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THE CHALLENGES OF ENTERPRISE INTEGRATION: CYCLES OF INTEGRATION AND DISINTEGRATION OVER TIME

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Abstract

In recent years enterprise integration has become an important theme in information systems research and practice. Enterprise integration pervades enterprise resource planning (ERP), supply chain management (SCM), and customer resource management (CRM) systems and applications. However, much IS research in this area seems to assume that enterprise integration is inevitable and that enterprise integration is strategically necessary. These assumptions appear to have held sway until now, probably because most IS researchers have studied the life cycle of just one single enterprise systems project.

Our research throws into question these assumptions. Using critical ethnography, we studied a small-to-medium sized company within the context of a large conglomerate over a seven-year period in total, from mid 1996 to early 2004. This company was one of many subsidiaries within a large conglomerate in the Asia-Pacific region (one of the global 500 companies with annual revenues of more than US\$4 billion). Looking at the broader context (the conglomerate as a whole), and seen over a sufficiently long time scale, our findings suggest that enterprise integration is not inevitable, nor is it always strategically necessary. Rather, enterprise integration is perhaps best described as a cycle: as one or more cycles of integration, disintegration, and (perhaps) reintegration. This paper can be seen as one response to the call for more empirical in-depth case studies concerning enterprise systems.

Keywords: Enterprise integration, critical ethnography, enterprise resource planning, ERP

Introduction

In recent years, enterprise integration has become an important theme in information systems research and practice. Enterprise integration pervades enterprise resource planning (ERP), supply chain management (SCM), and customer resource management (CRM) systems and applications (Davenport 2000b; Genovese et al. 2001; Markus 2000). However, there are two underlying assumptions of much IS research in this area. These are (1) that enterprise integration is inevitable and (2) that enterprise integration is strategically necessary. These assumptions appear to have held sway until now, probably because most IS researchers have studied the lifecycle of just one single enterprise systems project.

Our research throws into question both these assumptions. We challenge the assumption prevalent in much of the information systems literature that enterprise integration is, of necessity, a continuing trend (Davenport 2000a; Genovese et al. 2001; Markus et al. 2003). We also challenge the assumption that information technology-enabled enterprise integration is strategically necessary for survival (Davenport 2000b; Markus 2000). This may well be the case for some organizations, but it is certainly not true for all. Viewed over a sufficiently long time horizon, and looking at the broader context of one large enterprise (and not just one organization within the enterprise), we suggest that enterprise integration is perhaps best described as a cycle: as a cycle of integration, disintegration, and reintegration.

We found that enterprise integration was cyclic in the organization we studied for a few reasons. First, every time a new manager was appointed, he or she reinterpreted the purpose and value of the ERP system within a new context. Not knowing the original objectives of the ERP system, the new manager often overturned earlier decisions. Second, actions at higher levels could have a dramatic effect on the strategic context of action at lower levels of the firm. A decision to integrate (or disintegrate) various business units at the division or corporate levels would cascade down (sometimes over many years) to the subsidiaries. Thus the interaction between various levels of the enterprise was very important.

The organization of this paper is as follows. First, we briefly review the literature relevant to the concept of enterprise integration and enterprise resource planning (ERP). We then describe the theoretical framework (critical hermeneutics). We discuss the research method (critical ethnography), followed by a description of the research site and the findings. The findings are discussed and the conclusions presented.

Literature Review

There have been various approaches to enterprise integration, resulting in different definitions and conceptions of what enterprise integration is all about (Alsene 1999; Goranson 1992; Hasselbring 2000). Markus (2000), for example, in her view of enterprise integration, distinguishes business integration from systems integration. Business integration is defined as the “creation of tighter coordination among the discrete business activities conducted by different individuals, work groups, or organizations, so that a unified business process is formed” (Markus 2000, p. 4). This is supported by the integration of systems that involves “the creation of tighter linkages between different computer-based information systems and databases” (Markus 2000, p. 10). Hasselbring (2000) defines three layers of systems integration: business architecture, application architecture, and technology architecture. Business architecture refers to “the organizational structure and the workflows for business rules and processes. It is a conceptual level expressed in terms meaningful to actual users of application systems” (Hasselbring 2000, p. 33). Below that layer, the application architecture refers to “the actual implementation of the business concepts in terms of enterprise applications. At this layer, it is the central goal to provide the ‘glue’ between the application domain described in the business architecture and the technical solutions described in the technology architecture” (Hasselbring 2000, p. 33). Lastly, the technology architecture refers to “the information and communication infrastructure. At this layer, IT is challenged to achieve the business requirements” (Hasselbring 2000, p. 33).

The term enterprise systems may refer to enterprise resource planning (ERP) systems, enterprise application integration, or data warehousing (Markus 2000). In this article we are concerned with ERP systems.

ERP systems have been defined as “comprehensive, packaged software solutions [that] seek to integrate the complete range of a business’ processes and functions in order to present a holistic view of the business from a single information and IT architecture” (Gable 1998, p. 3). However, although in theory a single IT architecture is desirable, the way ERP is implemented in practice differs substantially. In their study of several multisite implementations, Markus et al. (2000) found some variation. This ranged from a company that had different ERP systems configurations in different business units (although the ERP systems were from the same software vendor), to a company that mandated a single ERP system across the whole organization. Bhattacharjee (2000) found one corporation where ERP systems from two different vendors, SAP and BPCS respectively, had been implemented. The large conglomerate we studied was different again. Since it was a large, highly diversified international conglomerate, with a ranking of around 400 on the U.S. Fortune 500 benchmarks in 1999 (Fortune 2000), its various subsidiaries had over a dozen different ERP systems from all of the major vendors. In this kind of situation, the concept of one tightly integrated package for the entire enterprise is not feasible (although it may be feasible for individual companies within the conglomerate to have one ERP system).

A somewhat broader definition of ERP is offered by Shanks and Seddon (2000, p. 243). Focusing more on the shared information and data flows that enable integration of enterprise-wide processes, they define ERP as “comprehensive packaged software solutions that integrate organizational processes through shared information and data flows.”

Over time, new modules and technologies have been integrated with the various ERP offerings. Davenport (2000b) observes that as time progresses, enterprise systems vendors tend to incorporate more and more functions into their software to accommodate new business challenges. In fact, ERP vendors like SAP, BaaN or PeopleSoft no longer tout themselves as ERP vendors but describe themselves as providers of “collaborative business solutions” (SAP 2003), “enterprise application” (BaaN 2003), or “pure Internet platforms for the real-time enterprise” (Peoplesoft 2003) respectively.

There have been calls for longitudinal research studies in information systems (Hitt and Brynjolfsson 1996; Pettigrew 1985). Some researchers on enterprise systems have moved beyond just the implementation episode to account for the entire appropriation experience (Robertson et al. 1996), while others have studied enterprise systems throughout the adoption life cycle (Markus and Tanis 2000).

Recently, some IS researchers have drawn attention to the importance of taking a longer-term view with respect to the broader strategic context of enterprise integration. For example, Larsen and Myers (1999) discussed a SAP implementation that failed after the adopting organization merged with another company. Davenport (2000b) reported a similar instance of a company merger leading to the discontinuance of the SAP system. In another case, Davenport (2000b) reports of a chief operating officer who changed his mind about his strategic assumptions after they had already started to become embedded into the enterprise systems project. Eventually, the project was cancelled.

Clearly, a company may experience many changes over the space of a few years, such as mergers, acquisitions, or divestitures (Sasovova et al. 2001). But changes of this magnitude may be missed if an IS researcher studies the lifecycle of just one single enterprise systems project within one particular company. We suggest it is important to study the broader context within which enterprise integration takes place, over an extended period of time, to better understand the changing nature of the relationship between the enterprise and enterprise systems.

The Theoretical Lens: Critical Hermeneutics

The theoretical lens used in our research was that of critical hermeneutics. Critical hermeneutics is variously described as a research philosophy, a theoretical lens, or a mode of analysis (Myers 1994, 1995, 1997b).

As a research philosophy, it provides the philosophical grounding for interpretivism, and particularly for interpretive research of a more critical nature. Klein and Myers (1999) base some of their principles for interpretive research on critical hermeneutics.

As a theoretical lens, it can be used as a meta-theory to provide interesting insights into hermeneutically grounded social action (Thompson 1981). Critical hermeneutics, like structuration theory, is a constitutive process theory whereby structure and agency mutually influence each other (Myers 1995; Walsham 1993). Both theories can be seen as emanating from the “school of structuration” (Parker 2000). Both suggest how it is possible to examine how social structures enable and constrain social action.

As a mode of analysis, critical hermeneutics can be used to analyze hermeneutically grounded social action. This usage of critical hermeneutics is one where it becomes a method of qualitative data analysis (see Myers 1997b).

In this paper we are using critical hermeneutics primarily as a theoretical lens. We adopted critical hermeneutics as the theoretical lens in this study because it provides a way to study to the broader context of enterprise integration within an organization (Harvey and Myers 1995). Organizations can be considered to be text-analogues. It also provides a way to understand events holistically over the long term (Myers 1997a). One of the key insights of critical hermeneutics is the idea that the very act of interaction between subjects and researcher creates history (Myers 1997a). Critical hermeneutics-informed research is thus a form of historiography. Our goal was thus to provide interesting insights into hermeneutically grounded social action—social action which in this case was concerned with enterprise integration within a large conglomerate.

From a critical hermeneutics perspective, power is exercised in everyday social encounters in the reflexive monitoring of everyday action. The concept of leadership involves dominant actors pursuing intentions to enact courses of action drawing upon and constrained by social structures. In exercising leadership, dominant actors reify and/or change social structures. Our concept of power, following Jasperson et al. (2002), includes authority, decision rights, participation in decision making, influence, politics, and power.

Some have suggested that leadership is one of the main determinants of ERP implementation success (e.g., Sarker and Lee 2000). Related to this is the role of power and politics in determining the outcome of enterprise systems implementation intertwined with inherent conflict among subcultures (e.g., Hislop et al. 2000). It appeared to us that critical hermeneutics was very appropriate for analyzing such issues along with the broader context of enterprise systems integration.

Research Method

One of the authors studied Stark—one of many subsidiaries within the Solteria group—using critical ethnography (all names are pseudonyms to preserve confidentiality). Ethnographic research has emerged as one important method for studying the social and organizational contexts of IS development and use (Harvey and Myers 1995; Myers 1999; Schultze 2000). Critical ethnography is one particular kind of ethnographic research, emphasizing that the research itself is an emergent process (Myers 1997a). Also, “Critical ethnographers describe, analyze, and open to scrutiny otherwise hidden agendas, power centers, and assumptions that inhibit, repress, and constrain” (Thomas 1993, p. 2). Given the focus of this research project on the effects of enterprise integration over time at the strategic level of the enterprise, we believe the use of critical ethnography was appropriate.

The data was obtained over an eight-year period in total, from mid-1996 to early 2004, with the most intensive period of fieldwork relevant to enterprise integration being from August 1999 to August 2000. The time horizon of interest ranged from 10 to 25 years depending on the level of the organization. Data sources included interviews, informal chats, meetings, observation, the company’s intranet, and various documents such as e-mail, annual reports, and newspaper articles. Although the focus of the research was on one particular subsidiary (Stark), we considered it important to understand the broader context within which Stark operated. Hence data was collected at many levels of the conglomerate: at the sector, divisional, and corporate levels.

A total of 107 formal interviews were conducted with 71 people (most of which were audio taped) from August 1999 to February 2004. The duration of the interviews ranged from around half an hour to over two hours. The selection of participants followed a combination of purposeful and maximum variation sampling strategies. Many informal discussions with employees also took place. The people interviewed ranged from the truck drivers delivering the product to the former chief executive officer of the larger conglomerate (Solteria). Horizontally, across the organization, those interviewed included salespeople, IT personnel, accountants, administration workers, customer service representatives, plant managers, logistics personnel, shop floor workers, and customers.

As well as interviews, meetings were attended at various levels and departments. Across the organization, meetings such as sales, finance, production, meetings between functions, meetings between business units, meetings between Xenon and the SEKTOR Information Services Group, Information Services Group (ISG) members dedicated to Stark and Xenon’s information systems meetings, SEKTOR group shared services project meetings that included people from various business units in Flavion, and others, were attended. Apart from interviews, meetings and documentation, one of the authors was given access to the internal network of Stark and an internal e-mail address for research purposes. This access was given in May 2000 and retained until April 2001.

From the data, following the principles of hermeneutic analysis (e.g., Klein and Myers 1999), a variety of contradictions, issues, and controversies arose. A story of the enterprise integration effort was written from the mass of data and 46 issues were highlighted. These issues were grouped into six themes: the relationship between leadership and enterprise integration, knowledge loss, enterprise-wide integration challenges, Stark over-tight integration problems, Stark organizational change failure, and Stark ERP system implementation problems. Insights were then sought that would inform current research and practice. The insights discovered were juxtaposed with the existing literature to refine its distinctive contribution to the literature on enterprise integration. One of the insights, namely, the cycles of integration, is reported in this paper.

In summary, given the nature of the topic (the broader context of enterprise integration within a large conglomerate), we believe the research method (critical ethnography) was appropriate. As is to be expected with such a method, the research project was highly emergent, reflexive, and iterative. Also, given the huge mass of data at our disposal, we have chosen to discuss just one aspect of the story in this paper (as recommended by Myers 1999).

Enterprise Integration at Stark

Stark is a small-to-medium sized enterprise within a large conglomerate within the Asia-Pacific region. Stark was part of the SEKTOR group of companies with annual revenues of over US\$300 million. SEKTOR was in turn part of the Flavion division (with annual revenues of around US\$1 billion). Flavion was one of four divisions of Solteria. Solteria was one of the global 500 companies with annual revenues of more than US\$4 billion. The organizational structure of the Solteria empire for the year 2000 is shown in Figure 1 (with the reporting line for Stark highlighted, and the subsidiaries of other divisions and sectors omitted).

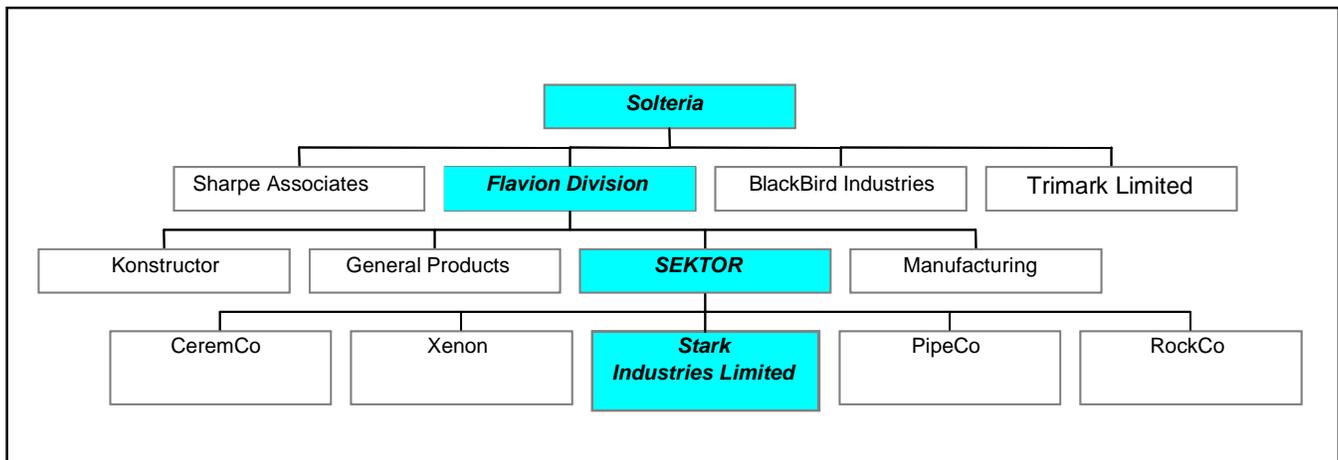


Figure 1. Organizational Structure of Solteria Limited (2000)

Many of the companies within the Flavion division held dominant market positions in their respective markets with Stark being no exception. The SEKTOR group of companies of which Stark was a part collectively made up an industry supply chain. Stark employs around 700 people at over 68 production sites throughout the country. Stark is now comprised of five businesses: CamCo, MaxCo, HinoCo, DrinCo, and ModCo. Prior to November 1999, Xenon was also part of Stark.

Stark was diverse with regard to its operations and information processing requirements. For example, CamCo was a make-to-order business while MaxCo, DrinCo, and HinoCo were primarily make-to-stock businesses; Xenon was an engineer-to-order business, while ModCo was a design-to-order business.

The Wider Context of Enterprise Integration at Stark

The Stark story cannot be understood in isolation from the sector, division and conglomerate levels of which it was a part. Therefore, we will describe the broader context within which Stark's enterprise integration efforts took place.

Since 1981 Solteria and its subsidiaries had gone through a cycle of centralization, decentralization, and recentralization. Let us start at the Solteria level where for decades a leadership style of federalism had been practiced.

Solteria (Corporate) Level

Over time, a corporate ethos of commensurate accountability, responsibility, and autonomy was practiced to the lowest level practicable (even down to the manufacturing plant level). For example, a plant manager was described as the "king" of his or her domain. This leadership style also led to IT decision making being localized at the business unit level. The dominant logic was one that preferred business-unit effectiveness over cross-business-unit efficiency. This decentralized leadership was also prevalent during the tenure of Sam Kennedy, the Solteria CEO from 1987 to 1997. He was succeeded by Clinton Grant, who adopted a more centralized approach in management.

Grant initiated the "One Firm" initiative that sought to share non-unique resources across the Solteria Empire. A move toward tighter enterprise integration began. In 1999, a shared services project named Project Jigsaw was initiated at the Solteria corporate headquarters level. Jigsaw had four sections: information technology, human resources, accounting, and others (functions such as supply chain, procurement, and customer relationship management). At the same time as Project Jigsaw was under way, there was a global procurement initiative and a global telecommunications outsourcing project. In addition, there was a global IT infrastructure project that was started at the SEKTOR group level but, due to the wider corporate move toward integration, was escalated to the Flavion and Trimark Limited divisional levels.

However, in the first quarter of 2000, it was decided that Flavion should be spun-off as a separate business. Project Jigsaw was cascaded down to the Flavion level. The global procurement and the IT infrastructure initiatives were also cascaded down to the Flavion division level as well. Alongside these was the global telecommunications outsourcing project.

Flavion (Divisional) Level

Moving down to the Flavion division: The Flavion division was heavily influenced by the leadership style of Solteria. Successive Flavion CEOs that managed Flavion from 1991 to late 2000 were federalists. Under this leadership style, a “best of breed for line of business” IT strategy was adopted. This strategy was also justified by Flavion’s extreme diversity where processes, markets, technologies, products, and services differed substantially across its business units. This approach spawned a myriad of IT systems and processes. In 1999, Flavion had 33 different business information systems from multiple vendors and had 13 different ERP systems.

Then in October 2000, given the new mandate that Flavion was to be spun-off, a new CEO, Hans Weissmann, was appointed. Weissmann adopted a single ERP strategy for the whole of Flavion, a strategy that was relatively extreme compared to his predecessors. (This is shown as “tighter integration” in Figure 2 within the Flavion row). A new CIO was also brought in who initiated a shared services project similar to Project JigSaw mentioned earlier. However, Weissmann’s tenure was short-lived. In June 2001, he was succeeded by Henry Thoreau.

In contrast to Weissmann, Thoreau’s previous experience with large-scale IT implementations, particularly with one major ERP vendor, was not positive. The shared services project was shelved resulting in the departure of the CIO. The IT strategy reverted to a best of breed for line of business strategy. There was, however, still an expectation to move toward fewer ERP systems in the long term. But given the diversity of Flavion’s business units it was expected that no single ERP system would be able to cater for the combined needs of all its business units.

SEKTOR (Group) Level

At the SEKTOR group level, a similar federalist leadership style was adopted by Billy Wilton, the founder of that group. The SEKTOR group IT strategy was also one of best of breed for line of business. A move toward tighter coordination of IT resources started with the formation of an information services group shared services function for the SEKTOR group in January 1996. By 1999, all SEKTOR business units were sharing the same IT networks, e-mail systems and IT support staff.

In April 1998, a new SEKTOR chief executive, James Wadsworth, was appointed. Within the context of Solteria’s move toward tighter integration, increased coordination and control of business application development was exercised at the SEKTOR group level. In March 2001, Flavion was restructured after being spun-off from Solteria resulting in the SEKTOR group ceasing to exist. Incidentally, James Wadsworth had also been the IT champion of Flavion with many IT projects under his belt. His departure along with those aligned with him resulted in the cancellation of several IT projects.

Stark (Individual Business Unit) Level

Lastly, at the Stark level, Stark had traded over the years as a single entity, as three independent entities, and again as a single entity in 1993. From 1993 to 1998, the dominant logic of the management of Stark was to achieve greater integration across its constituent businesses. However, from 1998 onward, there were signs that greater separation of Stark’s constituent businesses was going to occur. The pendulum of integration and disintegration had begun to swing the other way—toward greater disintegration. This started with Xenon, one of its businesses, being split off to become an independent business unit reporting at the same level as Stark. This split was ordered by the then new SEKTOR group chief executive, James Wadsworth. Even though both companies had shared the same ERP system, Wadsworth ordered the split because he wanted to manage Xenon independently from Stark. The ERP system was split into two as well.

Recurring Patterns

If we take a sufficiently long term view, there are several patterns that accompanied these changes. One was a change in enterprise integration strategy following a change of leaders. For example, prior to 1993, Stark traded as three independent business units under the leadership of Billy Wilton, who then became the chief executive of the SEKTOR group of companies (to whom the chief executive of Stark reported). Then, from 1993 onward, prior to David Callon becoming the chief executive of Stark, Stark was formed from the amalgamation of MaxCo, CamCo, and Xenon (HinoCo and ModCo, the other two businesses of Stark, were added later). From then onward, an enterprise integration movement involving systems, processes, behaviors,

mindsets, culture, and politics began at Stark. This included development of a single corporate culture, a Stark-wide corporate mindset, promulgation of certain Stark behaviors, standardization of certain processes, and amalgamation of its information systems.

The development of a single corporate identity during David Callon's time as general manager of Stark from 1993 to 1998 required the use of a single ERP system (developed by DAREA¹) that went live in July 1998. This system was meant to enable Stark to achieve its new strategic role of being the marketing arm of the SEKTOR group. Within this strategic context, Stark's role was to increase the use of SEKTOR products within the industry. However, Stark, being formed from three distinct significant entities, had powerful actors (herein known as the old-timers led by Wyatt Dunkins) that sought to pursue their hidden agendas to preserve their power centers. These actors sought to influence the higher echelons of Solteria to change Stark's strategic role back to one of a production arm of the SEKTOR group.

Then in May 1998, as mentioned above, Xenon, one of Stark's businesses, was split off. Following this, Gene Romm, took the helm of Stark and greater separation of Stark's constituent businesses ensued with divisional managers appointed for each business. Ironically, Romm perceived that the ERP system had been implemented primarily as a financial performance reporting tool. This stood in contrast to the original intention of the previous management team to implement ERP as a tool for better non-financial performance measurement.

Eventually, by 1999, Stark had become a shadow of its former self where its strategic role as the marketing arm of the sector was taken over by the SEKTOR group headquarters. It reverted back to being a production arm of SEKTOR group. Thus, dominant actors with hidden agendas acting to preserve certain power centers managed to change Stark's strategic context. However, the ERP system that had been implemented was now inscribed with assumptions of tightly integrating the three businesses of Stark. The change in strategic role meant that Stark no longer needed such a tightly integrated system.

[The change of Stark's strategic role has] certainly taken place since I left [in December 1998]. But [it was] starting to take place a little bit over the implementation [of] Project Bridge. We're challenging, at senior levels in Solteria, about what role Stark was to have inside the SEKTOR group of companies—whether it was about strategic growth or whether it was just an operating unit that was at the end of the value chain, and we wanted to keep it tight and simple. (Interview with David Callon, General Manager of Stark from 1993 to 1998, 16 February 2001)

This oscillation of strategic role was accompanied by the periods of looser integration in the pre-Callon era, tighter integration during David Callon's tenure, and then looser integration in Gene Romm's tenure. Also, what appears to be an enterprise integration movement enabled by integrative technologies (in this case the use of ERP) over a five to six year period, when viewed over a broader time horizon, was actually a cycle of integration, disintegration, and reintegration.

These oscillations between looser integration and tighter integration are characteristic of patterns that seemed to occur at multiple levels of Solteria. This is illustrated in Figure 2.

After discussing the longitudinal oscillations at each level of Solteria, we now discuss the interaction between the organizational levels. As Figure 2 shows, Sam Kennedy, the CEO of the conglomerate, influenced leaders at the lower levels of Solteria. They in turn influenced the leadership at the SEKTOR group level.

Under the Solteria corporate ethos of commensurate accountability, responsibility, and autonomy, leaders like Billy Wilton thrived and grew. He mentored his successor, James Wadsworth, within the same culture. When David Callon took over the general manager's position, he adopted a similar federalist model of management. Hence, over time, we see leaders influencing other leaders and culture at lower levels that in turn constrain or enable certain courses of action. In Stark's case, federalism at the highest levels of Solteria allowed it to pursue its own systems integration strategy.

The figure also shows the relationship between leadership changes, enterprise integration strategy changes that accompany leadership changes, and how changes at higher levels trickle down to changes at lower levels. There appears to be a correspondence between the change of leaders (who are arguably the dominant actors) and the shape of the enterprise in the longer term. Accompanying these management changes was the turnover of CIOs. In every case, the CIOs left and were replaced soon after a new CEO took over (usually due to disagreements between the new CEOs and incumbent CIOs).

¹DAREA is an acronym for one of the five largest ERP vendors at that time.

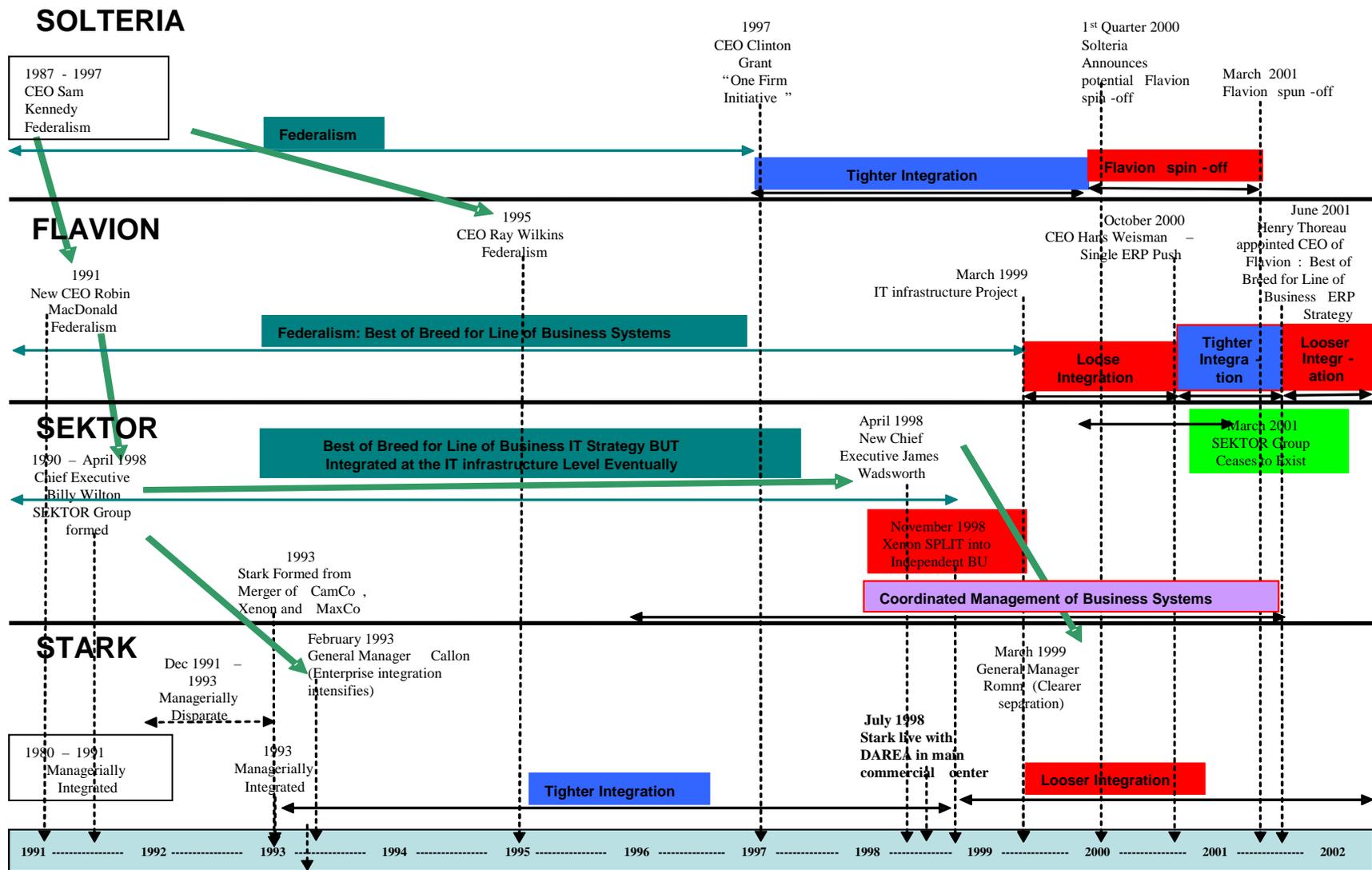


Figure 2. Historical Trends toward Tighter/Looser Integration across the Entire Solteria Group

Another observation is that while changes at the higher echelons at the Solteria level had mandated a tighter integration strategy, Xenon's system was totally split from Stark by the edict of the CEO of the SEKTOR group (two levels down from Solteria). This aberration can be explained by the large degree of autonomy accorded by the culture of commensurate accountability, responsibility and autonomy. Deviations from corporate policy were permitted provided they could be justified by the promise of better performance.

Discussion

Drawing upon a critical hermeneutic perspective, one can understand the unique understanding that each actor brings to the setting. Each incoming manager brings his or her experience to bear on the new organizational setting. As they make decisions based on their background and experience, new organizational history is created.

In the case of Flavion, Ray Wilkins practiced a federalist approach, giving managers the responsibility of meeting corporate performance targets. In October 2000, however, Hans Weissmann was brought in as a corporate doctor. He expressed reservations about the capabilities of some members of the senior management team at Flavion and mandated that one ERP software product should be used throughout the whole of the division. After Weissmann's resignation, however, Henry Thoreau cancelled a proposed shared services project that was promulgated under his predecessors' tenure. His aversion to enterprise integration was due to his previous bad experiences in implementing large-scale enterprise systems.

The concept of historicity of understanding explains to a large degree the differences in enterprise integration strategy at the Stark level. Here, Gene Romm perceived the role of the ERP system differently from his predecessor, David Callon. Romm saw the ERP system as a financial performance reporting tool, whereas Callon saw it as an enabler of non-financial performance measurement. Romm had not been involved in the original discussions about the objectives of the ERP system and thus did not understand the broader goals of the original project.

Another emphasis of critical hermeneutics is the scrutiny of hidden agendas and power centers. Dominant actors played a major role in determining what was initiated, feasible, and successful across multiple levels of Solteria. For example, Wyatt Dunkins lobbied to change the strategic role of Stark, against the wishes of the CEO of Stark at the time. Eventually Dunkins was successful.

Nowhere is the interaction between leadership and social structure more profound than in the cycles of oscillations observed when new leaders take the helm. While he or she may attempt to change the organization by installing a new system and processes, it seems to take much longer for the influence of the leader on the social structure and culture of the organization to take effect. These cultural and structural changes may be opposed by other dominant actors. In the case of Stark, in the end the social structures at Stark were not changed to reflect a new corporate identity. They reverted to what they had been originally.

There appears to be some correspondence between the cycles of centralization (integration), decentralization (disintegration), and recentralization (reintegration) and the industry economic cycle. When the economy was doing well, the three businesses of Stark were said to be different enough to be managed as separate entities. Then, when there was an economic downturn (characteristic of the boom and bust cycle of the industry in which Stark is participates), there was considerable pressure to consolidate to save costs. It is interesting to note that prior to Stark being merged to become a single entity, the three businesses CamCo, MaxCo, and Xenon collectively made an unacceptable loss in the eyes of Solteria's strong performance-oriented culture. Then, when the economy recovered, a new general manager came in and observed that Stark had been over-tightly integrated.

There is evidence to suggest that the cycles of integration, disintegration, and reintegration are due to but not limited to the interaction of the following forces:

- Management turnover and knowledge loss that results from it. Every time a new manager is appointed, he or she reinterprets the purpose and value of the ERP system within a new context. New managers may not know the original objectives of the ERP system.
- Hidden agendas and power centers of dominant actors. The interaction between these actors determines the shape of the enterprise in the long term by influencing systems, processes, social action, and structure.
- The interaction between various levels of the enterprise. Actions at higher levels may alter the strategic context of action at lower levels of the firm and vice versa.

The economic cycles of the industry. In thriving times, the company tended to decentralize to maximize flexibility; in lean times, centralization was the order of the day to save costs.

Conclusion

Enterprise integration is a long term undertaking. We suggest that enterprise integration should be approached from a much broader perspective than that of the single enterprise systems experience lifecycle. We also suggest it is instructive to look at enterprise integration from the perspective of multiple levels of the firm (rather than just one individual business unit). We have seen that long term patterns emerge when one looks at enterprise integration efforts over a relatively long time span and considers multiple enterprise integration projects (at least within the one large conglomerate).

In IS research, enterprise systems research has often been approached with the assumption that integration is the order of the day. But our findings suggest that there may be cycles of integration, disintegration, and reintegration. In the firm we studied, with each new leader there was a new strategy for the enterprise as a whole, and a new cycle of enterprise integration (or disintegration) began. However, it took many years for the systems, processes, social practices, and culture of the enterprise to be inscribed with the new leader's strategy. Unfortunately, by the time the new strategy was implemented in structures and systems, a new CEO had come along—restarting the cycle all over again.

One practical implication of our research is that enterprise systems vendors need to design their systems to be reasonably flexible to accommodate changes in organizational leadership and strategy. Perhaps future offerings of enterprise systems will allow more extensive reconfiguration than is presently possible. From the perspective of the organization installing and implementing enterprise systems, our work highlights the fact that it can be counter-productive to integrate systems too tightly if in the future a clearer separation of business units is required. This is the mistake that Stark made.

As a theoretical perspective, we found critical hermeneutics to be particularly useful for studying the broader context of enterprise integration within the enterprise as a whole. It provides a way to understand the relationships between the leaders and their actions at the various levels of the firm, and how these actions and the corresponding events take place over time.

One important limitation of our paper is that we studied just one large organization. Therefore, it is possible that many of our findings may not apply to smaller organizations. Another limitation is the fact that the conglomerate we studied and its subsidiaries were going through a time of dramatic change. Our findings thus may not apply to those organizations in more stable environments (if there is such a thing).

Nevertheless, our research throws into question the meaning of information technology-enabled enterprise integration. Is the enterprise a conglomerate, a division, or a business unit? This paper has shown that the nature of the enterprise may change dramatically over time. Seen over a sufficiently long time frame, the enterprise may centralize, decentralize, and recentralize (Markus et al. 2000). The obvious implication is that enterprise integration is by no means inevitable. Enterprise integration strategies will change as leaders change, as the economy changes, and as the firm itself changes. We thus propose that enterprise integration is perhaps best described as a cycle: as a cycle of integration, disintegration, and (perhaps) reintegration.

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