ERP project dynamics and enacted dialogue: perceived understanding, perceived leeway, and the nature of task-related conflicts

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Abstract: Different views on change and IT-related outcomes have been proposed in the literature. Most privilege the technological deterministic and organizational imperative positions. This article introduces two types of process views on change arising from “designers”’ inability to forecast the impacts of ERP on work and governance:
- a dialectical process due to the lack of perceived leeway by the actors;
- a teleological process view, where actors feel they have more leeway and where they try to take advantage of technological effects that they feel they have some control over.

Building on the concept of enactment and on the nature of conflicts, we demonstrate the necessity to articulate these views in a theoretical framework describing the dynamics of ERP projects.

This framework is employed to interpret problems arising in ERP choice and implementation in the French context. During the "chartering phase" the deterministic vision dominates the perceptions of designers. During the "project phase" the designers come closer to the organizational imperative view when they customize the system and make integration/differentiation choices. During the "shakedown" and subsequent phases, organizational outcomes are often not realized because of job and governance conflicts with end users.

Introduction

0.1 – The risk of failure- issues in project and change management.

The risks associated with an information system project relate to the project’s size (number of people and sub-teams requiring coordination); the technical difficulties involved; the ease with which it can be integrated into a firm’s existing management system; the diversity of the various functions involved (its scope); the degree of change implied; and the diversity of the competencies that its implementation requires. It is clear that many of these risk factors are by definition symptomatic of ERP systems.

France, with an ERP system penetration rate of 27% in its medium sized companies, and of almost 100% in its top 100 companies, would appear to occupy an average position in Europe (Van Everdingen et al., 2000). This may seem
surprising, given France’s high score at Hofstede’s uncertainty avoidance parameter (1991), and in light of the major risks that are involved in projects of this nature (Besson, 1999).

So why do companies in France deploy ERP systems? Are there any compelling reasons or constraints necessitating the adoption of such systems in France (or indeed anywhere else)? What kind of changes do firms anticipate - and what really happens during such projects?

0.2 The objective and the outline of the present article

Many ERP projects include an initial business process reengineering phase (Bancroft 1996; Bouillot, 1999). The more radical the project, the greater the criticality of change management (Kettinger, Teng and Guha, 1997). Change management is usually considered to be at its most severe whenever a process change is being implemented (Grover, Kettinger, 2000). In this latter study, change management problems were deemed to encompass the failure to: anticipate and plan for organizational resistance to change; account for the business politics that comprise the framework within which the reengineering efforts take place; recognize the need for managerial leadership; communicate the reasons for the changes to the organization’s members; match human resource policies to BPR requirements; encourage cross-functional co-operation; and secure senior management’s commitment to the new values embodied in the system. We believe that these problems also apply to the whole of ERP projects: chartering, engineering, deployment and continuation. In short, we argue that the way in which ERP designers understand and enact organizational issues is a critical factor in projects dynamics, and ultimately in projects success or failure.

This paper proceeds as follows. First, we build a framework for studying ERP project dynamics. This framework takes into account the aforementioned problems in change management. In the first section, we tackle the problem of change management by considering two aspects of people’s attempts to make sense of the situation in which they find themselves: the perception by a project’s leading actors that they must make a commitment to the project; and their uncertainty as to the positive organizational consequences of the technology it involves. Finally we introduce a typology of conflicts. In the final section, we link these representations and types of conflict to the various phases of an ERP project.

In the second section we describe our research. We then illustrate how the conflicts that arise reflect both the various configurations to which the actors can belong as well as their enacted behaviours. In particular, we show that conflict avoidance, which appears to be relatively symptomatic of projects carried out in a French environment, tends to lead to two types of conflict: job conflicts that are part of a dialectical emergence process; and governance conflicts within a teleological emergence process. The fact that these conflicts crop up whenever end-users try to avail themselves of the system would also appear to be a feature of a French environment.

1 – A socio-cognitive framework for studying ERP project dynamics

In order to understand ERP project dynamics, three problems need to be considered: 1) motivation of project initiation; 2) organizational setting, and 3) the role of organizational learning and conflict in project.

What are people’s motivations for launching such projects? The most risky projects are those that have the greatest need of being sponsored and championed. But who should design and manage such projects? Why do they get launched? How can they end up by making sense to the actors who are involved with them? The choices and actions of an ERP project designer translate his/her representation of the world. It therefore first behooves us to understand how actors perceive the constraints and opportunities that they face; and how ERP projects can become a means for loosening these constraints, and for creating new opportunities.

Secondly, to understand ERP project dynamics, we need to have an overview of the organizational setting within which it unfolds. Most firms can be represented as loosely coupled open systems (Weick, 1996, p.70). In fact they are “coalitions of shifting interest groups that develop goals by negotiations; the structure of the coalition, its activities and its outcomes are strongly influenced by environmental factors.” (Scott, 1987, p.23). As open systems they are very conflictual in nature. An ERP system transforms the organization into a much more tightly coupled system. The implementation of an ERP can therefore be construed as a change in the nature of the organization’s life, since it suddenly precludes the existence of diverging views. From this perspective, the deployment of an ERP system can be considered as a radical organizational innovation.

Finally, the paper examines the way cognition and conflict develop throughout the various phases of a project. Towards this end, we will be demonstrating that limited communication and enacted dialogue play an important role in the emergence or control of different types of conflicts. To achieve this, we will need to modify observers’ habitual analysis (i.e., Klempa, 1995) of the socio-cognitive processes that take place during projects of this nature. In our opinion, such processes do not only translate the fact that the interpretative schemata of the designers are to a certain extent based on social considerations – it is our contention that they may even reflect the existence of a modicum of mutual understanding between an organization’s members.

1.1– Problem 1: A socio-cognitive approach to project design

1.1.1 – The issues that “designers” perceive

The greater the cost of a project, the greater the likelihood that senior management will be asked to provide some input. Whilst many technical IS projects have in the past been driven by CIO’s, ERP applications represent a threat for their in-house IS development teams. As such, in order to sell their software, vendors must first convince senior management of the attractiveness of the type of solution they are offering. One of the main arguments they can use is that ERP implementation can be linked to the overall redesign of many of the firm’s organizational units. However, it is not up to them to make this sort of decision – and in any event, talking to CEOs is not an easy matter. Organizational transformation and redesign is typically a strategic choice, and senior management generally favors receiving advice in this area from consultants. Hence we identify the four types of actors who strongly influence the launch of an ERP project: senior managers, IS internal specialists, IS and strategy consultants, software vendors. Henceforth we refer to them collectively as “designers”.
Change frequently occurs even when people do not welcome it. There are at least two reasons for this – reasons which play a prominent role in the diffusion of ERP systems (Rowe, 1999).

ERP systems are collective systems that are chosen by senior management. External actors and forces can shape the environment to such an extent that senior management sees no other alternative but to try to reap the anticipated benefits of the ERP systems. Software vendors and consulting firms try to ensure that people perceive themselves as having little leeway but to invest in such a system. ERP is portrayed as a strategic necessity (Rowe, 1994), if only because one’s competitors have done the same and are building a technological infrastructure on the ERP. Social influences and mediation by other agents thus often play an important role in the adoption of Information Technology (Attewell, 1992). An ironic article entitled “I’ve fooled half of French industry and I’m proud of it” made fun of the naivety displayed by a number of senior managers who were confronted with cynical consultants and vendors of large integrated accounting systems. Once a few leading firms have begun installing these software packages, even the most risk-averse managers will follow the same risky policies as their competitors and adopt an ERP.

The second reason senior management will accept the organizational change required by an ERP is to lower the degree of uncertainty surrounding the expected organizational impact of the new technology (Triandis, 1979; Milliken, 1988). If the perceived consequences are readily identifiable and highly desirable, senior managers will commit themselves more easily to the project. In France, the nation of Descartes, companies sometimes choose project implementation policies that might be more costly, but which can also be presented as being less risky, in that they avoid a certain number of uncertainties. In particular, ERP projects are often presented as being tantamount to control technologies (Orlikowsky, 1991). Because of the ERP systems’ specific attributes (e.g. a common database, industry reference process models and cross-process consistency), many managers believe that they can be used as a means for simplifying an organization. The feeling is that these systems will finally make it possible to get one’s organization truly under control - and that when they are up and running, any residual ambiguity will be resolved once and for all. Yet paradoxically, these systems can create further unanticipated problems, and as a result, they may never fulfill the hopes invested in them (i.e., a unique system for everyone in the firm).

We can therefore divide designers’ representations of their world into two dimensions:

- the leeway they perceive at an environmental level;
- their understanding of the organizational benefits of information systems projects.

These are expressed in our first hypothesis:

H1 – Designer’s perceptions of environmental leeway and organizational benefits fulfill a critical role during the various phases of an ERP project

1.1.2 – Perceived issues and enacted dialogue for stakeholders

Within any organization, each critical actor will develop positive, negative or neutral representations of the issues involved in the ERP implementation based on the expected impact of the IS project. The dynamics of an ERP project stems in part from designers’ perceptions of the environmental leeway and organizational benefits they entail – but also
from the other stakeholders’ perceptions of these same factors. Hence one dynamic of a specific ERP project can be construed as the outcome of a dialogue that takes place between these two categories of perception, that is, as an event whose materialisation depends on designers’ and stakeholders’ organizational behaviours and interactions. This leads to the second hypothesis:

\[ H_2 \text{ – The final outcome of an ERP project stems from enacted dialogue between designers and stakeholders.} \]

Enactment means that in the life of an organization, the operational environment in which people are function is usually the product of their own actions (Weick, 1995). In an ERP project successful implementation is due in part to the management of user participation. This does not always mean that the greater the participation, the higher the probability of an IS project’s success (Kappelman, Mac Lean, 1991). But the more users get involved in the different phases of the project, the more they are satisfied with it (Guimaraes, Mac Keen, 1993).

1.2 Problem 2: Enacted dialogue and types of conflicts

Active participation provides an opportunity for expressing conflicting opinions on a particular IS project. Participation can impact needs analysis; project launch and deployment decisions; and behavioral changes (Morley, 1993). In an ERP project, user participation is necessary so that the system’s parameters can be adjusted to the existing or redesigned processes. Participation may help define the project’s design and organizational options, as well as its overall orientation and future development. However, users are very rarely involved in the decision to launch the project, giving rise to future conflicts. With a project entailing radical changes, for example, it could be risky for senior management to get users involved from the outset (that is, at the project’s launch, or when the decision is made to acquire a module for the system). Participation is also supposed to induce people to accept the future system, insofar as this system infers both a change in interface usage (with the high cognitive costs that this implies) as well as a number of organizational process changes that some users may view as being fairly radical in nature.

1.2.1 Enactment as a way of managing IS project conflicts

To our knowledge, there is very little published research on enactment in ERP projects. We know that project teams generally incorporate key users - but to what extent do they really represent other users? Does their agreement to the new process parameters and technology signify that the other future users have also been involved in these decisions - and that they too have agreed to the same choices?

Marciniak (1996) as well as Kirsch and Beath (1996) view conflict as a dimension of co-ordination enactment rather than as a consequence of user participation. Avoidance, negotiation, the lobbying of one’s hierarchical superiors, bargaining and confrontation are the principal behaviors that are applied in conflict resolution situations (Kirsch and Beath 1996; Marciniak, 1996). Through a longitudinal analysis of multicriteria performance, Marciniak showed that conflict avoidance generally turned out to be the least appropriate behavior. Kirsch and Beath provide an important contribution in this respect, as they demonstrate that enactment is an issue from the start. The selection of a system’s features is enacted through the way that knowledge is exchanged between developers and clients. They show how
enactment is also concretised by the way in which the selection of the system’s different features is controlled. Their study is limited in scope, in that they use the terms “client” or “user” liaison interchangeably, an association that does not apply to ERP projects. In reality, clients change during the various phases of a project, and this is partly why ERP projects are so conflictual. Another limitation is that these authors base their description of the coordination enactments that take place during the implementation process on a number of coordination mechanisms (sign-offs, schedules and plans, mutual adjustment, role overlap, to name a few) and on the extent of that conflict that exists between the developer and the client – rather than on the actual nature of the conflict.

It is therefore probable that the methods that have been used to convince senior managers to launch an ERP project are different from those that they will be using to help end users to make sense of it. Senior managers will need to create a vision for the organization that generates a commitment to a new frame of reference, and which overcomes any cognitive and social conflicts that there can be with the users.

Our study of the dynamics of an ERP project involves analysing the presence or absence of enacted dialogue during the life of the project. We will be referring here to dialogues amongst designers; between designers and stakeholders; and finally amongst stakeholders.

The role of conflict in an enacted dialogue in the designing process is captured in another hypothesis:

\[ H3 \text{ – Conflict as a means of processing a meaningful enacted dialogue} \]

1.2.2 – A typology of conflict

Boulding (1963) sees conflict as a perception of people’s incompatibilities. In this view, and given the importance of the social issues raised by an ERP project, enacted dialogues during the designing process are likely to be conflictual in nature. Indeed, for those who were involved in ERP project management during the 1990’s, conflict was a major part of any project. As such, if an ERP project is analysed from an organizational point of view rather than from a technical engineering one, it can construed as a continuous and never-ending sequence of conflicts.

Literature in this field distinguishes between two basic types of incompatibility (Jehn, 1995; Pinkley, 1990): relationship conflicts stemming from the personality and history of those individuals who are involved in the project; and task conflicts stemming from actors’ disagreements as to the true nature of their activity. We will be focusing below on task conflicts. While personal incompatibilities clearly do influence project dynamics, discussions on task-related matters cannot be reduced to mere inter-individual relationships. Besson (1999) distinguishes in fact three separate types of task-related conflicts:

- 1) Task conflicts per se, involving the various modus operandi, operational definitions and optimal means of achieving one task (or an entire set of tasks).
- 2) Job conflicts involving standardised human resource relationships: the competencies that are necessary to perform a job and not only a set of tasks, career management, wage and benefits package, dismissals, etc. This type of conflict is influenced by the perceived nature of the industrial relations within a country, sector or firm.
- 3) Governance conflicts involving the distribution of power and/or the way in which the members of an organization perceive their own contribution towards the achievement of its goals.

In business process literature, governance conflict has been identified as a question of delineation. In reality, this problem constitutes a failure to identify process owners during the course of a business reengineering effort, or else to identify those who are responsible for the entire business process (Grover et al., 1995)

1.3 – Problem 3: IS project dynamics

The two aforementioned socio-cognitive dimensions are a vehicle for understanding how ERP systems have been implemented in France. They also provide us with a filter for thinking about social change. Four views can be derived from these two dimensions, and it would appear that one of these views can dominate a particular stage of the ERP implementation process. Using Markus and Robey's typology (1988) on IT and organizational perspectives as a starting point, the present article purports to expand upon their framework for studying the various ways in which actors can view change. In addition to technological determinism (i.e., the external control theory) and organizational imperative (i.e., actors’ rationality, although we would prefer speaking in terms of an "engineering" perspective), we introduce two types of process-related attitudes towards change (Rowe, 1999). Those are:

- an emergent view in a dialectical process, stemming from key players’ lack of perceived leeway and from the difficulties encountered in forecasting the event’s impact on work;
- an emergent view in a teleological process, wherein actors try to take advantage of some of the technological effects over which they feel that they can exert a modicum of control (cf. Figure 2).

The difference between a planned or intended change and an unanticipated or emergent change is generally defined by a phenomenon of emergence (Mintzberg, Waters, 1985). “Organisation design tends to be emergent, and visible only after the fact...Design viewed from the perspective of improvisation, is more emergent, more continuous, more filled with surprise, more difficult to control, more tied to the content of action and more affected by what people pay attention to than are the designs implied by architecture” (Weick, 1993, pp.348-351). Combined with the typology developed by Markus and Tanis (2000) concerning the various phases of an ERP project, this framework helps us to interpret the different problems that may arise as part of an ERP’s choice and implementation. Indeed to understand the system’s organizational benefits, we must have information on the capacities that the designers dispose of during the

1 The first three phases suffice to describe key player’s perceptions of the environmental leeway and/or organizational benefits they dispose of, and the role of enacted dialogue and conflict. 1) “The chartering phase comprises decisions leading up to the funding of an enterprise system. Key activities include building a case for an enterprise system, selecting a software package, identifying a project manager and approving a budget and schedule.
2) The project phase comprises activities to get the system up and running in one or more organizational units.
3) The shakedown phase is the period of time from “going live” until “normal operations or “routine use” is achieved. (id. p.190-195).
various phases of the project (general management and consultants during the chartering phase, project team during the second phase), as this will allow us to anticipate the other stakeholders’ expectations, and therefore the factors to which they will be paying attention. Since organizations are enacted, and have no existence apart from action, it is very likely that most unexpected changes will occur during the shakedown phase, and that this will lead to major emerging changes. In sum, emergence is fundamentally linked to the degree to which the perceived understanding of the project’s organizational impacts turns out to be accurate. Stakeholders’ perception of their environmental leeway will then determine which kind of political process and degree of conflict is to develop by means of the appropriation of the technology. The mental model that the designers follow seems to be dominated by a deterministic vision, during the “chartering phase” at least. Indeed, it is the designers’ perception of their lesser leeway and of the higher organizational benefit that renders the selection process so deterministic. During the "project phase", designers draw closer to an engineering (Marciniak, Rowe, 1997) or else to a rational actor (Markus, Robey, 1988) point of view, what with their discussions on the degree of the main databases’ homogeneity and core design (as opposed to a pilot implementation approach that emphasises cultural and business unit differentiation). Indeed, project launches often create new options that require investigation. During the "shakedown" and subsequent phases, organizational outcomes are rarely achieved due to conflicts with end users. Sometimes these conflicts start earlier, in particular during the project phase when conflict can crop up with the key or expert users. The enactment of these projects plays a critical role in their development. At this juncture, the effects of the change seem to be neither determined by an external law, nor by the control being exerted by the firm’s general management or by a particularly dominant and rational actor. Instead, this is an emergent type of change, one that has to be negotiated with stakeholders because it affects their identity and power (Truex et al., 1999). In addition, where this type of process occurs, what we are actually discussing is two fairly different emergence situations. The first one follows a dialectical process, i.e. a confrontational logic between opposite social forces (Van de Ven and Poole, 1995). As Truex et al. state, dialectical commitment (or autopoiesis) refers to the way in which organizational meaning, and hence self-reference and constant change, is negotiated. The second situation occurs when actors feel that the most important factor is the environmental leeway that they perceive. Here, because actors perceive that a path to a new and attractive type of organizational equilibrium has been opened, conflicts are less severe and a teleological process (Van de Ven and Poole, 1995) of emergence is engendered.

Table 1: Attitudes towards ERP-related outcomes and project phases (after Rowe (1999))

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<th>Perceived environmental leeway</th>
<th>Low</th>
<th>High</th>
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<tr>
<td>Perceived understanding of organizational benefits</td>
<td>.......</td>
<td>Technological determinism: chartering phase</td>
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<td>High</td>
<td>A rational actor or engineering view of the organizing process: project phase</td>
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<td>.......</td>
<td>Dialectical emergence process:</td>
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<td>Teleological emergence process:</td>
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2. Methodology

The purpose of this article is to increase understanding of the way in which designers perceive the need for ERP; the impacts it can have; how they enact their cognitions in a more or less restricted dialogue with other actors (and especially with users); and why these enactments have certain specific outcomes. Since "user participation is viewed as an enactment process, emphasizing the interaction of social actors within a particular context (Robey and Newman, 1996; Newman and Saberwahi, 1989), "the focus is not only on behaviors, but also on critical incidents, commitments, resistance and the development of points of view or interpretations by the participants" (Kirsch, Beath, 1996, p. 227). In this paper, we have chosen to focus on conflicts so as to better understand the functioning of the enactment process that takes place within the ERP projects themselves. For this reason, we follow a qualitative and interpretative approach that is based on a mix of cases and data sources. These data sources are classified from second to first hand as follows:

A – Professional and academic reports and a literary review, including SI&M’s special issue.
B – Supervised studies in specific domains: PhD, MBA, specialized master in “Organization”.
C – Expertise offered during tender bids.
D – Research-action.

A – We will be document various views of ERP-related outcomes with research published in a special 1999 issue of the Systèmes d’Information et Management magazine (a leading IS journal in France); consulting reports from IS executives working at France’s top 100 firms (CIGREF, 1999); and with the views of a white collar labour union (CFDT Cadres, 1999). One of the present article’s authors was the editor of the special SIM issue and as such has worked extensively with those academics and professional experts whose articles have been selected, at first through the use of a blind review process. He then met with each author twice, with discussions lasting an average of 4 hours. He was invited to the presentation of a report by the CIGREF (Club d’Informatique des Grandes Entreprises Françaises) in Paris and has met five out of the ten CIO’s whose experiences with ERP were documented therein.
B-The same author is directing two PhD dissertations on ERP, and his laboratory is conducting a research project entitled "ERP, work and flexibility", on behalf of the French Ministry of Labour and Employment. One of his PhD students has spent a year and a half on an ERP project and has compiled extensive information on 3 of the 10 cases that are documented in the CIGREF document: Air France, Renault and SNECMA (the 7 other cases being Axa, Paribas, Cegetel, Hoffmann Laroche, Pèchiney, Usinor and EdF-GdF). In much the same way, the second author has had extensive access to information whilst working with Executive MBA students. He is also directing two PhD dissertations on ERP.
C-The second author has also participated as an expert in two ERP project tender bids.
D- He has also worked as a consultant and has been involved in four research-actions.

From these cases and documents, we will be selecting those conflicts and insights that can make the greatest contribution to our position as critical-social-theory researchers. In actual fact, such conflicts and insights question "the
sort of relevance delivered by the instrumental model of practice to the extent that an instrumentally produced theory "(of ERP and change) would be used to perpetuate false unconsciousness and inappropriate work relationships" (Lee, 1999, p.31). All in all, we will be demonstrating that many large French companies have been the victims of ERP and reengineering practical models of this ilk.

3 - The unfolding dynamics involved in the discovery of organizational complexity

Our research topic focuses on the way in which organizational issues were accounted for at each stage of the ERP project – and rationale behind this system. Our answer will be formulated in three sections, each of which focuses on one stage of the ERP project.

3.1 – The chartering phase: low environmental leeway and technological determinism

During the ERP chartering phase, people are mainly concerned with two specific issues. First of all, should the ERP investment be undertaken in the first place? Secondly, what type of software package is needed, and what kind of implementation strategy is consistent with the firm’s goals and organizational resources? Generally, the enacted dialogue within the chartering phase involves the general management team, the external consultants and some high ranking corporate experts from the IT and the finance departments. Users do not get very involved at this stage of the innovation process. What are the main arguments that actors can use at this juncture? What are the main conflicts that will arise? In short, how does the ERP decision-making process work in real life? In our examples, three dominant types of rationale can be identified behind the ERP decision-making process. This is an environment that is characterised by an unconscious imitation of cost-cutting strategies; sometimes by irrational fears; and it basically determines the answer to our first question, that is, whether the firm really wants to invest in ERP. Add to this the existence of an organizational control fantasy, and of an ideology revolving around the desire to reengineer the entire business process, and we also find the answer to our second question (i.e., which system packages and implementation strategies are appropriate).

3.1.1 - Cost-cutting, unconscious imitation and irrational fear

The factors underlying the unconscious imitations and irrational fears of the 1990’s have been widely documented. Out of all these factors, three have been decisive.

First of all, there is the issue of cost-cutting. This focus has spread through all sectors of economic activity, raising a feeling of urgency that has driven companies and public administrations into a massive process of standardization that has been fuelled by benchmarking pressures and by the search for operational excellence. Here, the main arguments have emphasized those I.T. cost-cutting issues that are related to the economics of software integration: the elimination of duplicated data entry (Coat, Favier, 1999), the reduction of the number of applications that firms have had to maintain; and, to a lesser extent, the lowering of the levels of training that employees need to attain in order to be able to get used to the new applications that they will be using when moving from one entity to another. SNECMA, for example, a world leader in aeronautics engines, expects to replace 400 out of the 600 software applications that it used
in 1999 (CIGREF, 1999) with an ERP system. Above and beyond the economic issues involved in software integration, a second rationale was also advanced (albeit much less overtly) for this decision: the desire to downsize the firm’s I.T. function. Since the late 1980’s, senior managers have been trying without much success to reduce the number of I.T. staff members they employ, as well as the organizational power that their I.T. departments have been wielding. ERP software has been seen as a powerful means of achieving this target. Yet as an organizational lever, ERP has had certain paradoxical effects. It is not easy to use an ERP project as a vehicle for downsizing an IT function when at the same time the ERP’s actual implementation requires the competencies and commitment of the very people who are working in the IT department. This paradox provides a clear explanation for certain very strange alliances that have been observed in a number of firms between the general management team, the external consultants and the finance department, all of whom have ganged up against the I.T. department. Due to the anticipated effect of an ERP project on a firm’s governance structures, the appointment of a project leader and the building of a team constitute opportunities for what we have entitled a leadership conflict situation. During this critical conflict, the functioning of the strange alliance against the I.T. department has often become quite clear.

In one automotive sector firm, for example, this leadership conflict was first observed in the definition of a project leader profile. The issue caused major disagreements between the I.T. and the finance departments. Each argued that the project leader should be someone from their own department. As the conflict worsened, it became a matter for discussion by the executive committee, which ultimately felt that it had to decide in favour of the finance department. The latter was able to impose its views with strong support from the consultant firm that was involved in the project. Since the ERP that was to be implemented was a SAP/R3, the decisive argument was that somebody with management control expertise would be better suited to this leadership role than somebody with IT expertise. Still, given that no one with this type of profile was available within the firm, the executive committee decided to recruit somebody from the outside. By luck, one of the consulting firm’s employees was available at the time. The same type of leadership conflict was then observed during the project team building phase. The I.T. department tried to position its people in this team. To prevent this fairly overt maneuvering, the finance department again raised the issue of whether the position(s) required people with IT expertise, or else people with controller expertise. Once again, the leadership conflict required that the executive committee get involved; and once again, the finance department won with support from the consultant firm. As the finance department was short of people and competencies, the executive committee decided to recruit 4 individuals in an effort to increase the firm’s ability to manage the ERP project (and subsequently, once it had been implemented, to run it on a day-to-day basis). At the end of this leadership conflict, the corporate finance department was reinforced by the recruitment of five high-level staff members - despite an environment in which human resource policies had become very stringent. The paradox of the situation was that none of the new recruits had any real management control expertise. Indeed, they were all I.T. people who could to a certain extent just as easily been recruited internally. In this governance conflict, the management control expertise requirement was nothing more than an argument to marginalize the IT department. The funniest thing was that during the project’s engineering and

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2 A leadership conflict is a type of governance conflict. Once the ERP investment has been decided, it is the first major conflict that senior management needs to resolve. It arises at such a time as the project team is being built. Who is to become project leader? From which “clan” will s/he be chosen? From which “families” will the project members be recruited? Due to the perceived impact of an ERP project on the firm’s governance structure, the building of a project team is a major political maneuver - one that is generally perceived by senior managers as a deep-seated modification of the firm’s balance of power.
shakeout phases, the leading actors’ lack of management control expertise was clear for all to see. The lack of competency increased dependency on external consultants and was certainly one of the main reasons for the project’s ultimate failure.

The issues surrounding the implementation of the Euro, and later of the Y2K bug, constituted the two other causes fostering this climate of unconscious imitation and irrational fear. For Renault, for example, the in-house software system’s inability to meet either the Y2K or the Euro deadline was considered a sufficiently good reason for replacing this old application with an ERP. It is amazing that within this climate of unconscious imitation and irrational fear, the appropriateness of the ERP investment itself longer seemed to be an issue. For most firms, investment in an ERP became a necessity that no one questioned. Since many firms appear to have felt that their environment offered them little leeway (room to maneuver), we can only interpret these attitudes toward ERP investments in technologically deterministic terms.

3.1.2 – The fantasy of total organizational control

Above and beyond arguments relating to the economics of software integration, there is a more fundamental issue of organizational control. Firms and public administrations officially accept, welcome and sometimes insist on the need to adopt the best organizational practices that can be found in their sector of activity. At the very least, they compare their entities’ performances in a variety of different settings. In fact, what they are explicitly seeking, in 7 out of the 10 cases documented by the CIGREF for example, is to reinforce and acquire organizational control by standardising their processes and integrating their databases. Air France expects to use SAP vocabulary as the common language in all of the accounting and purchasing modules that it has chosen to implement. As demonstrated by Teo and King (1996), the more the strategic planning and management choices are integrated, the more the databases become homogenous; the wider the scope of the system implementation, the higher the expected control returns. Moreover, most of the firms outlining their ERP projects in the CIGREF report share a growth strategy which is based on their own core competencies. Usinor, a leader in the steel industry, reports that “faced with increasingly stringent environmental constraints and rising sectorial concentration, the company has been forced to adopt a global growth strategy that requires it to coordinate units which feature very different types of information systems. Senior management would like Usinor to appear as a group where everyone speaks the same language” (CIGREF, p.69) Yet we read at the same time that the “senior management’s objectives have nothing to do with the project’s Return on Investment” (id.).

To better understand what has really been at stake in these ERP decision-making processes, we must first consider two of the 1990’s more important organizational issues. The first relates to the control that corporate centres have been exerting over their peripheries. During the 1970’s and 1980’s, most French companies had sought to decentralize their operations, the result being that corporate headquarters partially lost control over their field operations. During the 1990’s, the trend was reversed. General management’s perception of a sharp increase in business risk meant that French firms began to look for a way of recentralizing their operations (Besson, 2000). ERP became a part of this strategy, as management saw it as a technological vehicle that could enable them to legitimize their new policy. Entire ERP projects were therefore imbued with this one, overriding organizational goal.
The second great issue of the 1990’s stems from French firms’ major organizational feature, i.e., from their idiosyncratic socio-technical manufacturing and engineering culture – and from the weak management control systems that stems from it. As the 1980’s came to a close, most of the French companies and administrations in our sample possessed neither managerial accounting systems nor business-oriented profit and loss (P&L) statements - and their planning systems were primarily focused on budget allocation and variance analysis. As a result, one of the main innovation trends to have affected firms and public administrations during the 1990’s (and to have reinforced the aforementioned trend towards recentralization) was the development of cultures and processes that emphasised economic value management as well as a powerful management control function (Besson, 1997). This feature explains why most ERP projects were finance-oriented, and why the SAP/R3 was the most popular software package of the time.

More specifically, out of the 21 projects studied by Besson (1999), 14 were launched subsequent to the design of an enterprise conceptual framework that had originally been inspired by management control considerations. This essentially involved designing a structure that focused on responsibility centres and on the main financial information flows. Indeed, above and beyond these ostensibly technical issues, an enterprise conceptual framework ends up determining a firm’s structures of governance. We were directly involved in designing four of these frameworks. One recurring argument during these design processes centred on the great difficulties that firms were experiencing in developing an overview that would enable them to decide upon their main lines of action. Firms also frequently decried the fiefdoms that got in the way of transversal co-operation, impeding the transformations that were required. We also observed that in most cases, corporate designers were driven by a spirit of revenge, as if they felt that with the ERP, they would finally be able to gain the upper hand over their operational colleagues (and over their firm’s organizational units). In many cases, however, this desire for revenge was little more than a fantasy, as the corporate people who were in charge of designing the conceptual framework did not have enough power to concretize the control that they wanted to wield.

For one transportation sector firm, for example, the conceptual framework was based on a product line structure which integrated more than 50 profit centres. We told the design team in charge of the conceptual framework that because of the firm’s current departmental structure and information flows, the implementation of their conceptual framework would require an in-depth transformation of the firm’s system of governance (especially since none of its activities had been P&L and product line oriented). Their answer was that ERP would help them to set up the system that they had hoping for (and never been able to achieve) - as if ERP in and of itself would be able to put an end to all “politicking”, and impose the desired changes. Yet despite repeated warnings, the enterprise conceptual framework remained unchanged. In this example, ERP project dynamics lead to permanent state of conflict during the engineering and the shakedown stages, revolving around the redesign of an enterprise conceptual framework that would better suit the critical stakeholders’ culture and interests than the original one had done. The amazing thing was that the people who were supposed to resolve the conflicts were not the same ones as those who had designed the original enterprise conceptual framework – a division of labour that caused a great deal of confusion throughout the ERP project.

Another surprise was the fact the ERP projects had caused the corporate people to indulge in the aforementioned control fantasies. Because they wanted to decide the main lines of actions, yet lacked any real vision of the enterprise, the corporate people behaved as if the technology had given them a tremendous and unlimited power over the operational
people and the organizational units. Some of the projects however resulted in their being quickly brought back to earth – due to the sudden emergence of a governance reality that had been forgotten during the enterprise conceptual framework design process. Given designers’ prediction that the operational people would feel they had little leeway in terms of the technology being used, we can interpret these attitudes toward the ERP projects in technologically deterministic terms. Note that the motto “SAP is not just a software – it’s an organization” was often used by designers as a way of legitimizing and enforcing their decisions.

3.1.3 - The all-BPR ideology

During the chartering phase, firms had to make another significant decision: should they try to reengineer their processes before implementing the software, or should they implement the software without first having undertaken any particularly thorough reengineering? Most of our examples adopted the reengineering option. Why did they choose a strategy that had been a major cause of project difficulties during the engineering and shakedown phases? Part of the answer resides in the point we make above about organizational control fantasies - but two other factors were decisive in this decision-making process.

The first involves the reengineering ideology which dominated the French business world (or certainly the country’s largest firms) during the 1990’s. Most general management teams were looking for a way of transforming their firms. Once Hammer and Champy’s ideas (1993) had become widely disseminated, reengineering began to be seen as an ideal lever. For many general management teams, the great ambiguity that surrounded ERP projects stemmed from the fact that they considered ERP to be synonymous with reengineering. Surprisingly, they did not really focus on the associated I.T. issues. Moreover, this strong reengineering ideology was strengthened by the consulting firms’ attitude. Up until 1999, most consulting firms were recommending that firms reengineer themselves before implementing ERP. Most ERP projects in France involved two types of consulting firms: I.T. consultants from SSII; and functional consultants who primarily came from the “Big Five”. For this latter group, ERP project fees were directly linked to the reengineering option’s having been chosen. The more a thorough reengineering effort could be integrated into an ERP project, the greater the number of consulting hours the consulting firms could sell. Does this mean that it was in their commercial interest to recommend reengineering – or that clients were unable to assess either their own needs, or else the socio-technical feasibility of the reengineering of their own organizations?

In this sort of ideological climate, the choice of one of these two implementation strategies often reflected the way in which a firm’s governing coalition was operating. Let’s take three very different examples showing how governing coalitions could influence the ERP decision-making process. The first involves an airline company that began a major turnaround in 1994. Despite pressure from its finance and I.T. departments, the firm’s CEO decided to postpone ERP implantation until 1998, and he committed to a major corporate reengineering program that would last 4 years. The CEO considered that an in-depth transformation program would confuse those who would have to simultaneously manage organizational as well as I.T. issues. In his opinion, ERP was not a strategic change lever, since the major change issue was governance and job reengineering rather than process reengineering. His change strategy was a mix of Organization Development principles and tough leadership. For him, an ERP project would have placed the corporate experts at the heart of the change process, instead of the senior managers, middle managers and workers who would be
affected by his transformation initiative. In the second example, the automotive sector firm we have already discussed (c.f., 3.1.1), a choice was made in favour of linking a deep-seated reengineering program to ERP implantation. Within the firm’s governing coalition, as we have already seen, the CFO (with support from the CEO) had taken the ERP project under his wing. For him, this was a very important career issue - the ERP project had to be viewed as the firm’s main change project. This made it essential that the ERP’s reengineering issues prevail over its I.T. issues. Within the governing coalition, the CFO’s opponents let him take the lead during the chartering phase, and only began to engage in surreptitious guerrilla warfare during the subsequent engineering and shakedown phases once it had become clear that the reengineering program was much more difficult than had been expected. Finally, in our third example (an engineering sector company), a choice was also made in favour of a reengineering - but for very different reasons this time. Here the governing coalition was completely paralysed by the conflict avoidance strategies that the members of its executive committee were pursuing. As it was impossible to come to a joint decision about the ERP project within the executive committee, every member felt free to choose his/her own implementation strategy. This caused complete IT chaos: different consulting firms; different versions of the same software; different cost, sales and purchasing nomenclatures, etc.

It is amazing that it took complex ERP projects to reveal the true nature of these governing coalitions’ organizational misunderstandings and real modus operandi. Many firms who adopted a reengineering approach favouring ERP implantation totally under-estimated the organizational issues that were really involved in a strategy of this sort. Inasmuch as designers clearly felt that the organization as a whole would have to comply with the technological requirements that they had postulated, we can interpret these misunderstandings in technologically deterministic terms.

The more complex a project, the more important its chartering phase. As such, the fate of an ERP project depends on what occurs during its chartering phase. As we have seen, the main feature of this phase, asides from the prevailing strategic and ideological business environment of the 1990’s, was its complete neglect of organizational issues. It seems that the newer and more promising a technology is, the more its designers fantasize and act on impulse. This statement exemplifies a technologically deterministic view. Designers felt that they benefited from little leeway in their corporate environments, yet at the same time they did not undertake any detailed assessment of the organizational impacts of their project, and assumed that they could predict all of its applications. This comprises a major paradox: even as designers were thinking that the technology that they were using would have a very deterministic impact, they still believed that they could do what they wanted within the organization. Technology was considered to be rigid, yet organizations were supposed to be malleable: in the absence of any environmental leeway, organizational leeway was supposed to be comprehensive. Indeed, organizations were not deemed to be the real issue (designers not being truly familiar with organization). In fact, the two remaining ERP phases all included reminders to designers that organization is indeed an issue - and a major one at that.

Still, this deep-seated neglect of organizational issues is rooted in the way in which strategic dialogue has been enacted during the chartering phase. As we have already stated, users have hardly got involved in this phase. For this reason, little consideration has been given to their specific interests (working procedures, job design and governance structures). What is significant here is the way in which dialogue has been enacted between the general management teams, corporate experts and consultants. During the 1990’s, the main features of the enacted dialogue that took place during
the ERP chartering phase were the ambiguity of the goals, and conflict avoidance. Goal ambiguity, because each of the critical actors during this phase had his/her own personal view of the ERP project’s goals – different views that (due to the lack of any real dialogue) were not given an opportunity to converge. In many cases, the necessary goal congruence was not achieved at the end of the chartering phase. Conflict avoidance, because top managers do not like (or do not have the time) to engage in conflicts over general topics. They engage in conflict when their own interests are directly at risk. During the chartering phase, with the exception of the project leadership issue (which created a great deal of conflict), the only areas that could even potentially cause conflict were the enterprise conceptual framework that underlies any ERP project, and the overall change strategy itself. Moreover, senior managers rarely discussed these two critical issues in any detail. They were overlooked. It is therefore no surprise that events which did not happen during the chartering phase would have to take place during the two following phases.

Table 2 – General features of enacted dialogue during the ERP’s 1990’s chartering phase

<table>
<thead>
<tr>
<th>Topics</th>
<th>Issues</th>
<th>Socio-cognitive attitudes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment strategy</td>
<td>-Whether or not to invest in an ERP</td>
<td>No perceived leeway. Technological determinism.</td>
</tr>
<tr>
<td></td>
<td>-Level of investment</td>
<td>General agreement that to remain part of the competitive mainstream, companies must invest in an ERP.</td>
</tr>
<tr>
<td>Enterprise conceptual</td>
<td>-Design of governance and work structures.</td>
<td>Discussions between corporate experts, (mostly finance people). Note that human resource people were rarely involved in these projects’ chartering phases. The topic was rarely discussed seriously by senior managers.</td>
</tr>
<tr>
<td>framework</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change strategy</td>
<td>-Whether or not to reengineer before</td>
<td>Low perceived leeway. Technological determinism. The socio-technical risks of reengineering seem to have been insufficiently assessed.</td>
</tr>
<tr>
<td></td>
<td>implementing an ERP</td>
<td></td>
</tr>
</tbody>
</table>

3.2 –The engineering phase: an integration/differentiation dilemma

Once an ERP implementation decision has been taken, new actors join in the process. These are generally expected to be the system’s key users. However, it also occurs frequently that the team running the engineering phase is entirely comprised of new members. Moreover, only a small minority of those individuals who got involved in the engineering phase were also active during the chartering phase. This same applies to consultants – and it is sometimes the case that the project’s new overall leader is someone who has had no previous involvement whatsoever! In fact, for many teams, the ERP project’s true starting point is its engineering phase. As a result, their understanding of what has transpired during previous phases is often vague and second-hand.

The nature of the ERP project changes in any event with the engineering phase. There is an end to the verbosity and lax time management that marks the chartering phase. Constraints related to technical object engineering and to budgetary considerations impose their rhythm on the project. The priority now is to meet deadlines and to stay within the project’s projected cost. At the same time, the surrounding organization’s degree of complexity becomes a key factor for the
project. Unlike the chartering phase, which focuses on a few big issues, the engineering phase involves many “small” scattered technical choices on matters such as nomenclature, process, information display and accessibility, etc. Each of these “micro-choices” focuses on the organization itself. This means that designers may feel uncomfortable with organizational issues which they may have to take a stand on, as such questions are generally beyond their technical expertise. A new project team; stringent time and cost constraints; an under-estimation of the organizational complexity of the technical engineering that is being carried out – these factors (and/or a combination thereof) more or less explain the dynamics of an ERP project during its engineering phase.

Once the decision to launch an ERP has been taken by senior management, many of the choices regarding project implementation and the system’s parameter settings are left to the project team. There are many alternatives to be considered, and actors may feel that they have a great deal of leeway at their disposal. Indeed the main focus at this stage is engineering the integration/differentiation dilemma (Lawrence, Lorsch, 1967). If we consider that the integration paradigm means that everyone who works within a given firm will basically share the same interpretation of the facts that they encounter, the integration/differentiation dilemma is really a question of the standardization of culture. What level of cultural standardization do we want to achieve through the ERP project? It is widely acknowledged that some firms possess a wide variety of different cultures or subcultures (Sackmann, 1992), whilst others can operate and even be effective without its units (even its smallest ones) sharing any common values whatsoever. With ERP, engineering the integration/differentiation dilemma signifies the denial, channelling or acceptance of ambiguity (Martin, Meyerson, 1988). This is the real issue that designers face during the engineering phase.

In practical terms, the first question that needs to be answered relates to the level at which data and/or processes should be differentiated. The task design that is to take place during the engineering phase is entirely subsumed in this issue. This means that the application software does not necessarily have to be a unique one. Moreover, this is rarely feasible in global firms. One frequent strategy involves having one common ERP module for the finance department – and other specific systems, either ERP or best-of-breed, for the other functions or regions (Markus, Tanis and Van Fenema, 2000). Indeed, in most firms differentiation is based on the specificity of the production and/or distribution process (Forest, 1999). For example, Hoffmann-Laroche’s ERP project led to a total integration, with SAP/R3 modules being implemented at the firm’s three divisional levels (pharmaceuticals, vitamins and fine chemicals and diagnostics). This new organization replaced earlier local platforms that had provided a modicum of synergy between the various products and services within each local site - but limited interconnexion and integration between different functions and sites. Now with the new ERP system, the divisions are organized by product rather than by site. This raises this issue of why the bigger entities are not integrating as much of the smaller entities’ processes or data as they would like to. Conversely, how can a firm avoid taking the differentiation process too far – thus losing out on the ERP systems’ ostensible benefits?

In this view, the way in which the differentiation/integration dilemma has been managed during the engineering phase is central to an ERP project’s dynamics. In our sample, we have identified two standard tactics that the ERP project teams have adopted in this respect: dialogue avoidance tactics; and open dialogue tactics.
3.2.1 - Dialogue avoidance tactics

In our sample, these are engineering tactics that crop up the most often. During the engineering phase designers try to avoid discussing any of the issues that are related to a firm’s governance and job structures. A deliberate attempt is made here to conceptualise the consequences of the information technology that is being used in data integration terms rather than in job and governance terms. The project is viewed as a rationalization of the firm’s various functions rather than as a social evolution. The best way to understand the rationale underlying such tactics is to relay the comments of one ERP project leader. Aware that his project was in a state of deadlock (essentially due to job-related issues), and that people were becoming more and more dissatisfied, he told us, “It is not my job to do the senior management’s work. My job is to design the functional characteristic of the I.T. system, and their job is to get users to buy the system.” The problem with this firm was that nobody cared about the fact that the ERP project was causing people to feel growing dissatisfaction with their work. Was this project leader being irresponsible?

To understand the behavior displayed by many project leaders and their teams during the engineering phase, it is important to ascertain the general context within which enacted dialogue was able to take place. People often found themselves in a very difficult situation, caught between the devil and the deep blue sea. On one hand, senior management had not made any decisions during the chartering phase concerning many of the enterprise conceptual framework’s main integration/differentiation level-related characteristics. Yet project leaders and their teams were forced to adopt certain technical options – each of which had a major cultural impact. On the other hand, as the ERP project became more and more specific in terms of its impact on the structure of governance and of job, stakeholders became increasingly self-aware, and began to make ever-greater demands. In this difficult situation, many project teams pursued tacit tactics wherein they would avoid any discussion of governance and job-related impacts and try to limit their responsibilities to functional issues alone.

3.2.2 - Open dialogue tactics

These are engineering tactics that revolve around the use of skilful dialogue. Here conflict is considered as a positive way of dealing with the cultural differences that are at play in governance and job structures. The case of the Ts group, as reported by its Project Director C. Bouillot (1999) is particularly interesting in this respect. This merger (followed by a sell-off) exemplifies the ERP project-related opportunities and problems that can accompany a firm’s strategic moves. To a certain extent, the case can be considered as a metaphor of the much wider integration/differentiation issues that are so crucial during an ERP project’s engineering phase.

From this counter-example, two factors emerge to explain the difference between the two aforementioned types of engineering tactics. First of all, open dialogue tactics are based on a clear and ambitious objective, i.e., “one face to the customer”. An organizational unit could only make proposals or modification requests that could be extended to all of the other units; and that would lead to an improvement in the order, shipping or billing processes. The French company was by far the weakest in terms of overheads, turnover, financial results and therefore political power. Moreover, whereas the two other entities were principally producing from their own stocks of materials, the French firm’s production was mainly order-triggered, and the processes it relied upon were therefore more complex in nature. In this sort of English-speaking environment, how can a firm successfully negotiate the development of German packages? The French unit was at least conscious of this weakness – and awareness is always a strength. It chose to concentrate on
a few specific processes that could be shared. Of course, Matra Harris chose to design order-triggered production processes. With its highly motivated team, this task (and the challenges that went along with it) was widely communicated throughout the French entity. In the end, conflicts between Tk and Sx meant that Ms was able to wield a lot of power – despite its relatively smaller size. As many decisions were taken with two parties joining against the other one, Ms found itself in a good position and the choices made in favour of order-triggered production were close to what it had originally proposed. After this success, it decided in 1997 to develop a project covering its financial and manufacturing functions. Yet many of the ERP projects we studied were launched to satisfy limited, confused or suspicious objectives, be they a change in management control systems or else a resolution of Euro or Y2K-related issues. When ambitions are so limited, confused or suspicious it is difficult to get people to understand why their organizational life must be transformed (Besson, 1999). When a merger occurs, the sense of urgency increases, creating a collective desire for change.

Secondly, clear and unwavering support from the general management team is also essential. In the Ts group the merger of the three sales networks was managed by a steering committee that was headed by the CEO and composed of senior managers from the 3 firms’ main functional departments; by a project direction team with a computer specialist and a logistics expert; by a permanent team of 12 computer specialists and business experts from all three firms; and by a network of 40 key users. The permanent team was mobile and convened every month for two weeks, meeting alternatively at one of the three firms’ main home country sites. Yet many ERP project teams in our sample were continually seeking support from general management teams that were divided. They were left to their own devices to deal with people who were angry about the cultural changes that the ERP projects were causing. To some extent, many project leaders were asked to do what the general management team did not have the will or courage to do. It is also possible that a third factor played a role in this implementation process - the fact that the project team, from the very outset, was a multicultural one. This characteristic might have forced everyone involved in the project to engage in open dialogue so as to reduce tacit knowledge (Nonaka, Takeuchi, 1995), and indeed, diminish the tacit organizational prejudices that are commonly found in culturally homogeneous teams.

Last but not least, the engineering phase mainly consists of cultural choices that are linked to the integration/differentiation dilemma. Cultures can either be deliberately maintained (i.e., the Air France ERP project financial module) or changed (i.e., Ts or Hoffmann Laroche’s distribution function). In many cases, one of the main paradoxes of an ERP project was that the project team was given the power to make decisions on a cultural engineering of the firm. To some extent, this paradox explains the engineering tactics adopted by project leaders and their teams. For some of them, the cultural challenge had been well prepared during the chartering phase, and well supported during the engineering phase. For this reason, and as we saw with Ts, the task, job and governance conflicts that arise between the two sub-cultures during the engineering process can be handled effectively. For many project teams however, the cultural transformation challenge was considered to be too ambiguous – the issue was complicated because of the support that these teams had been receiving from senior management. The project teams therefore put the job and governance issues that are generally raised during the engineering phase to one side, and focused solely on technical aspects. What happens during a shakedown phase reflects the nature of the dialogue that is enacted during an

3 In general, systems integration will have a strong impact on operational efficiency, reliability and responsiveness once a merger has taken place (Robbins, Stylaniou, 1999). Using the example of one Canadian telecommunications operator, however, Truex and Ngwenyama (2000) show how difficult it is to obtain cost savings after a merger, even when similar reference models exist and the same ERP system is adopted.
engineering phase. An open dialogue on job and governance issues will induce a smoother shakedown phase; conversely, the avoidance of dialogue will induce a harder shakedown, insofar as the issues that were not handled during the engineering phase will have to be dealt with in one way or another during the next stage. Still, as the Norsk Hydro case shows us, a five year engineering phase favors user involvement - but may cause over-customization (Hanseth, Braa, 1999). This means that dialogue is a risky business which presupposes a real communication competency that many project leaders and teams do not possess. This may be another explanation for the choice many made in favor of avoidance dialogue tactics.

3.3 – The shakedown phase: where stakeholders make their presence known

An ERP project is not just about changing the ergonomics of a software application or the nature of a firm’s business processes. It is first and foremost an organizational redesign process, hence a set of political and socio-cognitive problems. The technological imperative and the rational actor (or as we prefer to call it, the engineering) view basically neglect this reality. We agree with Westrup and Knight (2000) that most vendors and engineers work under the assumption that processes and knowledge can be modelled and encapsulated in an ERP system.

Paradoxically this assumption complicates organizational life and change. Indeed many process choices have become increasingly ambiguous, leaving room for a variety of diverging interpretations, none of which can encompass the total range of possible situations – not even within the context of a single company. Of course, where business processes are modelled in the software, they can be easily changed. But this does not mean that they are contextually adapted. In other words, it is not because processes are modelled in software that all actors will accept this representation of their work. For these actors, it is not enough that a few key users have been co-opted – nor that they have been forced to comply under pressure.

Contrary to the technologically deterministic view, the emergence view asserts that external forces do not compel actors to act in any particular way. According to this line of thought, technology produces no pre-determined organizational consequences. Moreover, it also differs from an engineering view of IT-related outcomes in that it maintains that actors, even when they are subjected to a hierarchical leadership and to a controlled allocation of resources, cannot anticipate many of the organizational effects that technology will cause. In addition, when actors try to control certain effects, they induce other unanticipated impacts (Markus, 1994). In other words, it is very difficult to predict the way in which information technology will be used or appropriated, or indeed the impact that it will have. We agree with Markus and Tanis (2000) that this emergent and process view is a more appropriate way of accounting for some of the conflicts and contradictions that arise during the ERP shakedown phase. We discuss below two different emergence situations, one related to job conflict, and the other to governance conflict.

In reality, governance and job conflicts exist throughout an ERP project. Some conflicts occur during the shakedown phase, and some crop up during the project phase. As we have previously demonstrated, a conflict’s occurrence during a given phase of an ERP project is linked to the way in which the chartering and the engineering phases had been managed, and more specifically, to the senior management and/or project team’s having engaged in avoidance behaviour.
3.3.1 - Job conflict in a dialectical emergence process

The first emergent situation is mainly characterized by job conflicts. Senior management may feel that it had been forced to commit to an ERP solution. In any event, it will have communicated poorly with users during the shakedown phase. This has often occurred because senior management did not anticipate the consequences of its decisions in competency, career or employment terms. An ERP project deals directly with workflow, a set of elementary tasks or, in modern management language, a process. In reality, an ERP project does not deal with people and their job specifications. Hence it is often only once software deployment has taken place that job conflicts arise.

This type of conflict has been documented by Besson (1999). He shows, having tested it in 7 cases, that there are rapid changes in the job that a local management controller is asked to fulfill. ERP’s impact on this job leads to a diminution in his/her budget consolidation and data entry activities, and to a reduction in the operational control s/he exerts. On the other hand, it leads to a greater involvement in strategic and operational planning, in the communication of results and in the proposition of corrective actions during the reporting process. Now, there is a major change in the way in which information is handled: the controller no longer controls the data entries, and s/he needs to understand and communicate the results through an abstract reconstruction of the performance model that is embedded in the ERP system. All in all, ERP requires that actors understand the fundamentals of management control - and it accelerates the need for true professionals. There are three reasons why this causes tension with the controllers. First of all, most controllers have not received any education in this speciality; their average age is high; their ambitions limited; and there is a strong feeling that theirs is a “dead end” function. In addition, their professional identity has recently been placed in doubt by the increased professionalization that has been mooted for this function – and they fear that they will be left behind. For example, in the aforementioned transportation sector firm (cf. 3.1.2), temperatures have risen as senior management have been talking aggressively about the need for productivity gains and layoffs. At the same time, ERP means that the summit of the hierarchy is continually asking for more information. The tone of the discussions between senior managers and controllers has deteriorated, as the latter are not considered to be “equals”. The hierarchy loudly asked the Human Resources Department to recruit “young and competent” controllers. Faced with an explosive situation, senior management took two decisions. It first slowed down the ERP project - and it then launched a program modernising the management control function by combining education, redeployment, pre-retirement plans and recruitment.

In this example, the job conflict’s emergence process is a dialectical one (thesis, antithesis, synthesis). In fact, this logic of confrontation between social actors with diverging goals and interests is similar to one of the four ideal types of social change described by Van de Ven and Poole (1995). This case is interesting because it emphasizes what is really at stake with this dialectical type of emergence. ERP and more specifically SAP/R3 bring about a real organizational revolution within the management control function. The extent of this revolution had been vastly underestimated during the chartering and the engineering phases. Controllers therefore made a “sudden” discovery of the impact that the system was going to have for their future, without having received any preparation or support. They felt trapped. In situations such as this, people generally react negatively. They resist, they idealize their past and they give meaning to their defensive behavior by engaging in job conflicts. In the aforementioned transportation sector firm for example, it was interesting to note that most young controllers behaved differently than the older ones. They perceived ERP as an
opportunity, so they did engaged in little job conflict. On the other hand, they got much more involved in the governance conflict that arose between managers and controllers regarding the control of information.

### 3.3.2 - Governance conflicts in a teleological emergent process

A somewhat different (but equally emergent) situation that can occur during the shakedown phase is one in which senior managers are not the drivers behind a corporate-level ERP project— or where they do not consider it to be a governance problem. In this situation, ERP adoption decisions are not taken because of any pressures that are felt at a corporate level. Rather, it has been at the subsidiary or divisional levels that such pressures have been felt; that separate ERP systems are occasionally set up; that coordination problems arise; and that governance conflicts exist. This shows that the organizational consequences of ERP have been poorly anticipated at a corporate level. This type of conflict occurs more often in firms that do not really coordinate the deployment processes between their subsidiaries.

Besson (1999) reports a simple case of governance conflict that cropped up in the aforementioned engineering sector firm (cf. 3.1.3). As we have seen, the firm’s subsidiaries had all implemented the same ERP, but they had not coordinated their moves. A little while later, and in an effort to further integrate the company’s marketing and commercial policies, a working group composed of marketing and commercial people from different subsidiaries and lead by a high rank manager from the corporate marketing and commercial department was given the go-ahead to define common rules for the subsidiaries’ client nomenclatures. After six months of strenuous negotiations, the working group reached a compromise. However, when it came to the issue of how the nomenclature would be allowed to develop over time, the conflict re-opened. Before the introduction of the ERP, the firm’s subsidiaries had been accustomed to adapting their nomenclatures to their own local needs. The question now arose as to whether they would have to ask for permission whenever they wanted to modify these nomenclatures, and/or if they would have to justify any and all changes. These changes in database control suddenly gave the corporate marketing and commercial department new powers that the subsidiaries did not accept. What is even more surprising is that the corporate marketing and commercial department had not even asked for this power. ERP provided it with a means for coordinating marketing and commercial policies— a tool that it had not even been looking for. The software had caused a centralization that initially none of the stakeholders had thought about or even desired! In other words, concentration and/or integration has been interpreted by the subsidiaries as a sign of centralization.

Norsk Hydro also illustrates the shortsightedness of senior management as regards the impact of ERP on governance problems. The overall ERP infrastructure has been emergent (as have its effects), but at Norsk Hydro this was more or less deliberately planned and designed. On one hand, given the heterogeneity of each subsidiary’s portfolio of applications and IT processes, Norsk Hydro decided in 1994 that the whole group should adopt an ERP package; and it chose SAP. On the other hand, “The first SAP applications were installed in France in 1990..The divisions decided completely on their own how to implement and use SAP” (Hanseth, Braa, 1999, p.58). In the European fertilizer division, several unanticipated organizational changes occurred as a result of this project.

Firstly, two new common units were created, one for transactions between marketing and production, the other for a number of different accounting and financial services. Subsequently, as aforementioned, over-customization took place. However, it can also be said that in this division, the ERP project created a greater integration between people, giving
them their first opportunity to work on similar problems throughout their division (instead of being asked to simply work on mere process integration tasks). This was of course the true purpose of this ERP – especially after the earlier failure of a reengineering project. Even more importantly, at least according to Hanseth and Braa, is the fact that “SAP is again changing its role as it gets installed and integrated into a larger corporate infrastructure. In a few words: it may become everybody’s enemy by resisting all organizational change” (id, p.68).

In this example, governance conflict emerges by a process that is teleological in nature. In fact, “the entity is purposeful and adaptive; by itself or in interaction with others, the entity constructs an envisioned end state, takes action to reach it and monitors progress. Although teleology stresses the purposiveness of the actor or unit as the motor for change, it also recognizes limits on action.” (Van de Ven, Poole, 1995, p.516).

3.4 Discussion

The present article has demonstrated that as ERP projects unfold, the involvement of each new actor changes his/her own perceptions, as well as the views of the other stakeholders. Norsk Hydro best exemplifies this concept. At first senior management is the process’ leading actor – and for this constituency, SAP will be a way to reengineer the division and create a common culture. However, during the project phase, SAP becomes an ally of the local managers, “helping them bring the change process under their influence and into the speed they preferred”(id, p.68). Finally, during the shakedown phase, SAP becomes an infrastructure, and it exerts more influence on the changes taking place than any of the other actors. In addition, we argue that in the French context task, job and governance conflicts are specifically related to a particular process phase, and to a perception of related outcomes (cf. figure 4). Of course, we have shown and argued that each of these types of conflict can develop at any given stage. For instance, we have given an example of two governance conflicts that took place during the chartering stage. We have however also demonstrated that all of the other conflicts (with the exception of the Ts case) emphasize the existence of a strong avoidance behavior amongst designers. It would be interesting to test our framework against a larger sample including smaller firms in France and in other countries. An international comparison would be important because the authors of the present article are strongly influenced by the way in which French teams manage projects. Strong experts, a longer period of study before IT implementation and particularly low user involvement at an early stage of the project – all common features in those countries that score high on uncertainty avoidance (France and Italy, though not England, c.f., Carton-Bourgeois, 1999). Moreover, it appears that the length of the study that takes place during the chartering phase cannot compensate for users’ low level of involvement in business specifications. This also helps us to better understand what uncertainty avoidance really means in a French context (Rowe, Struck, 1999). French managers, generally trained as engineers (or sometimes as finance specialists) in abstract types of knowledge, place their trust in technology, and they love taking risks in this domain. On the other hand, they like avoiding social conflict. As such, why should senior management commit to a project whose social effects it cannot anticipate? Paradoxically, the answer again lies in their belief that they will be able to resolve any difficulties that are linked to the adoption of a given technology.

Table 3: Attitudes towards ERP-related outcomes and dominant conflict types in a French environment
Above and beyond the specificities of the French situation, environmental factors are always very important in understanding the dynamics at play in any given project. The culture of a firm, of its senior management and of the consultants who are involved in a project explain some of the variations in the different ways that ERP projects were handled (in practical terms) during the 1990’s. It would appear that the designers’ strategic maturity, which can be evaluated in terms of their level of understanding of organizing-related issues, was a prime contextual variable. Yet in addition to this, and regarding the ERP project itself, the strategic maturity of the firm’s senior management also appears to be a key variable. As we have demonstrated, senior management establishes the dynamics of the chartering stage. If it is aware of salient organizing issues, it can control external consultants and internal experts through a strategic formulation process as happened at the airline company that we have studied (cf. 3.1.3). If on the other hand senior management has insufficient self-awareness, the ERP project will unfold, from the very beginning, without any strategic control being exerted - and the chartering phase becomes a kind of managerial comedy within which fears, unconscious imitations, fantasies and interests interact in a somewhat chaotic manner.

**Conclusion –sensemaking or the dynamics of alternative views on information system-related outcomes**

Each of these ERP project stages has its own learning process. During the 1990’s, perceptions of environmental leeway and of organizational beneficiaries evolved. Critical players, senior management, middle management, workers and labour unions have all learned a lot through ERP implementation. As a result of this learning process, ERP project management has evolved. The most striking example of this evolution is the way in which implementation strategies changed in the late 1990’s. Many companies began to understand that the use of an ERP project to “reengineer their corporation” was no simple matter. The redesign of task, job and governance processes, whether these changes are truly necessary or simply someone’s wishes, is a much greater organizing issue than the implementation of software and hardware devices. Indeed, many of these firms seem to have understood that the same issues are not at stake: social

<table>
<thead>
<tr>
<th>Perceived environmental leeway</th>
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<td>Perceived understanding of organizational benefits</td>
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<tr>
<td>High ..................................</td>
<td>Technological determinism in the chartering phase: Governance conflict primarily manifested as leadership conflicts</td>
<td>The rational actor or engineering view of organizing in the project phase: Primarily task-related conflicts</td>
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<tr>
<td>Low ..................................</td>
<td>Dialectical emergence process in the shakedown phase: Primarily job-related conflicts</td>
<td>Teleological emergence process in the shakedown phase: Primarily governance-related conflicts</td>
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change must not be treated as IT engineering. Based on this renewed perception of environmental leeway and organizational benefits, they have lowered their anticipated ERP outcomes, and implemented the system without trying to use it as a social reengineering enabler. Due to this strategic change, some consultants and editors have started to propose accelerated implementation methods that neglect (for the time being at least) any semblance of radical organizational reengineering.

What do these changing perceptions of environmental leeway and organizational benefits really mean? In actual fact, ERP projects have been organizational learning processes. Through their designing activities, designers have discovered the reality and therefore the complexity of the organizing process. ERP implementation has been a real life learning process that has caused an evolution in designers’ and stakeholders’ perceptions—after all, designing within a context of uncertainty and ambiguity is in and of itself a sensemaking process. Indeed, at the end of their project, designers might finally understand what organizations truly entail. Because of this sensemaking process, it is important during project phases to consider alternative logics and views of IT-related outcomes. Many inconsistencies found in the literature on the organizational effects of IT (Carlson et al., 1999; Robey and Boudreau, 2000) may stem from changes in actors’ perceptions of their environment during the different phases of the project with which they are involved. Organizational outcomes appear to be emergent rather than determined or constructed. In other words, it is very difficult to predict either the way in which information technology is going to be used and appropriated, or else its impact. Along with Markus and Tanis (2000), we think that this emergent and process view is better able to account for the conflicts and contradictions that arise in ERP projects. This does not mean that technological determinism, planned change or engineering, or even punctuated equilibrium are less relevant than emergence, improvisation or situated change—this being the conclusion that Orlikowski (1996) drew in her study on organizational transformation. Indeed, through the designers’ perception of environmental leeway and understanding of the organizational benefits, technological determinism and planned change play a crucial role in enacting and preparing outcomes. Senior management has the power to organize this interaction process and social game (Pavé, 1989). They sometimes impose structuring rules (such as the use of an ERP), but this power is limited. They cannot completely determine the logic of social actors’ actions, or anticipate how their project enactment will be perceived. If views on organizational systems change during projects, it is both because ruling actors differ and also because, along with external events, they can change the social and economic definitions of a technology. Hence the ambiguity of the history of projects and of organizations (March, Olsen, 1973). Hence the “retrospective mobility of meanings” (Dilthey, 1883).

Bibliography


Rowe, F. (1999); Cohérence, intégration informationnelle et changement : esquisse d’un programme de recherche à partir des Progiciels Intégrés de Gestion, Systèmes d'Information et Management, vol.4, n°4, p.3-20.

Rowe, F. (1994), Data Network productivity and competitive behavior: the case of the French commercial banks, Technological Forecasting and Social Change, vol 46, n°1, p.29-44.


