall low satisfaction and that the autonomy-pattern shows overall high satisfaction is an example of aggregations that do not reveal internal divergences and conflicts, but reflect the dominant perception.

\(^{22}\) Although top management members are also ERP end-users, I am differentiating top management end-users from all other end-users, especially the personnel working at the operational level.
The Implementation of Configurable Technology: Negotiations Between Global Principles and Local Contexts
Marlei Pozzebon

Table 5 - Overall Project Results (from business analysts’ and consultants’ interviews)

<table>
<thead>
<tr>
<th>Overall results</th>
<th>Dependency-pattern</th>
<th>Autonomy-pattern</th>
<th>Cooperation-pattern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall poor fit</td>
<td>Overall low satisfaction</td>
<td>Overall good fit</td>
<td>Overall good fit</td>
</tr>
<tr>
<td>HOSP1</td>
<td>HOSP2</td>
<td>NAVAL</td>
<td>ENERGY</td>
</tr>
<tr>
<td>Top management satisfaction</td>
<td>Low to Medium</td>
<td>Low to Medium</td>
<td>Low to High</td>
</tr>
<tr>
<td>Business analysts and key-users satisfaction</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>All other end-users satisfaction</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
</tbody>
</table>

(*) I had not enough elements to estimate top management satisfaction at HOSP1, HOSP2 and NAVAL

(**) Regarding end-users’ satisfaction levels at AERO1, the results are heterogeneous from one department to another, going from low to medium and eventually high.

In addition, when people from one stakeholder group speak for people from another stakeholder group, they are doing so from their perspective, which can be different from those they are speaking for. In my case, in addition to their own judgment, business analysts and consultants answered questions about end-user and top-management perceptions. I did not directly interview top management and end-users. The assessment of their satisfaction level was inferred from the interviews, observations and documentary analysis.

Taking all these concerns into account, I outline the main conclusions drawn from Table 5:

The dependency-pattern exhibits the lowest levels of fit and satisfaction when compared to autonomy and cooperation patterns. As previously discussed, I relate the poor results at HOSP1, HOSP2 and NAVAL to the trajectory of global-local negotiation their pattern of mediation produced, characterized by non-sharing and blind configurational decisions. Although many other factors could contribute to this lack of success (for instance, the maturity level of their segment), I suggest the pattern of mediation as crucial. Regarding cross-case differences, HOSP1 exhibited slightly higher levels of satisfaction when compared to HOSP2 and NAVAL. My explanation of this variation is discussed later.

Autonomy and cooperation patterns exhibit high levels of fit and satisfaction. I relate the overall good results at ENERGY, MOTO, AERO1 and AERO2 to the trajectory of global-local

---

23 Two comments: first, although top management members are also ERP end-users, I am differentiating top management end-users from all other end-users, the firm’s personnel. Most of the time, business analysts sustained their perceptions of top management and end-user satisfaction levels, referring to periodical surveys the firms carry out in order to evaluate project results.
negotiation their patterns of mediation produced, characterized by partial and mutual sharing, and by incremental and reflective configurational decisions, respectively. However, a second look at autonomy and cooperation patterns results shows that, with the exception of MOTO, end-users reveal overall low satisfaction levels when compared to top management and business analysts. How do we explain these variations?

If the aim is to help improve the configurable implementation process, the understanding of these internal variations in terms of project success is as important as aggregated results. In order to make sense of them, I recall Markus and Tanis’ argument: the notion of configurational success is relative to the unique goals against which it is being interpreted. More than paying attention to “who is asked,” we need to identify “against what goals is project success being evaluated” (2000, p. 186).

The decision to implement an ERP is often mandatory and often corresponds to top management’s aspirations for better integration of different areas of the business, better control over the flow of resources and information and increased responsiveness to market trends and demands. Consequently, the success of ERP projects from top management’s perspectives will be judged regarding such an “old managerial dream” of unifying and centralizing all the IS required by the firm in one single system (Adam and O’Doherty, 2000). What do ERP projects mean to other end-users, such as, workers on the production line? It is doubtful to suggest that ERP projects help promote workers’ interests by making work more interesting or increasing their autonomy and flexibility. At least from my interviews, ERP experience seems to be painful for most end-users, at least during the initial years.

They [top management] believe a lot in SAP… because it does bring a lot… because it’s integrated, it’s fantastic. But people, on the bottom… people on the shop floor… for these people, for them it’s… awful. (Consultant, AERO1)

Yes, but on the other hand, they [top management] don’t work daily with the system. And often, what happens within corporations - I see it also clearly here -, is that end-users who are going into SAP to do their job, they have all the problems… they have all the error messages, warnings, etc… but they are not going to make a report above. They are going to call us, we are going to support them, we are going to solve their problem… so they are going to say “Hey, SAP… each time I want to do something it crashes!” , but quite the opposite, supervisors, managers, what they see is … “we have installed SAP, the job is running perfectly, so we are satisfied!” (Consultant, AERO2)

What might increase end-users’ satisfaction level and perception of fit? Why have HOSP1 and MOTO exhibited higher degrees of end-user satisfaction? I propose that there is a potential association between satisfaction with the project - in terms of level and scope - and participation – in terms of depth and breadth.

♦ First, my empirical investigation suggests that, for people who directly interacted with external consultancy in order to configure ERP - the business analysts and key-users - their level of satisfaction and their appreciation of system fit were proportional to their empowerment, i.e., client participation depth.

The more business analysts are empowered - in terms of their ability to configure the package (knowledge) and their direct responsibility regarding the configuration process, and to influence the configuration results (power) - the higher their level of satisfaction is likely to be. Because
emergent power represents the ability to influence project outcomes, the highest levels of satisfaction were held by business analysts from the autonomy-pattern, which holds the greatest levels of participation depth. Business analysts from the cooperation-pattern were also relatively empowered and showed high levels of satisfaction. However, their aspiration for more autonomy in configuring generated frustration and they struggled to increase their power in proportion of their growing technical expertise. Finally, lower levels of satisfaction were demonstrated by business analysts from the dependency-pattern, where participation depth was very limited.

♦ Second, regarding the satisfaction levels of the rest of end-users, the extent of satisfaction can be linked to the breadth of client participation. The larger the number of end-users involved with the project, the higher the scope of satisfaction we can seek to attain.

It is clear that the direct participation of end-users becomes more difficult as the size of the organization increases. “How can we directly involve 20,000 employees?”, ENERGY’s project director wondered. The answer I have found from interviewees’ perceptions and from critical literature is that even when they are not directly occupied with configurational activities, end-users must be listened to and involved in configurational decisions that affect their daily practices. I am not talking about some “traditional” visions of change management, where people are prepared for change with training and communication plans but are not necessarily “listened” to and thereby respected in their expectations and needs. The adoption of IT solutions like ERP requires a compromise between local flexibility and organizational integration. Although one may argue that the benefit of organizational integration is being perceived and appreciated by many employees from lower hierarchical levels, what seems to be the more apparent consequence for their daily jobs is less autonomy and less flexibility. Indeed, if all employees were listened to, perhaps solutions such as ERP and other similar IT solutions (which are concerned with issues like global integration or total control despite local flexibility and end-users’ well-being) would never be adopted. This makes the effort of increasing “end-user satisfaction” an ambiguous enterprise.

We noticed that in the beginning, there is a certain resignation, but with time, after 6 months, eventually… it’s ok… they [users] get used to a new way of working, and it’s goodbye! So… when they know there is no discussion possible, that’s it. (Consultant, HOSP2)

Figure 10 illustrates the seven projects according to their participation depth and breadth and the direction that some of them seem to be taking. Comparing Figure 10 and Table 5, I reinforce the idea that, although participation is not a guarantee of satisfaction in implementing and using configurable IS, it is a condition for it. The level of satisfaction is nourished with client participation depth - the more empowered the implementers, the more satisfied they could be with the implementation outcomes - whereas the scope of satisfaction is extended with client participation breadth - the more comprehensive the participative context, the greater the number of users that could be satisfied with IS use. For instance, regarding Figure 10, I characterize project satisfaction at HOSP2 and NAVAL as having low level and low scope; low satisfaction level because client participation depth was very limited (pseudo), and low satisfaction scope because client participation breadth was also very narrow (selective). ENERGY, AERO1 and AERO2, in turn, show high satisfaction level but in narrow scope, i.e., their participation depth was great (empowered) but the participation breadth was relatively low (selective). HOSP1 shows low to medium satisfaction levels (pseudo), and the scope (participative) was higher than...
My final comment is that perceptions of configuration success are essentially dynamic. They may change over time and depend on what point of time is being assessed: when going-live, three months later, two years later, etc. Because the timeframe I used varies from three months to two years after going-live, I could observe not only different appreciations of success according to different stakeholder groups but also an evolution of success judgments over time regarding the same stakeholder group. For instance, most end-users seem to “evolve” from resistance, to resignation, to some degree of satisfaction (or at least they do not wish to return to their “old legacy systems”). This observation reinforces my attempt to understand the processual mechanisms of mediation that can increase the possibilities of purposively intervening in the projects and, ultimately, influencing their outcomes.

Initially the level of dissatisfaction was relatively… I’d say high. So er… then with time maybe the level of dissatisfaction diminished because yes, we got rid of some irritants. But, there is still a certain level of dissatisfaction. I think people like … “well, we need to live with … We have complained for a long time; we have provoked some changes, now, we live with what we have…” (Business analyst, AERO1)

6.3 Implications for Research

This empirical investigation invites researchers and practitioners of configurable technology implementation to revisit and extend the existing knowledge on the matter, especially the literature on ERP implementation. At the beginning of this paper, I organized ERP literature in two groups: variance-oriented and process-oriented. Revisiting the former first, variance-oriented studies have emphasized the importance of several factors (predictors) of successful ERP implementation, especially “top management commitment and support” and “best people working full-time on the project.” My results do not refute these factors as important, but reveal a critical view not frequently found in mainstream ERP literature.
Regarding top management commitment and support, more than supporting the project team from the beginning to the post-implementation phase, decisions top managers made about “who will effectively control the project” and “in what kind of knowledge transfer strategy they will invest” have strong influences over the configurational process and project results. The initial arrangements of power/knowledge between consultants and clients defined by top management are likely to allow different trajectories in terms of global-local sharing (e.g., non-sharing, partial-sharing or mutual-sharing). Although client-consultant relationships are not fixed but open to change, the extent to which each type of relationship lasts has profound influences on the configuration being implemented. For this reason, it is important to emphasize that those initial arrangements can be changed or adjusted over time in order to increase organizational chances of finding benefit from configurations. A clear illustration of such “strategic adjustments” is offered by NAVAL. In our last meeting, NAVAL’s project director affirmed that, after realizing the situation of high dependency that total outsourcing had produced in their firm, they (top management) decided to rethink their strategy and look for more autonomy.

Similar concerns could be noted regarding “strong leadership,” which is certainly an important ingredient of any project management. However, strong leadership is not enough if not accompanied by empowerment and proactive involvement of other organizational actors. For example, ENERGY’s project manager was considered an exemplary leader, an expert in project management. However, the lack of end-user participation and involvement helped produce mixed project results in terms of satisfaction.

Another implication of my results to theory (but also to practice) concerns the nature of client participation in configurational projects. The analysis of participation depth and breadth leads me to rethink one of the critical factors of success frequently proposed by ERP literature: “the best people working full-time in the project” (Appleton, 1997; Bingi et al., 1999; Markus et al., 2000a; Markus and Tanis, 2000; Parr and Shanks, 1999, 2000). First, full-time participation does not mean empowered participation, and, consequently, cannot guarantee successful projects. For instance, people from HOSP2 were carefully selected and were able to work full-time on the project. However, as exhaustively discussed, their power to influence project outcomes was very low. The meaning of empowerment does not rely on participation alone, because the capacity for participation does not empower users unless they also have the ability to act accordingly (Asaro, 2000). Second, if “only” best people are listened to regarding the configurational decisions, perhaps “only” best people will influence the project outcomes and, consequently, they will be the “only” ones likely to develop a positive appreciation (satisfaction) of project results. What happens with the “rest” of end-users? The gap between business analysts’ satisfaction and end-users’ satisfaction in all projects (excepting MOTO and HOSP1) suggests that the satisfaction of top management and business analysts - people who were directly involved with decisional and configurational processes, the “best people” - does not guarantee end-users’ satisfaction. A range of policies should be put in place for empowering end-users in terms of knowledge of the tools and techniques needed to implement and use packages.

Finally, my findings reinforce the value of looking for “factors” that are particular to configurable technology implementation, like those related to configurational and mediation process management. Taking the work of Sawn et al. (2000) as an example, the authors emphasize the critical role of consultants and vendors as “fashion setters” who are skilled at developing a rhetoric that encourages the spread of particular approaches to management, so that
firms may be led to adopt technologies that they do not fully understand and which may not be appropriate for their particular needs. Alternatives are hidden. Technology and organizational complexity are downplayed and the tacit, locally situated knowledge needed to implement the technology is downplayed. In this vein, I propose the type of client-consultant relationship as an important “factor” to be tested by variance-oriented researchers.

Departing from the variance-oriented studies search for “factors research models,” process-oriented studies seek to explain ERP implementation in terms of interactions between organizational members and technologies, trying to outline driving mechanisms, similarities and differences among processes. My findings provide arguments for combining two of these perspectives in particular, those that see ERP implementation as a social and political process, and those that see ERP implementation as a cognitive, knowledge transfer or learning process. My analysis suggests that cognitive and political accounts cannot be separated; they are inextricably intertwined. Questions about mechanisms of sharing stocks of knowledge, about knowledge transfer mechanisms or about collective interpretations of technology require a combination of cognitive and political lenses. The sharing of interpretive frames among different groups of individuals depends not only on cognitive conditions but also on political interests and management decisions. Knowledge transfer may not be effective or simply may not occur, depending on power conflicts and imbalance. How shared understandings are formed, reinforced, institutionalized and changed over time depends on knowledge/power arrangements. The focus on configurational activities and the investigation of global and local negotiation gave me an opportunity to increase our understanding of how certain frames (global, local, a chemistry of both) become dominant and embedded in a final configuration and what their consequences are.

A final implication for research (and practice) is to rethink the notions of “global principles” and “universal solutions”: do they really exist? Behind ideas like “best practices” are beliefs that companies within the same industry end up sharing similar practices and those companies performing better serve as a benchmark for other companies. Vendors compile all this expertise and incorporate it within their offerings. “Best practices” become widely available as cheap standardized commodities (Swan et al., 1997). However, the multiple choices provided by configurable IS represent a range of “business models” that always derive from some dominant and historically situated worldviews within each segment (Heeks, 2002). Keeping ERP packages as a typical example, they represent a strong vision of total control over material flows within manufacturing, the origins of which go back to the 1960s’ US manufacturing contexts. Later, they had a heavy impact on European companies during the 1980s (Clausen and Koch, 1999). Although additional requirements and contexts were incorporated during the 1990s, ERP solutions are neither equally mature nor widely applicable: each ERP solution remains suitable for a certain range of organizations. Although parameterizable, ERP packages are indeed appropriate to a limited range of contexts and visions of organizing. Despite their limited scope, many configurable IS are sold as widely flexible and generalizable. ERP vendors push them as commodities, claiming their product can be implemented anywhere using prescribed methodologies, and downplaying the limits, complexity and risk (Swan et al., 2000). The result: a number of ERP clients struggling with high costs and huge barriers to achieve “best practices” without success. My investigation goes along with those who do not agree with claims such as “best practices are now quickly built into software or otherwise replicated” (Carr, 2003, p.10). The situation is quite the opposite; much research is needed to improve our knowledge of the nature of the process where global and local are negotiated and shape each other.
6.4 Implications for Practice

This research has many implications for people managing and participating in configurable technology implementation. During configurational activities, clients and consultants negotiate their visions of how the technology will operate. The resolution of their competing frames depends on dependencies of power and knowledge, and such a resolution strongly influences the project results. This is illustrated by all three patterns and is especially evident in the cooperation-pattern, which shows the best chemistry regarding local and global frames but also the fragility of such a synergy when power struggles emerge. The cooperation-pattern illustrates how consultants legitimate the exercise of their power by accumulating an expertise, which is called into question as clients also increase their expertise in technical knowledge.

Faithful to the argument that the benefit from configurable IS depends on local-global chemistry, my analysis suggests that initial organizational choices regarding the type of mediation allow a certain balance of knowledge/power, i.e., certain degrees of dependency or autonomy of clients vis-à-vis external consultancy. Such a degree of autonomy or dependency deeply affects organizational practices. When talking about configurable IT, we are talking about IT solutions that sustain or change existing practices, resource allocation and information flow. The three patterns indicate how organizational decisions made regarding the type of mediation (knowledge/power balance) have influenced the type of trajectory (global-local sharing) that took place during the configurational activities and how these different trajectories influence the success of their project results. I found some “success” only in autonomy and cooperation patterns, although in the cooperation-pattern the continuity of such success is “at risk.”

These results should be taken into account by decision-makers who are inclined to totally outsource projects involving configurable technologies. Several analysts have suggested IT outsourcing as an undeniable trend (Hirschheim and Lacity, 2000), and this has been a strong characteristic of ERP implementation (Gable, 2002). The underlying logic of outsourcing is to use the best internal capabilities to direct IT initiatives, and to support those functions with an external team that can deliver the cost savings, technology expertise and process efficiencies (Schmitz, 2002). Not surprisingly, such appealing arguments have attracted many organizations worldwide. Although in theory IT outsourcing corresponds to a “strategic partnership” that we would expect to produce successful IT projects, what I found in practice was a trajectory where the blending of internal, local capabilities with external, global expertise did not occur.

Therefore, it is worth noting that “strategic” positions held by consultants within firms are, after all, supported by the firm’s top management. Among many reasons that explain why top management rely on consultancy (Sturdy, 1997), in the case of ERP projects, the frequent argument is that end-users or IT departments lack the skills, resources or required knowledge to configure and obtain benefit from “best practices.” Hiring readily available external expertise is seen as less expensive, less time-consuming and more effective than developing such expertise internally. Consultants know about the capabilities of the ERP package but often ignore particular needs and local practices. The argument used to legitimate consultants’ intervention is that over time and with accumulated experience, they have developed an understanding of local industry practice (Fleck, 1993). Yet the gap between generic technology knowledge and local practical knowledge is at the heart of configuration IS implementation because, even if consultants have developed expertise in local industry practices, it is only in the course of consultants’ and clients’ interactions that global-local sharing can emerge. Therefore, projects
that have shown better results show that a number of mediating strategies can be put in place to help increase global-local sharing.

Another implication of this research involves the nature of the configurable IS implementation process. Figure 11 illustrates why the implementation of configurable IS needs to take into account a broader network of players than traditional IS development: global-local sharing is something negotiated not only at the organizational level, but at the segment level as well. The more the actors involved in the configuration process: (a) plunge into the local context (because local practices are created and recreated by all end-users), and (b) network with global expertise (because cumulative expertise is created and recreated by a network of consultants, vendors, developers, groups and users, etc.), the greater their chances of producing thoughtful configurations. For instance, participation in user groups is one of the best ways for clients to access the cumulative expertise of their segment, to discuss best practices, to share their expectations, doubts, discoveries, trials.

Figure 11 - The Nature of Configurable IS Implementation Context

![Diagram of the nature of configurable IS implementation context]

Part of the barriers to achieving thoughtful configurations can be explained by the very nature of configurable IS. It provides hundreds or thousands of discrete features and data items that may or may not be used, and when used, can behave in multiple ways. Even experienced consultants cannot anticipate, from the seemingly infinite number of possible combinations, how any given configuration will interact within a particular organizational context (Fichman and Moses, 1999). In order to increase their ability to benefit from previous experience and to propose good alternatives for a given organization, consultants need to build a careful appreciation of local context. But even when proposing a configuration based on strong local-global knowledge, the consequences cannot be fully anticipated; unexpected outcomes from IS development are always possible, and this risk is bigger with configurable IS (Yuthas and Dillard, 1999). Such complexity is, of course, often downplayed by configurable IT vendors and should be taken into account by firms before embarking on such risky projects. One implication of this research is to
keep top management’s attention on the risky nature of configurable technology implementation, even when local context is taken into account.

In Conclusion, one avenue to deal with the uncertainty and ambiguity inherent in configurable IS implementation is to evaluate and monitor consequences of blending global principles and local contexts as a joint effort, *clients and consultants together*. This joint effort can take the form of a partnership with different degrees of cooperation and autonomy, but should avoid dependence on external consultancy. All the mediating strategies previously described - *intensive training, prototyping, brainstorming sessions, group of users, networking* - address this joint effort. People working in modern organizations are likely to experience configurable technologies. Knowing more about how mediation process works, people can deliberately sanction mediating strategies in a way that improves the selection, configuration and ongoing use of these technologies. They can explicitly and deliberately manage the process of intervention involving consultants, vendors, trainers, business analysts, key-users and end-users. The early articulation, reflection, discussion, negotiation and revision of mediating strategies may reduce the likelihood of unintended consequences of the implementation of a new configuration.

In addition to formal and sanctioned mediating strategies, people should be aware of informal and non-sanctioned forms of mediation such as rhetoric and discourses that dominate public opinion and characterize media communications. An awareness of their implications leads to more critical thinking and purposive decisions. Consultancy firms can also improve their interventions with an awareness of the nature of the influence they exert over client interpretations and actions. Together with vendors, they can *integrate mediating strategies within their agenda*. Finally, configurable tools designers and vendors may improve the “transferability” of the IT solutions by providing tools for mediators that support their intervention (for instance, facilitating prototyping).

### 6.5 Future Research

Understanding any organizational phenomena requires an understanding of their context. The mediation process that arises in a firm cannot be seen in a vacuum, there are *external constraints* that influence the structuring of each new configuration. Because my focus is on configurable IS, I cannot neglect the influence that one category of external constraints – *the segment level* – has exercised over the seven projects I have investigated. Let me take the example of the SAP-segment.

The concept of segment is really close to the SAP’s own concept of an ecosystem, a dynamic set of customers, vendors, and partners. In addition, within the segment, we have a portfolio of solutions that meet the needs of different industries. These solutions demonstrate, in theory, the industry insights that SAP has gathered over 30 years of developing relationships with clients in those business sectors. The development of SAP packages evolved, like any other ERP technology, as an incremental process, based on many cyclic interactions between SAP, consultants and clients, many trials and mistakes, different learning experiences, different changes forced by organizational pressures, an incremental process that progressively achieved a certain degree of maturity (Clausen and Koch, 1999).

However, not all segments are equally mature, and not all industry solutions within the same segment have equally mature tools, tested business models and experienced consultants. The moment at which a firm enters a given segment has a strong impact on its project deployment
and results. One approach to managing this risk is to carefully evaluate the segment maturity regarding each specific industry before entering the segment. For instance, regarding the three projects following the dependency-pattern, their project directors affirm that they realized the lack of maturity of the ERP solutions they bought after entering the segment, i.e., during the implementation. An indication of segment maturity is the number of previous implementations. When the segment lacks maturity, the risk of implementation failure increases. Consequently, it is important to have in place empowered employees with knowledge of the existing configuration possibilities, who can proactively interact with the available consultants in the market and even pressure the vendor to make the technology evolve.

To sum up, I found an important link between the mediating strategy and the degree of maturity of a configurable solution within a segment: if client-firms do not empower their employees to appropriate the technology, they become much more vulnerable to segments’ immaturity. The empowerment of clients helps them to be less vulnerable to segment immaturity and fluctuations. They still will be affected, but with less intensity. All seven retrospective cases offer interesting illustrations of the connection between mediation pattern and segment influences. MOTO illustrates a case where segment immaturity is overcome thanks to the development of internal expertise. Future research might deepen our understanding of how segment characteristics in terms of maturity or stability influence the success of configurable IS projects. It can also investigate the influence of empowerment, networking and training in overcoming such external constraints.

In addition, future research might improve our knowledge of mediating strategies. This research suggests a collection of mediating strategies, which can be systematized and improved. For instance, it is surprising that literature on ERP implementation does not place importance on prototyping, brainstorming sessions and user groups. Future research could explore more purposively the contribution of prototyping and other mediating strategies to successful ERP projects.

7. Conclusions

The purpose of this research was to increase understanding of configurable IS implementation. The empirical investigation of seven retrospective case studies helped me build up certain theoretical explanations about the technology-configuring mediation process. As previously mentioned, such theoretical explanations were not formulated a priori, but grew out of continued data collection and analysis. I began with general premises suggested by structuration theory. As the investigation evolved, an iterative process between theory and empirical material led to the refinement of the structurationist framework and the integration of political and cognitive views of IT implementation. At the same time, critical discourse analytical techniques emerged as suitable for the type of investigation taking shape. Periods of data gathering, data analysis, reflection, re-reading and new readings were followed by new reflections, in an iterative process.

24 For instance, SAP offers different “solutions” for different industries and countries, but each specialized “SAP solution” did not evolve at the same pace. Most of them were very immature several years ago, when most companies launched ERP projects. Others were developed more recently and are just starting to be tested. Of course, SAP vendors push all solutions as equally “mature”, but empirical evidence does not confirm such a claim.
The Implementation of Configurable Technology: Negotiations Between Global Principles and Local Contexts
Marlei Pozzebon

that ended with the portrayal of more specific theoretical explanations, the “generalizability” of which is likely to be further tested. Walsham (1995) proposes four types of generalization from interpretive case studies: the development of concepts, the generation of theory, the drawing of specific implications and the contributions of rich insights. I think my findings fit especially with the two last types of generalization, but also represent initial steps towards theory generation regarding configurable technology implementation.

The three patterns of mediation identified and analyzed shed some light on the nature of global-local negotiation which consultants and clients mutually construct during the implementation of configurable IS and on its influence on projects results. Configurability is an important trend in IS, drawing its popularity from the hope of achieving two goals; to benefit from increased economies of scale, and to access the cumulative expertise about organizational practices “embedded” in these software packages. With configurable technology, we face a kind of paradox; in order to benefit from economy of scale and cumulative expertise, firms are invited to compromise with standardized but parametrizable solutions. However, the complexity and limits of configuring these solutions have been downplayed. The organizational challenge of matching local requirements with generic functionalities and achieving a meaningful or effective configuration requires time, effort, investment and purposive strategies (intensive training, prototyping, brainstorming, etc.), which can contradict or neutralize the first goal of adopting configurable solutions, decreasing costs.

The second goal is also at risk: to benefit from cumulative expertise. The likelihood of configurable IS implementation being successful increases when global principles take the local context carefully into account. Overconfidence in global principles and neglect of local context, and vice-versa, are likely to result in poor solutions. This research shows the importance of the local context when implementing a configurable technology, and exposes the ambiguous nature of the process where global and local are negotiated. Proposing a political and cognitive perspective that articulates mediation patterns, knowledge/power connections, and local-global negotiation helps to increase our understanding of how such implementations work and can be improved.

My final concern regards the research design. It is clear that my collection of interviews is limited in a number of ways: not all voices appear in each text, and those that are present are not necessarily expressed in equal terms; I cannot assume that my understanding of actors’ discursive repertoires is exhaustive; interviewees may provide an unintentionally distorted account or a purposively misleading picture of their experience; people can be unaware of some issues and “omit” them, etc. Some of these limitations are inherent in any data-gathering method. Although I assume these “limitations,” the strength of critical discourse analytical techniques is precisely to keep the researcher’s attention on taken for granted, equivocal, omitted, and fundamentally interpretive accounts, by analyzing their inter-relations and their insertion into broader contexts. What makes the approach and method of CDA powerful is its attempt to explain the relationship between different discursive practices and social processes, helping to understand how dominant interpretive frames and patterns of power-knowledge relations influence or shape each other and how they relate to broader and historical social

25 An interesting discussion about this issue is provided by Nandhakumar and Jones (1997).
phenomena. This move, if pursued, bridges micro and macro. To discover how discourses cumulatively contribute to the reproduction or transformation of macro structures is at the heart of the explanatory effort of many CDA investigations (Fairclough, 1995). This is common to the structurationist framework, there can be no theoretical defense for supposing that the personal day-to-day encounters (micro encounters include verbal interactions and discursive practices) could be “conceptually separated from the long-term institutional development of society” (Giddens, 1981, p. 173).
References


The Implementation of Configurable Technology:
Negotiations Between Global Principles and Local Contexts

Marlei Pozzebon


The Implementation of Configurable Technology:  
Negotiations Between Global Principles and Local Contexts  
Marlei Pozzebon


Trigg, R.H. and Bodker, S. (1994) From Implementation to Design: Tailoring and the Emergence of Systematization In CSCW. CSCW 94, Chapel Hill, Usa, 45-54.


