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Implementation of Configurable Information Systems: Negotiations between Global Principles and Local Contexts

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THE IMPLEMENTATION OF CONFIGURABLE INFORMATION SYSTEMS: NEGOTIATIONS BETWEEN GLOBAL PRINCIPLES AND LOCAL CONTEXTS

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Abstract

Among the new forms of technology that overwhelm information systems research and practice, configurable information systems refers 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 enterprise resources planning (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. From a critical-interpretive view, this paper proposes a new way of understanding the implementation of configurable solutions. Using seven retrospective case studies, we 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 (1) to recognize different patterns of mediation, i.e., different types of client-consultant relationships, and the different types of trajectories in terms of global-local negotiation these patterns are likely to produce; (2) to address how initial organizational decisions in terms of power and knowledge distribution between clients and consultants influence the negotiation between global principles and local contexts; and (3) to identify mediating strategies that may help organizations improve global-local negotiations and, hopefully, improve the benefit of embarking on such costly and risky projects.

Keywords: Configurable technology; IS implementation, mediation patterns, power–knowledge balance, global–local negotiation, user–consultant relationship

Introduction

As 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 (1999, p. 40) contend, because it offers users a profusion of functionality but demands that they choose well from this multiplicity to ensure that the resulting configuration is not only internally consistent but also consistent with organization processes and policies, whether existing or new. The present research focuses on *configurable* information systems, which refers 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 (Fleck 1994). They are particularly well illustrated by advanced packaged software like enterprise resource planning packages: a range of software modules, data structures, and parameters must be selected, assembled, and tailored to meet local requirements (Markus and Tanis 2000).

Configurability is an important trend in IS, drawing its popularity from the hope of benefit from increased economies of scale and cumulative expertise about organizational practices embedded into these software packages. 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 adopt configurable 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 information systems are supposed to engender.

Universal or global principles refers to generalizable features that might be divorced from particular settings and applied more widely. Project teams should acquire knowledge and skills to shape an effective configuration through manipulation of parameters, switches, and multiple choices into consonance with local requirements, 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. Fleck (1994) summarizes the situation with the fundamental implementation equation: *successful implementation = 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. While some clients may have a good understanding of global knowledge and some consultants may be familiar with some local knowledge, their focus and interest and the knowledge they can contribute to the process are likely to differ. Clients are most preoccupied with making sure that the system corresponds to specific needs and particularities of a given organization or unit (*local*) and consultants bring a more generic perspective that draws on the experience they have gained over the years in different organizations (*global*). For this reason, each new configuration being built requires an entire process of negotiation, necessarily mediated in several ways. Such mediation can take various forms: vendor's advertising and demonstrations, consultants' interventions, project meetings. The *mediators* provide images, descriptions, demonstrations, policies, and templates that somehow "speak" for the technology and directly influence users' interpretations and decisions. Neither the organization's requirements nor the software capabilities can be taken for granted because both are socially constructed and mediated.

In brief, we suggest the concept of mediation as central to understanding configurable IS implementation. We support the assertion that the likelihood of successful configurable IS increases when the implementation of global principles takes the local context carefully into account (O'Bada 2002). Overconfidence in global principles and neglect of the local context—and vice versa—are likely to result in poor solutions. Although recent research shows the importance of the local context and of adapting IT-based practices when implementing IS (Avgerou and Walsham 2000), the nature of the process where global and local are negotiated is still poorly understood (Rolland and Monteiro 2002) and can be seen as a fruitful cue for research on configurable tools. Few studies, if any, have focused on understanding the nature of the mediation constructed by consultants and clients during the implementation phase and how the type of relationship established influences the negotiation between local contexts and requirements and the global principles supposedly embedded in the artifact design. 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? Our intent is to help improve our knowledge of the global-local negotiation that characterizes the implementation of configurable IS by recognizing and understanding their processual mechanisms, i.e., their patterns of mediation.

Configurable Information Systems and Mediation Processes

The literature on ERP is growing rapidly. The work outlined here joins that of researchers who focus on the configurable facet of ERP packages (Clausen and Koch 1999; Swan et al. 2000). 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. Their pervasiveness in large firms is unprecedented, and the opportunities and risks of ERP projects are two inseparable sides of the same phenomenon: both great benefits and huge failures have been reported (Markus and Tanis 2000). In addition to the global-local translation which all configurable technologies require, ERP projects also involve standardization across a range of technological platforms, departments, and even organizations (Williams 1997). They involve not only internal players from different departments and hierarchical levels, but also a network of external players such as software vendors, external contractors or systems integrators, independent consultants, vendors of ERP product extensions, etc. (Markus and Tanis 2000).

By suggesting the concept of mediation as central, we define the term *technology-configuring mediation* to refer to the process characterized by a socially constructed relationship between clients and consultants by which visions of how the technology

should be configured are negotiated. Technology-configuring mediation comprises a set of activities (meetings, training, conversations, product demonstrations, etc.) or vehicles (documents, manuals, consultancy reports, training material, advertising, etc.) that influence the way people implement configurable IS. These activities and vehicles unfold in a scenario of intense political negotiation. Valuable insights are provided by previous research on technology mediation, which has identified different types of intervenors, such as champions, chauffeurs, expert users, system staff, administrators, tailors, facilitators, intermediaries, surrogates, or just mediators (Orlikowski et al. 1995). Yet most of these interventions are not directly related to technology-configuring mediation (i.e., the *implementation* phase). For example, champions, chauffeurs, expert users, and tailors intervene once technology is in place *and in use*. Intermediaries and surrogates help make the link between the design and the future user, not focusing on implementation. As previously discussed, the interpretations clients develop around configurable technologies are necessarily influenced by the mediation that *consultants* exercise, at least in the initial phases of the project. Consequently, when the focus is on the interventions that mediate configurable IS implementation, the role of consultants and their relationship with users become central.

Compared to the vast literature available on general management consultancy, few studies investigate the role of management consultants specializing in IT within organizations (Bloomfield and Danieli 1995; Gable 1996). Three main issues that emphasize the socially constructed nature of the client-consultant relationship have been explored in this research. First, there are different types of relationships between clients and consultants, 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 varying degrees of cooperation. Fincham (1999) emphasizes the importance of not generalizing all client-consultant relationships as a set of fixed dependencies. Second, socio-political and technical skills cannot be separated out; they are inextricably intertwined. According to Bloomfield and Danieli (1995), existing literature on IS tends to separate technical and social aspects or technical and values issues. Such distinctions hide the underlying mechanisms and exercises of power inherent to the introduction of any new technology. People working in IT projects, especially IT consultants, tend to identify both organizational problems and IT solutions *within the scope* of their expertise, skills, knowledge, and methodologies (Bloomfield and Best 1992). Third, consultants play a central role in the *global-local negotiation* that is a fundamental aspect of configurable IS implementation. The global-local debate has often been situated within the problematic of globalization (Held et al. 1999). Yet 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 can occur among many different countries, industries, or contexts. In the IT area, this problematic is typically illustrated by configurable packages like ERP. Software suppliers invest millions and millions of dollars in research and development in order to design and continuously improve these technological artifacts, learning from successive implementations. When configuring these packages, people have to translate those global principles and multiple choices into local requirements.

Research Approach and Methods

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. Interpretive studies generally attempt to understand phenomena through the meanings that people assign to them (Myers 2002). In addition to taking an interpretive view, this study seeks to develop a critical appreciation of the way in which IT is implicated in organizational activity. Being critical about interpreting IT means that, in addition to understanding the context and process of IS through 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). The full development of all potential relationships between interpretivism and critical theory has been suggested as one of the most fruitful avenues for future research (Klein 1999). 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 to a moderate degree, the different contextual elements (Glesne 1999). Retrospective case studies based on retrospective interviews and documentary analyses have been used by several researchers and have proven to be valuable (e.g., Sutton and Hargadon 1996). This study was based on 7 retrospective case studies, was preceded by a pilot study, spanned 10 months, and entailed the conducting of 79 interviews.

Cases Selection

In order to select the retrospective case studies, a pilot study was previously carried out over 4 months. The pilot study was built from 24 interviews (with senior practitioners working on different ERP projects; the interviewees are from client-organizations, software vendors, and consulting agencies) and allowed us to identify different patterns of client-consultant relationships, ranging

Table 1. Overview of Retrospective Case Studies

Project, Country, Industry	Project's Characteristics	Client–Consultant Relationship	Number of Interviews
HOSP1, Canada, Hospital Health Services	Project duration = 8 months (2001–2002); Big bang; low customization; low training (client)	Client is consultant-dependent; project led by consultant	6 business analysts 1 project director 1 consultant
HOSP2, Canada, Hospital Health Services	Project duration = 6 months (1999–2000); Big bang; low customization; low training (client)	Client is consultant-dependent; project led by consultant	4 business analysts 1 project director 1 consultant
NAVAL, Portugal, Naval Repair	Project duration = 26 months (1999–2001); Big bang; high customization; low training (client)	Client is consultant-dependent; project led by consultant	4 business analysts 1 project director 4 consultants
AERO1, Canada, Aerospace Manufacturing	Project duration = 36 months (1996–2000); Big bang; low to medium customization; intense training (client)	Mutual client-consultant dependency; project led by consultant and client	4 business analysts 3 consultants
AERO2, Canada, Aerospace Repair	Project duration = 18 months (1998–2000); phased implementation; low to medium customization; intense training (client)	Mutual client-consultant dependency; project led by consultant and client	4 business analysts 4 consultants
ENERGY, Canada, Energy Services	Project duration = 24 months (1996–1998; Upgrade = 2000); Big bang; vanilla; intense training (client)	Client is autonomous; project led by client	7 business analysts 1 project director 2 consultants
MOTO, Brazil, Chain Saw Manufacturing	Project duration = 18 months (1996–2001); phased implementation; vanilla; intense training (client)	Client is autonomous; project led by client	5 business analysts 1 project director 1 consultant

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 different patterns of mediation guided the selection of seven ERP projects, which were then retrospectively investigated.

In order to increase the possibility of cross-case analysis, several additional criteria guided the selection of cases: (1) all projects deal with the same type of software package: ERP/SAP; (2) all projects are developed at large companies with at least 800 employees; (3) all projects' last "go live" or upgrade was not earlier than 2000; (4) all projects have a huge scope and complexity, with at least eight SAP modules implemented; (5) all projects, to different degrees, made use of third-party consultancy and vendor consultancy. Table 1 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.

Empirical Material Collection

Interviews constitute the most important way we collected empirical material. We carefully built the interviews following useful guidelines, such as those provided by Glesne (1999), Mason (1997), and Patton (1990). The guidelines, used for all the interviews, are available upon request. All interviews were taped and transcribed verbatim. N-Vivo is the software used for the qualitative data analysis. The semi-structured interviews involved both consultants and clients. With respect to clients, we invited people that had participated directly in the decisions regarding the configuration of the ERP and that had directly interacted with external consultants. We tried to interview one business analyst from each of the most important modules implemented in each project. In five cases, we also had the opportunity to interview the project director.

Empirical Material Analysis

In keeping with a critical interpretive approach, we found ourselves immersed in a mass of 79 interviews[1] and mountains of research notes and documents produced from seven retrospective case studies. In an effort to make sense of the data and uncover patterns of relationship between consultants and clients, we analyzed the empirical material using CDA (i.e., critical discourse analysis; Phillips and Hardy 2002). CDA has a long history in sociolinguistics (Titscher et al. 2000), is beginning to hold sway in organization studies (Grant et al. 2001), and can be seen as emergent in the IT area as well[2] (Alvarez 2001). CDA 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 1998). 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).

In terms of methodology, the term CDA is far from implying a particular homogeneous method. To critically analyze discourses, we have supported our methodology based on several sources, including Phillips and Hardy (2002), Titscher et al. (2000), and Wood and Kroger (2000). All these authors stress the important work developed by Norman Fairclough (1995), who proposes a form of CDA conducted according to three dimensions (textual level, discursive practice, and social practice) and which follows three phases (description, interpretation, and explanation). 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, we have emphasized the use of *metaphors.* We tried to recognize a wide variety of metaphors and how they might influence human interpretations, decisions and actions. 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, we use the notions of *representation* (the fact of expressing or denoting by means of a figure or symbol) or *image* (a spoken or written description) to take them into account. A detailed description of this type of analysis is available upon request.

Research Results: Patterns of Mediation and Global–Local Trajectories

Figure 1 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 *dependency* or *autonomy* of clients vis-à-vis consultants during the implementation of a configurable tool). It represents a power dimension: who leads the project and who is responsible for project results? 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. In the next subsections, we describe the three patterns that emerged from the critical discourse analysis of the interviews and documents, and their trajectories in terms of global-local negotiations.

First Pattern: Dependency Roads

The strategy of HOSP1, HOSP2, and NAVAL regarding their ERP projects was total outsourcing: a consultancy firm was engaged for supplying the expertise necessary to implement and maintain the ERP. The underlying logic of firms fitting this pattern is that their internal departments lack the expertise and resources to put in place the ERP application, and it may not be profitable to invest in developing technological expertise internally. Instead, leading-edge technological expertise can be provided by the external "partner." As a consequence, a partnership with an outsourcing IT-provider is seen as (or "sold" to firms as) an avenue to gain economy-of-scale efficiencies and technology expertise. We call this a *dependency pattern* because these firms establish a common path of client-consultant relationship: clients become very dependent on external expertise.

[1]These 79 interviews represent a total of 80 hours of tape recordings and 1,100 pages of verbatim transcripts.

[2]The theme of the IFIP.WG8.2 Conference, Barcelona, December 2002, was "Organizational Discourse about Information Technology."

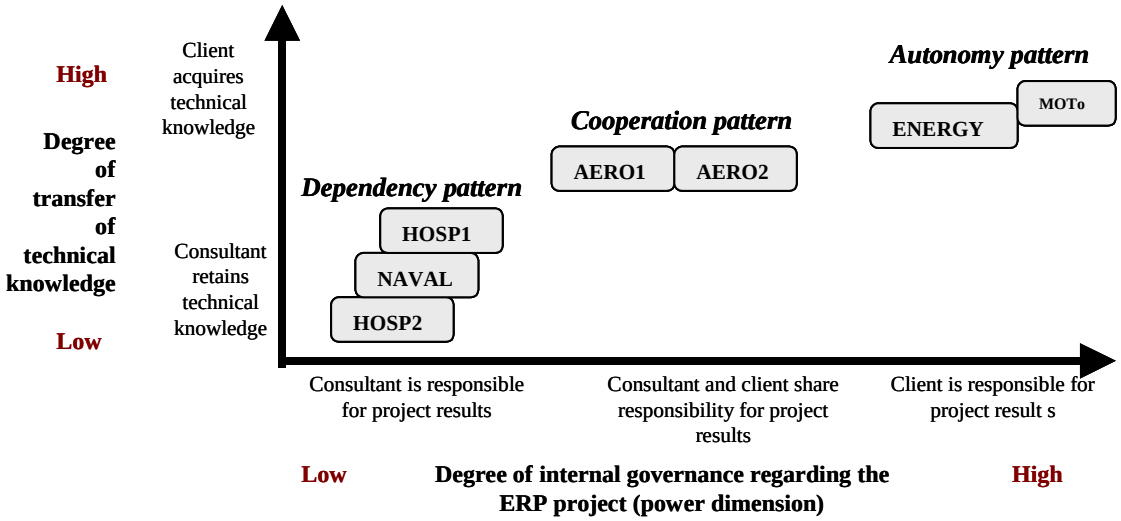

Figure 1. Three Patterns of Mediation

The nature of roles negotiated before the project launching at HOSP1, HOSP2, and NAVAL is quite similar. Consultants are engaged as powerful *experts* who have the responsibility for project implementation and results. The expertise they will provide is seen as an *alternative* to knowledge transfer or building. This explains why *little training* is planned and sanctioned by these three firms: clients were not allowed to configure directly.

> Regarding the configuration, we didn't learn anything; it was only the consultants. (Client, HOSP1)

Clients are the *information providers.* Based on their expertise in local processes and requirements, they will provide the information required by consultants and will make configurational choices in light of their appreciation of the range of possibilities offered by the consultants. 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, using our information. They asked us questions about our current processes. We gave them answers. (Client, HOSP2)

In order to legitimate their position as project leaders and experts, consultants mobilized such arguments as "we have technical and industry knowledge and we are able to propose ways of doing things that are better than the existing ones." It was clear that consultants tried to negotiate their identity as experts in an unequal power relationship with clients: they have the formal authorization to lead the project and they retain technical knowledge. An interesting image or metaphor that represents the dependency pattern is offered by HOSP2's project director, who compared consultants to the *police*. The use of this image—police who interrogate, uphold the law, and enforce the rules—helps explain why clients were expected to "answer questions" without necessarily challenging the consultants' propositions.

> 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. (Client, HOSP2)

The metaphors and images recognized in the dependency pattern to describe their ERP projects (*a car without a driver*) and to describe the consulting firms (*an army that lands and occupies an organization; two gangs, never a team*) are quite revealing.

> 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. And maybe it was a mistake. (Client, HOSP2)

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

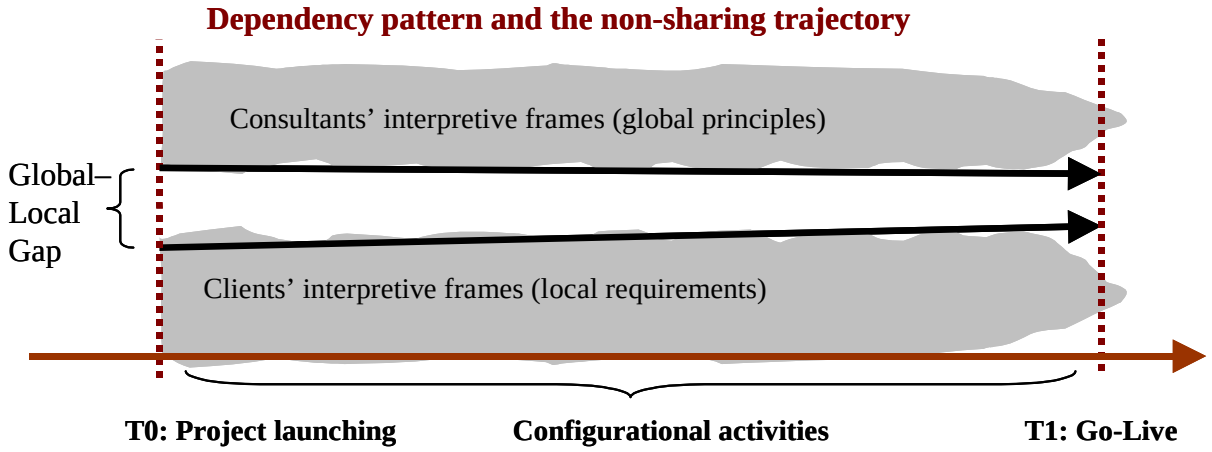

Figure 2. Dependency Patterns and Non-sharing Trajectories

Global–Local Trajectories: Non-sharing

The two bold lines represent the path of consultants' and users' interpretive frames between the project launching (T0) and the go-live (T1), a period during which a collection of configurational activities takes place. In order to have some degree of global-local sharing, the two lines must converge so as to have points of contact, to communicate, etc. In the dependency pattern the two lines do not cross or touch each other. Clients have developed too little knowledge about package features and are not able to challenge consultants' visions. Because consultants have not delved into the local context, they are unable to offer configurable solutions informed by local particularities, nor can they adequately judge the information provided by clients. Neither side can make thoughtful[3] configurational decisions with greater awareness of the organizational consequences of their choices. The initial power–knowledge balance helps to produce a *non-sharing trajectory* (Figure 2), which prevents a configuration that takes both sides into account. The lack of mutual understanding serves as a barrier to communication and knowledge sharing. Configurational decisions are made in a kind of blind or unilateral dialogue. 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. No purposive strategy is put in place to enable them to converge.

The Absence of Mediating Strategies

In the dependency pattern, we could not recognize strategies that helped the negotiation between local and global: consultants did not develop an enhanced appreciation of *local context*; clients could not visualize the consequences of the information they provided and could not learn and explore the range of the package's global functionalities. The initial arrangement of power and knowledge between consultants and clients set up an arena where conditions for blending global and local knowledge were weak, and the resulting trajectory in terms of global–local negotiations was one of non-sharing.

> 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, it's not true! Communication links have to be established, points of exchange, common points, and things you have in common, and so you can make good negotiations. If you don't have that, forget it! (Client, HOSP1)

[3]By thoughtful, we mean "showing thought or consideration for others; considerate, kindly" (*Oxford Talking Dictionary* 1998). In the context of configuration, we use thoughtful to mean *valuable* and *fitting*, *valuable* to the extent that the configuration helps to promote new or improved practices (global principles) and *fitting* to the extent the configuration respects particular requirements (local context).

Second Pattern: When Autonomy Is Essential

Two cases are characterized by the clear autonomy of the client regarding external consultancy: ENERGY and MOTO decided to maintain internal governance over the ERP project. We call this the *autonomy pattern*. Although these two firms are quite different in several aspects (country, industry, size, organizational culture), their ERP experiences were very similar regarding the knowledge–power pattern they followed. From the project launching, the clients kept total control over the project (power dimension) and assumed responsibility for technical aspects of configuration (knowledge dimension) and project results. Autonomy was seen as essential.

The nature of roles negotiated from the beginning of the project was similar. Clients are *uncontestable leaders*. 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 for their project success:

> We definitely believe in these two ideas: independence from external consulting and internal qualification…. You save money. A lot of money! (Client, MOTO)

Consultants are engaged as *temporary coaches* who are expected to supply specialized knowledge. From the client's perspective, the key to autonomy is knowledge transfer. Consultants were hired to explicitly transfer their knowledge and expertise, and their relevance to the project quickly decreased as the project evolved.

> So consultants are there, for the most part, to help them to meet a very specific need, a very precise problem for which we need. (Client, ENERGY)

> Yes, we work in knowledge transfer mode….We want them to be as autonomous as possible and to be able to evolve after that. (Consultant, ENERGY).

Interestingly, there is an inversion of roles from the previous pattern: to the same extent that, in the dependency pattern, clients were seen as passive information providers, consultants in the autonomy pattern hold an analogously passive and secondary role, working as information providers regarding their experience in the industry.

> They were secondary. The consulting always was secondary. (Client, MOTO)

In both firms, discourse analysis reveals strong convictions about "never losing their autonomy" and "never falling in consultancy hands." Autonomy is seen as the basis of their organizational culture. 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, in the long term, creates dependency and ends up being much more expensive.

> 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. (Client, MOTO)

Attempts to unilaterally impose best practices are rejected because clients feel able to challenge the consultant's vision. Indeed, consultants must be challenged, as 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. Consultants tend to offer solutions within the scope of their expertise and previous experience.

> 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. (Client, ENERGY)

Because the consultants' presence within the organizations is seen as temporary, they do not have the opportunity to acquire deep knowledge of local contexts.

> Consultants were not allowed to configure at all. This is unusual. Consultants found it very difficult! (Little laughs.) (Client, ENERGY).

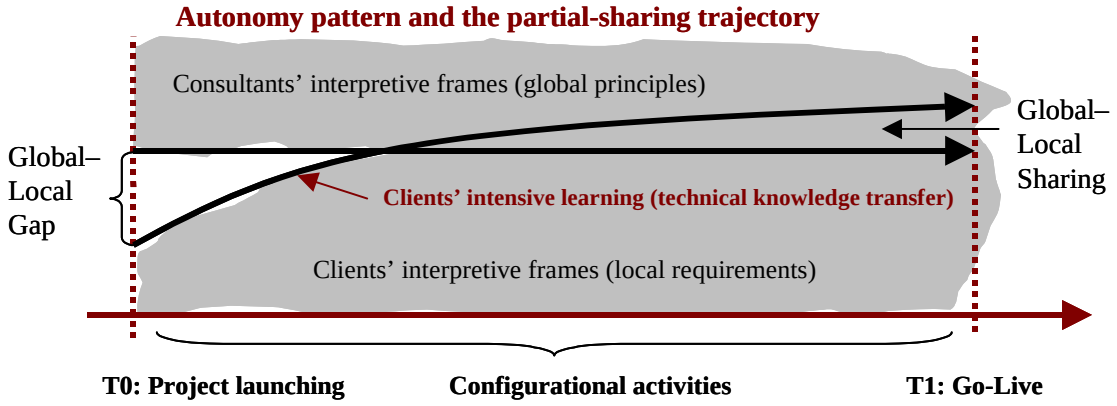

Figure 3. Patterns of Autonomy and Partial-Sharing Trajectories

Global–Local Trajectories: Partial-sharing

The 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 (technical expertise) and consultant "language" (global knowledge). A similar learning process does not necessarily happen with consultants because, in this pattern, their presence within an organization is seen as secondary and temporary. They have neither the time nor opportunity to delve into the local context, so they do not enhance their knowledge of local particularities. Their role is limited to being information providers. Nonetheless, a certain degree of global-local sharing is achieved: clients have intensively learned about package functionalities and are able to explore them with their local expertise. Because the global-local sharing is quite unidirectional, we call this a *partial-sharing trajectory* (Figure 3). Strong feelings of autonomy and powerfulness characterize the clients' discursive practices. The key representations and images dominating the autonomy pattern's discourses—*autonomy is essential*—reflect the arrangement of power–knowledge: *we are autonomous*.

Recognizing Mediating Strategies That Make Global and Local Converge

In the autonomy pattern, the challenge of finding a good configuration which takes into account global and local is partially met by using a combination of several mediating strategies that contribute to increasing global-local sharing, even if unilaterally. First, MOTO and ENERGY decided to train their business analysts intensively *before* the beginning of the project. In doing so, they created conditions for empowering the interactions of their business analysts with consultants from the very beginning of the project.

> Before starting to configure any module, we selected people and sent them for intensive training. Training was carried out before. People were ready when the project began. (Client, MOTO)

Second, MOTO and ENERGY applied prototyping, which 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 as a knowledge transfer mechanism between consultants and clients, a learning tool.

> In the methodology we used, our first prototype essentially relied on learning the technology, and also with becoming familiar with the tool. It was part of the learning process, in addition, to make a mental construction, to see in practical terms. (Client, ENERGY)

Third, MOTO's and ENERGY's members participate in groups of users. This strategy can be seen as typical of the configurational IS context: regarding the cumulative knowledge that successive ERP implementations can produce, participation in meetings that bring together a number of current ERP users represents an opportunity to gain access to global principles.

Third Pattern: Cooperation, a Fragile Synergy

Finally, two cases (AERO1 and AERO2), which represent a mixed situation regarding dependency and autonomy, resulted from a decision to partially outsource the ERP project. We call this the *cooperation pattern* because it 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: clients were progressively trained in SAP to share the configurational activities with consultants. Clients and consultants assumed a collaborative role with shared responsibilities and were evaluated together regarding the project results.

> What happened is that we worked really as a team, we were really a team. (Consultant, AERO1)

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. Rather than being considered passive information providers, clients are seen as active configurational partners. Similarly, consultants are neither simply knowledge transfer tools (as in the autonomy pattern) nor unchallenged experts (as in the dependency pattern). In addition, the presence of consultants within the organization is not seen as temporary. Consultants are likely to stay for a long time, working full-time within the client-firm, which creates conditions for consultants to develop a solid appreciation of the local context.

> What we expect from a consultant is that he has gathered experience in other companies, in similar businesses….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. (Client, AERO1)

From an initial view, the cooperation pattern seemed to be optimal. Interviewees representing both sides of the relationship, clients and consultants, articulated discourses that such a team composition represented a strong synergy. The negotiation of local-global knowledge was quite balanced. However, what initially might appear to be an ideal pattern ended by revealing a complex and ambiguous pattern of mediation: the partnership roles of clients and consultants underwent a clear transformation during the implementation process. We could perceive that clients were somewhat weaker at the beginning of the project, when their technical knowledge was still limited and they felt quite insecure when invited by consultants to make configurational decisions. However, from a certain moment in the configurational phase (which emerged progressively), clients started to take more control over the project and to be more and more assertive in their configurational decisions. Clients' power and ability to manage the project quickly increased over time. As consultants went through a phase during which they increased their knowledge of the local context and developed their ability to make insightful suggestions to their partners, they started to undertake configurational decisions that had been made by empowered clients. The legitimacy of consultants' complementary expertise started to be called into question. After a while, clients were already "*managing the boat*" and political tensions characterized both projects.

> So, what they did is that people from AERO2 took SAP courses and they improved technically, 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. (Client, AERO2)

Consultants felt themselves increasingly insecure because clients' pressures to change the rules of the game and formally assume total control over the project were quite strong. Facing that, we 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 [clients] on the engineering project…so, we went to see our management, we said, "Look, 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)

The trajectory followed by AERO1 and AERO2 reinforces the idea of the indissociability of knowledge and power during configurational activities. The synergy between global experience and local knowledge ended up showing a fragile side. As clients increased their technical expertise, they also reinforced their claims that "they have legitimacy to define their business processes" with autonomy.

> Because we don't have control anymore, we lost control. (Consultant, AERO1)

The metaphors, images, and representations reflect the initial synergy and the later conflict that emerged. When people describe the project's beginning, they use verbs like *sharing, collaborating,* and *rethinking,* and nouns like *team* and *partner* with great

frequency. However, when talking about more recent periods, words like *tension*, *downfall*, and *steal* started to emerge in different discourses. Powerlessness characterized their latest discourses.

Global–Local Trajectories: Mutual-sharing

Dependency and autonomy patterns show, in different ways, limited two-way communication. The cooperation pattern shows a bidirectional move from users toward global knowledge and from consultants toward local context. As clients increased their knowledge and skills regarding configuration, they began to interact more confidently with consultants. The presence of consultants within the organization was seen as permanent, which allowed them to develop a privileged appreciation of the local context. 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). Consultants and clients were progressively able to share and blend their knowledge, and this allowed the emergence of a strong chemistry. We call this a *mutual-sharing trajectory* (Figure 4).

However, a paradox emerged in both cases investigated. As the projects evolved, clients felt increasingly autonomous but frustrated: they wanted more and more autonomy. In turn, consultants felt increasingly vulnerable. Their legitimacy as project partners was in danger. The mediation process is characterized by rich knowledge sharing but a fragile synergy—fragile because it is menaced by political conflicts as both sides fight for more power.

More about Mediating Strategies

In the cooperation pattern, we could recognize four mediating strategies that helped increase the synergy of consultant and client interactions during the configurational activities. The first two were similar to those already described: intensive training and participation in groups of users. The third strategy was prototyping, but the use of prototyping at AERO1 and AERO2 was different from that applied in the autonomy pattern. In the cooperation pattern, prototyping was not seen as a tool for knowledge transfer between consultants and clients, but as a communication tool, a kind of laboratory to visualize and test different configurational choices before putting them into operation. The main benefit was to allow people to analyze each given technical choice in terms of its consequences within specific contexts.

> We try to do some little demo, an environment in which we can configure and make changes… and later show them. (Consultant, AERO1)

> So at the beginning, people can't figure out what the ERP modules do….It's the reason why I've made a prototype to show them…"that's the way it's going to run, do you think that it's…?" 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 not to do prototype is to reach the end of the project, and somebody tells me, "No, it's not what I wanted!" So, doing a prototype…risk is limited. (Client, AERO2)

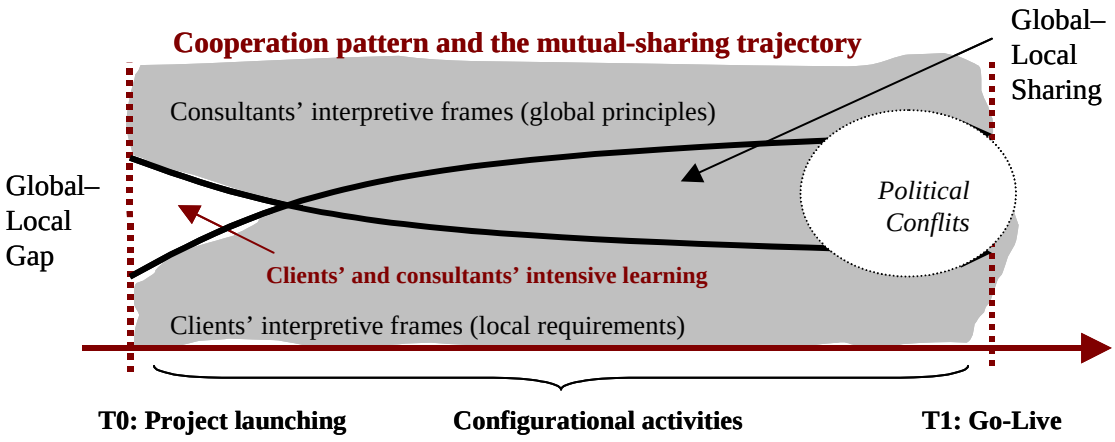

Figure 4. Patterns of Cooperation and Mutual-sharing Trajectories

The fourth mediating strategy is a novelty vis-à-vis previous patterns: the use of cyclical brainstorming sessions. AERO1 and AERO2 organized meetings in the form of brainstorming between clients and consultants, all from different modules and with different degrees of knowledge, in order to solve problems and difficulties, to discuss doubts and surprises, and to share new ideas and discoveries. Internal workshops and brainstorming sessions are useful for increasing the sharing of local and global expertise.

> We have what they call integration meetings and this is for consultants and clients for each module and it's every week. We go in a room and we discuss new applications and requirements. We can try to envision… on the other teams or if they have solutions we can provide answers. That's weekly meetings. (Consultant, AERO2)

Discussion and Conclusion

We propose to understand the implementation of configurable IS as a mediation process, i.e., a socially constructed relationship between clients and consultants through which they mutually influence each other's interpretations and negotiate how the configuration will work. Patterns of dependency, autonomy and cooperation were recognized according to the power–knowledge balances set up by consultants and clients, based on mutually agreed-upon roles, the nature of which ranges from passive information providers to authoritative leaders, passing through different degrees of partnership. Below we summarize the main insights.

Result 1: Recognizing the implementation of configurable technologies according to the power–knowledge balance set up between consultants and clients allows us to better understand the influence of different patterns of mediation on configurational activities. Above all, different patterns of mediation produce different trajectories of global-local negotiation. From each pattern of mediation (dependency, autonomy, and cooperation) we recognized different trajectories in terms of global-local negotiation (non-sharing, partial-sharing, and mutual-sharing). This association between patterns of mediation (discursively analyzed) and the trajectories of local–global negotiations brings new understanding of configurable IS implementation that helps to open the black box to which technology is often relegated, shedding some light on the nature of the process mutually constructed by consultants and clients.

Result 2: Initial organizational decisions are crucial for configurable IS implementation: they create different power–knowledge balances, which strongly influences the whole process that follows. Different distribution of power and knowledge between consultants and clients set up an arena with different conditions for global and local knowledge to be blended. How is this distribution defined? Special attention should be paid to initial organizational decisions regarding (1) who controls the project and (2) what kind of knowledge transfer is put in place. The initial power–knowledge distribution strongly influences the type of relationship being constructed and helps delineate a stage where trajectories of non-sharing, partial-sharing, or mutual-sharing are likely to emerge. Firms that do not believe that it is profitable and crucial to invest in internal expertise regarding configurable tools like ERP packages risk not being able either to put into operation an optimized solution or to improve their use over time. The exercises of power and the access, application, or development of knowledge are intimately related to each other (Asaro 2000). Our analysis indicates a consistent convergence between degrees of power over the project and degrees of knowledge transfer. The retention of stocks of technical knowledge regarding configurable IS is the basis of the exercise of power by consultants and vendors. Meanings and power are intrinsically related: *cognitive and political accounts of IS implementation are non-dissociable*. This is corroborated by several scholars but not by studies published in mainstream IS journals, which have presented cognitive and political accounts as distinct or complementary (McLoughlin et al. 2000).

The analysis of our cases suggests that not just global-local sharing but *timely* global-local sharing is needed. By timely, we mean that some degree of local-global chemistry needs to be reached *before* the more important configurational decisions are made because the foundations of any configurable package are 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, extend, and adjust the configuration, but not to 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. Future research might increase our knowledge on this temporal aspect of configurations.

Result 3: A collection of mediation strategies can be put in place in order to help increase global and local sharing. We do not generalize all client-consultant relationships as a set of fixed dependencies: they are dynamic processes that may shift in one direction or another over time. Although power–knowledge balances are dynamic, they are likely to be reinforced over time or

to change slowly if no *purposive strategy* is put in place to rearrange such balance. Initial arrangements can be changed or adjusted over time in order to increase organizational chances of finding benefit from configurations. One of the main contributions of this empirical investigation is to describe a collection of mediating strategies that were identified from the analysis of our cases and that may help to shift power–knowledge dependencies and to increase global–local sharing. They represent ways of improving the implementation process by helping global and local converge, and to be visualized, negotiated, and shared. Mediating strategies like prototyping, brainstorming sessions, and participation in groups of users represent attempts to create some synergy and decrease the risk of having the consultant's vision almost mechanically transferred into the local context, and vice-versa. It is surprising, for instance, that literature on ERP implementation does not place importance on such mediating strategies; future research might improve our knowledge of them.

By examining the mutually constructed relationship between clients and consultants, this work provides initial insights into patterns of global–local negotiation. More research is needed to improve our understanding of such complex social interactions. The first need is for a theoretical framework that will help explain the phenomenon observed, which might draw on the literature on boundary spanning, organizational learning, and power. Second, research is needed to determine if particular patterns are better for different contexts, industry sectors, types of clients, or business needs. Third, while the direct evidence provided by our research is limited, our study indicates that each pattern seems to lead to different intended and unintended consequences which evolve over time. There is need for more research to better understand the link between the different patterns and their respective outcomes. This study raises as many questions as it answers, and we hope that as such it will stimulate research in this domain.

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