The False Promise of Technological Determinism: The Case of Enterprise Resource Planning Systems

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According to software vendors and consultants ERPs, transform the nature, structure and management of work regardless of organisational context. This article contests this technologically deterministic view of organisational change by demonstrating the role that discourse plays in the social construction of ERPs.

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Introduction

Enterprise Resource Planning (ERP) systems are computer-based technologies that integrate data across an organisation and impose standardised procedures on its input, use and dissemination. Because of this capacity for integration and standardisation, ERP systems are supposed to transform the nature, structure and management of work (thereby delivering significant cost savings and increased profits) regardless of organisational context (Buckhout et al., 1999; Davenport, 1998; Laughlin, 1999; Trunick, 1999). We examine the extent to which this technological determinist conception, advanced by consultants and vendors, holds true in relation to three case study organisations. In each case, the organisation deliberated as to whether ERP could deliver what the vendors and consultants promised. One organisation embraced ERP whole heartedly, one organisation adopted it very much on its own terms, and one organisation rejected its adoption. Rather than simply appropriating or subscribing to the technologically determinist discourse promoted by the ERP industry, managers in the different organisations were able to generate and sustain a range of different discourses consistent with their ERP implementation experiences.

The paper is divided into four main sections. The first reviews some of the recent literature on ERPs and their implementation. It demonstrates the extent to which much of this literature presents organisational changes associated with ERPs in a technologically deterministic fashion. In the second section we specify the paper’s research questions and outline the discourse analytic methodology employed to investigate them. A third section reports the results of the discourse analysis carried out in relation to our three case study organisations. The final section to the paper provides a discussion of our results and main conclusions.

ERPs and their implementation

Originally derived from Manufacturing Resource Planning II applications, the current generation of ERP systems integrate data across an organisation and impose standardised procedures on its input, use and dissemination. They now boast a range of modules that include the original manufacturing
and logistics functions, complemented by various financial and accounting, human resource management, and sales and distribution applications. Leading vendors, like SAP, have also developed industry specific end-to-end solutions (Mabert et al., 2001: 70). Since the mid 1990s there has been massive growth in the number of organizations implementing ERP systems (Booth et al., 2000; Trunick, 1999; Madapusi and D’Souza, 2005). By the late 1990s one estimate suggested that, in the US, almost 60 per cent of large companies and 40 per cent of small and medium sized companies had deployed ERP systems (Cissna, 1998). In 2003 it was estimated that 30,000 companies around the world had implemented ERPs (Mabert et al., 2003). The significance of the ERP “industry” is such that the worldwide market for these applications grew to US$79 billion annually by 2004 (Gefen and Ragowsky, 2005).

ERP systems are believed by many to deliver significant cost savings and increased profits to organisations based on reduced procurement costs, smaller inventories, more effective sales strategies, lower administration costs, and reduced direct and indirect labour costs (Buckhout et al., 1999; Brady et al., 2001; Davenport 1998; Gefen and Ragowsky, 2005). They are also said to lead to improved decision making because of their ability to provide “real time” information in a variety of report formats, each designed to assist particular management functions and procedures (Laughlin, 1999).

In many respects this presentation of the organisational benefits and changes associated with ERPs can be described as technologically deterministic and there is a strongly determinist discourse that surrounds much of the ERP literature. ERPs are depicted by software vendors and consultants as a form of technology that has far reaching and beneficial organisation-wide consequences. While more measured examples of this discourse tend to warn businesses of the imperative of careful planning, and the importance of seeing an ERP implementation as a change process that needs to be managed, they all portray major benefits flowing directly from the technology (see, for example, Aldwani, 2001; Bernrodier and Koch, 2001; Holland and Light, 1999). This discourse typically emphasises the considerable business efficiency dividends that can be realised through the
introduction of an ERP system, the value of ERPs driving ‘best practice’ business processes into organisations, and the suitability of ERPs for organisations of any size in any industry. The discourse is best exemplified by the claims made by vendors and consultants. For example, Oracle/PeopleSoft promotes its PeopleSoft EnterpriseOne Solutions in the following terms, ‘Turn manual processes into an automated system and watch your expense management save time, money and resources’. In advertising its Customer Relationship Management modules PeopleSoft claim that they will ‘increase revenues and drive customer satisfaction and loyalty through Sales, Marketing and Service effectiveness’ (Oracle/ PeopleSoft, 2005).

While this technologically determinist discourse, which stresses the benefits of ERPs regardless of organisational context, is most clearly exemplified in the texts generated by vendors and consultants, it can also be found in academic literature. For example, one researcher has recently claimed that:

The tangible benefits that accrue due to ERP include: reduction of lead time by 60 per cent, 99 per cent on-time shipments, increased business, increase of inventory turns to over 30 per cent, cycle time cut to 80 per cent and work in progress reduced to 70 per cent. The intangible benefits include: better customer satisfaction, improved vendor performance, increased flexibility, reduced quality costs, improved resource utility, improved information accuracy and improved decision making capability (Siriginidi, 2000: 381).

Research questions and methods
In light of the deterministic discourse attached to ERPs by many of those involved in the ERP industry, this article examines two main issues. First, it is interested in the extent to which managers involved in ERP implementations accept and adopt the technologically determinist discourse associated with these systems. Second, it is interested in whether ERPs produce the sort of organisational changes that are suggested by this discourse.

It does so by examining the role that discourse plays in the social construction of ERPs. There is a growing body of literature which argues that technology and its impact on organisations
are shaped and influenced by the social context in which it is introduced (see Williams and Edge, 1996). One well known version of this argument is social construction of technology (SCOT), associated with the work of Trevor Pinch and Wieder Bjiker. Pinch and Bjiker (1984) argue that technology design is an open process which can produce different outcomes depending on the social circumstances of its development and is therefore subject to interpretative flexibility. Pinch and Bjiker’s work suggests that technologies are artefacts that bear the imprint of shared understandings developed by the social groups involved in their design.

While more recent assessments have argued that Pinch and Bjiker overemphasise the role of agency in shaping technology, they accept the need to analyse the development and adoption of technology in its social context. Klein and Kleinman (2001), for example, argue that SCOT neglects the importance of structural factors, like power relations, play in the social shaping of technology. In particular, they (2001: 38) suggest the need to explain the systems of meaning that impact the design of technological artefacts. Barley and Orlikowski (2001: 149) suggest, that in focussing on the agency associated with the design of technological artefacts, SCOT has tended to ignore the materiality of technology and failed to “examine how agency shapes the way technologies influence work practices and organisational structures once the technology is deployed and used in organisation.” They argue for a perspective that treats technologies as simultaneously social and physical and examines the interplay between the material characteristics of technology and the social context within which it is designed and deployed.

There are a number of features of ERP systems which suggest that there are benefits to examining them from a social constructivist perspective. Perhaps most importantly, while ERPs are designed to be highly standardised, they also require configuration. The ERP configuration process involves choosing from a range of inbuilt options and completing parameters and tables and is very different from changing the software code so that the ERP processes operate differently from their original design – a process normally referred to as ‘customisation’ (Shanks, Seddon and Willcocks, 2003). While it is possible to exaggerate the range of options available during the configuration
phase (Koch, 2001), organisations still have a range of options in how they configure and implement these systems. These are likely to be affected by social context within which and require an understanding of individual agency mediated by the power relations and systems of meaning within which implementation takes place.

In the organisational studies literature increasing attention has focused on the role that discourse plays in constituting organisational reality (Grant and Hardy, 2004). We define a discourse as comprising a set of interrelated texts that, along with the related practices of text production, dissemination, and consumption, brings an object or idea into being. By this we mean that discourse relates to not just spoken or written texts, but also structures and practices that underlie the texts and their production, transmission and reception (Phillips and Hardy, 2002). There has been a growing use of discourse analysis to gain insight into organisational phenomena including some which focus on ERPs (Alvarez 2005; Bondarouk, 2004; Oliver and Romm, 2003). In one recent example of discourse analysis, relevant to the current study, Leonardi and Jackson (2004) demonstrate how senior managers involved in controversial mergers use a discourse of technological determinism to frame organisational change as inevitable and uncontestable.

Our approach differs from traditional case study analysis in two important respects. First, a discourse analytic approach allows us to identify and analyse the key discourses by which ERP systems are conceptualized, idealized and articulated. Moreover, it enables us to demonstrate that discourse plays a central role in the social construction of ERP systems and the practices surrounding their implementation. Discourse brings an object (in this case ERP) into being so that it becomes a material reality in the form of the practices that it invokes for various stakeholders (employees, vendors, managers, consultants etc) (Hardy, 2001: 27). As part of this process, it “rules in” certain ways of talking about the ERP that are deemed as acceptable, legitimate and intelligible while also “ruling out”, limiting and restricting the way these stakeholders talk about or conduct themselves in relation to an ERP systems or constructing knowledge about them (Hall, 2001: 72). In
this sense discourse can be shown to act as a “powerful ordering force” (Alvesson and Karreman (2000: 1127).

Second, our discourse analytic approach shows how, via a variety of discursive interactions and practices, particular discourses go on to shape and influence the attitudes and behaviors of key ERP stakeholders (Alvesson and Karreman, 2000: 1126-1127). As with any discourse, discourses related to ERP do not simply start out in possession of “meaning”. Instead, and in line with their socially constructive effects, their meanings are created, and supported via discursive interactions among key ERP stakeholders. This constructive process involves the negotiation of meaning among different stakeholders with different views and interests and results in the emergence of a dominant meaning that can be seen as a particular discourse. The emergence of this dominant meaning occurs as alternative discourses are subverted or marginalized and is indicative of the power relationships that may come into play. As Fairclough (1995: 2) explains, the “power to control discourse is seen as the power to sustain particular discursive practices with particular ideological investments in dominance over other alternative (including oppositional) practices.”

Our discourse analytic study of ERP implementations seeks to demonstrate that, although some discourses related to ERP may seem to dominate (for example discourses with a technological determinist emphasis), “their dominance is secured as part of an ongoing struggle among competing discourses (among for example, consultants, managers and employees) that are continually reproduced or transformed through day-to-day communicative practices” (Hardy, 2001: 28). More specifically, it also seeks to reveal how dominant meanings emerge from the context under which they are negotiated.

We draw on data gathered at three Australian case study organisations. For reasons of confidentiality, we have given each case study an assumed name - FoodCo, BankCo and OzUni. FoodCo is a large food processing company, employing approximately 2,500 staff. BankCo provides a full range of personal and institutional banking services and employs over 22,000 staff. OzUni is a large “traditional” university. It employs a combined total of approximately 5,800
academic and non-academic staff and enrols approximately 42,000 full and part-time students per annum.

At FoodCo, the organisation had recently put a complete SAP ERP system into operation and our paper focuses on this process. At BankCo the organisation was progressively implementing an ERP system. One of these was the PeopleSoft HR suite of modules, and it is the circumstances related to the implementation of these modules that we focus on. At OzUni, some PeopleSoft ERP software was already in place and the university therefore considered adding the PeopleSoft Student suite of modules to this system. After some considerable debate among University management it was decided not to implement the PeopleSoft modules, but instead to design “in house” a customised system. The paper examines the reasons why the University made this decision.

Our primary sources of data comprised a series of interviews with senior managers at each of the three case studies. Managers were selected for interview on the basis of their having been involved in the decision to implement an ERP system or modules at the organisation. Where the organisation had decided to utilise the ERP system or modules, the respondents had also been members of the project team responsible for its implementation. Each interview was semi-structured, lasted between one and two hours and was tape-recorded and then transcribed. All interviews took place in 2003 and early 2004. In addition, selected line managers and supervisors, as users of the ERP systems, were interviewed. Over thirty interviews were conducted across the three case study organisations. The case study organisations also made available a range of documentation including internal reports, memos, training materials and information circulated to staff affected by the ERP implementation.

In order to carry out our discourse analysis, the texts that we had collected were catalogued according to which case study they related to and their genre (i.e. interview, report, memo etc) (see Orlikowski and Yates, 1994). We then classified the specific speech act reference, in order to see what a particular text or section of text was aiming to achieve. For example, was the text trying to justify, empathise, correct, explain or resist. We then matched this microanalysis with broader,
Results

FoodCo – Embracing ERP

Managers associated with the implementation of the ERP system at FoodCo regarded it as a major success. Our analysis of the texts surrounding the implementation suggests that these managers embraced the concept of ERP wholeheartedly believing that an ERP system would solve a number of its business ills and that as far as the organisation was concerned it had not been disappointed. This perception was epitomized by the ERP Project Manager that we interviewed at the company. His level of attachment to the concepts underpinning ERP and belief in what the ERP system could, and had, achieved for FoodCo was something that we did not experience at our other case studies.

In 1997, as a result of expansion and merger, FoodCo found itself operating six different computer systems. In most instances they were unable to interface and where they did there were immense problems. So as to obtain information and process standardisation across the business, FoodCo sought to implement an ERP system. After a lengthy selection process, FoodCo decided to adopt SAP and engaged one of the world’s largest consulting firms to oversee the implementation. The implementation of various modules of the SAP system at FoodCo involved seven roll-outs and was completed in November 2001.

In reviewing the implementation, management viewed the project as a success given that the system was delivered on time and on budget and as the Project Manager noted, “the functionality worked and the business kept going and the customers got served”. Indeed, while senior managers acknowledged implementation problems had been encountered, this was qualified by the advantages that accrued from the new system. For example, the Project Manager noted that some FoodCo line managers perceived ERP as controlling production where they might previously have been able to exercise some discretion. However, he rationalized this by explaining that “Quite often
in their discussions, they don’t realise they are whinging for one minute [about ERP implementation] and the next five minutes of the conversation they are actually extolling the virtues of what you’ve done to them.” Thus, he regarded complaints that the ERP system curtailed management discretion as evidence of the system’s success because “[I]n the past we would have gone ahead and made an incorrect product. Whereas now the linkage is there and people are now being driven by systems and data to achieve things.”

One of the most significant features of the discourse surrounding the ERP implementation at FoodCo concerned the extent to which the organisation had implemented a “vanilla” version of the software. A vanilla implementation is where “ERP systems require the organisation to adapt to the software rather than modifying the software to suit the organisation’s established practices” (Booth et al., 2000: 6). In line with this observation, the Project Manager asserted that: “Where possible we’ve tried to take vanilla SAP offerings with the notion that they would lead us to best practice”.

However this did not appear to have occurred in two key respects. Firstly, several areas of the organisation did not actually have to change their business processes and practices significantly. In other words the way work was organised and managed was commensurate with what the new ERP software required – the major benefit of the ERP was that it enabled these tasks to be carried out more efficiently. Thus, as the Project Manager noted:

Because it’s vanilla, because this software has been run by ten thousand other corporations… we’re just riding on the back of it… In certain areas, my areas, we didn’t bend [modify the ERP system].

In other areas of the organisation, rather than change the practices and processes, they sought to modify or customise the software. As the Project Manager explained, this approach was problematic in that it had led to inefficiencies and errors:

Sometimes you’re going to have to bend, but we bent too much…. In our sales area, we’ve sort of modified our system immensely to match custom and practice and my best example of not going vanilla is we took our promotion system which was called a PAR [Promotions Advice Register] and we’ve tried to copy the exact thoughts and exact processes into SAP, but then extend it to be a fully integrated cost accounting system and I’ve got one of my most senior people dedicated almost 100 per cent. It is an absolute nightmare.
Indeed the increasing complexity of work processes following the ERP implementation was acknowledged in interviews with other managers and users. They argued that new work in error reporting and reconciliation had generated a significant increase in both hours worked and the requirement to liaise with a wider cross section of functions. Some also expressed reservations about the accuracy of data emanating from the system and the ability of the new system to integrate all of the firm’s complex business processes. As one manager noted, “We really do have a very complex operation that has so many variables and at the moment it [SAP] certainly cannot cope with the number of variables in our system”. The result was that many employees continued to use the pre-existing paper-based record system in addition to the data-entry required by the new system. As one supervisor acknowledged:

…so the guys really need to write down what they’re putting away and what locations and then put it into the system and then complete their transactions. It’s a shame but that’s the way it is…When we pull down production orders we’ve got to do the same thing there’s paperwork there and we’ve still got to file paperwork.

However, employee concerns about ERP and potential resistance to its implementation did not appear to have any significant impact on the perceived success of the initiative amongst managers. Interviews with supervisors and line managers suggested that staff had either been ameliorated by the ERP system itself or by the implementation process surrounding the ERP. Hence, in line with organisational development and change literature (Burnes, 2000; French & Bell, 1999), staff were persuaded of the value of the ERP initiative through extensive training, communication, and participation. There were also few redundancies directly attributable to ERP. The project manager provided an illustration of the amelioration of resistance to the ERP implementation by using the example of a shopfloor employee - a leading hand, who had initially been very resistant to the idea of having to use a computer to input records that he had previously only ever written out by hand. In this instance it had been a case of:

I’ve never used a computer before, and it was really that sell message of ‘well what you’ve been doing on paper, we’re going to do and make visible on the computer’. And he’s now like the champion of it, like the contact point to his people and it’s just re-cemented his role as leading hand. So there was obviously a lot of those shopfloor people, who’d got there
through seniority and age, and so there was a lot of concern at that level ‘well is my job redundant? I won’t be able to do this, it’s all for the kids’. But that’s not the case, the software is just a tool.

In sum, the ERP implementation at FoodCo was judged by senior managers to have been a major success. The introduction of the system had led to a perception that information and data was now more efficiently managed and had enabled more centralised control of the way the business was run. As one manager noted, “I think it’s been very good, I’ve seen the benefits, I think we probably need to turn more of the components on to get more benefit.” This perception of success can, in part, be attributed to the way in which the ERP implementation was managed, and the fact that in many areas of the organisation existing business practices and processes remained largely unchanged despite the implementation, thereby minimising resistance from staff. Importantly however, despite the strong deterministic rhetoric accompanying the initial embrace of the ERP system, the actual implementation process demonstrated a more complex interpretation, in which business processes were not fundamentally redesigned, the software itself was in some cases customised, and where managers and staff in many cases maintained existing work practices alongside the new system. Thus, even though the managers associated with the ERP implementation adopted a technologically determinist view of the process, the system did not necessarily produce these results.

**BankCo – A Pragmatic Approach to ERP**

In 2000, BankCo commenced the implementation of the PeopleSoft HR suite of modules. The system went live in October 2002. The implementation of the PeopleSoft HR modules was largely determined by the fact that BankCo had already implemented the PeopleSoft Financials modules some years earlier. As a result it made little sense other than to implement PeopleSoft HR. While BankCo regarded the implementation of the PeopleSoft HR modules as having been generally successful, an analysis of the texts concerning their implementation revealed a discourse of pragmatism. The bank had taken a somewhat phlegmatic stance about what it could achieve by
virtue of implementing the modules and set out to adopt them very much on its own terms. This discourse permeated our interview with a senior manager in the HR function who had been a member of the project team responsible for the implementation and roll out. This discourse of pragmatism conditioned the implementation the ERPs’ HR module.

One of the major motivations for the implementation of the HR suite of modules at BankCo was to achieve a higher degree of integration between the HR and other functions, particularly across the corporate services division. The ERP was introduced into an environment which had already been shaped by a degree of experience with, and dependency on, a company intranet and a level of familiarity with self-service HR. The implementation of the Peoplesoft HR module provided BankCo the opportunity to replace and consolidate several different “legacy” systems that failed to interface effectively and which required a small group of experts versed in its specific characteristics. Furthermore the introduction of the HR in Peoplesoft made it possible to extend functionality beyond that traditionally provided by the bank’s existing legacy systems. For example, the organisation previously had its own, custom-designed, self-built enterprise system for payroll administration. Over time, various other functions were grafted on to the payroll system but “it was having difficulties coping with these extra functions”. As the second manager we interviewed explained, the move to PeopleSoft HR promised a more comprehensive system with integrated functions for performance management, leave administration, recruitment, separations, etc. It would also assist in extending the self-service approach to the delivery of HR functions. For example, leave application and administration was traditionally fully manual and paper-based. The ERP offered a fully on-line, automated computer-based system for staff leave. In short then “the PeopleSoft application represented an opportunity for us to do things smarter than previously and to gain efficiencies as a result. Particularly in self-service we saw the opportunity to make efficiency gains”.

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However, despite acknowledgement of the benefits associated with a full implementation and an awareness of the desirability of adopting a vanilla approach to implementation, BankCo took a flexible position on this issue so that customisations were implemented if they were felt to be necessary. These customisations were kept to a minimum - the PeopleSoft HR modules at BankCo feature only 90 customisations, which is far fewer than the hundreds or indeed thousands of customisations that can accompany such implementations.

Many of these customisations occurred as a result of negative employee feedback about the new system once it was operationalised. BankCo undertook a comprehensive survey of internal customer attitudes to the system not long after roll-out. The survey, in conjunction with conventional feedback (complaints via e-mail and telephone calls received by the HR function about the new system) identified two problems. First, staff didn’t like the fact that the data entry rules determined by the system were often inconsistent with traditional company terminology, processes and procedures and were thus unfamiliar to BankCo users. For example, regarding the recruitment function, jobs at BankCo have traditionally been defined in relation to their size, and are given particular titles. So, in the case of middle managers, jobs are defined as Category A, B, C and so on. The PeopleSoft recruitment module as configured, however, defined jobs according to its own fields. So, for instance, a particular manager’s job might be defined by the system as “executive” – a term which has a completely different meaning to BankCo staff.

Second, the new HR modules were often regarded as “non-intuitive” (i.e. the logic and functioning of the system is not immediately obvious to users) and difficult to navigate. The senior HR manager’s concern about this was that in order to effectively use the system:

users would need x hours of training and in a large and complex organisation it is not always feasible to provide that amount of training. Customers would try to ‘follow their nose’ and work through the system, but would eventually become frustrated with it and cease to use it.

These concerns led the key managers in charge of the implementation to focus on “improving the customer experience” by undertaking customisations and enhancements where required and requested by staff using the new system. In some cases, the extent of the customisations required
simply made it more logical to “turn off the module”, or at least disable part of it. In the case of the PeopleSoft recruitment module BankCo persevered with it for nine months until the decision was made to turn it off and resort to a largely manual system. The decision to disable the recruitment module and develop a new system in its place, provides one example of where the anticipated efficiency gains could not be realised. Rather than leading to a reduction in the amount of labour devoted to processing recruitment tasks, a new team has been established to manually load jobs onto PeopleSoft. PeopleSoft is still used by applicants to view job advertisements, however none of the automated features of the system (such as on-line applications and screening of applicants) can now be used.

The decision to customise where necessary was a pragmatic move on the organisation’s part and indicated a belief that it should not have to change business practices and processes simply to fit the requirements of the ERP. Had they not effected customisations it was felt that employees would have lacked confidence in the system, would have been unable to develop the skills necessary to operate it to the benefit of the organisation and in many instances would, where possible, have resisted using it. As the senior HR manager conceded:

We made the decision to concentrate on improving the customer experience of the system. There were costs involved in this, but the system needed to be performing – a lot of money had been invested in the system and we had to get it working better. Otherwise it was never going to work. The integration capacity of the system might be compromised [by the customisations] but over time there was a growing acceptance of the need to do it, even amongst the technical teams.

Despite the organisation’s misgivings about some aspects of the ERP, the HR module implementation was seen by management to be “relatively successful” in the sense that all modules were rolled out and did not result in any interruption to the provision of key HR services. As one manager noted: “People continued to get paid, so in that sense the implementation was a success and the changeover was seen as seamless by most customers. At levels underneath that, however, the quality of the product has been a problem.”
There appeared to have been several organisational effects where the PeopleSoft HR modules have come on line at BankCo. For example, the modules changed a number of jobs within the centralised HR functions. In some cases jobs were enlarged. For instance, in payroll, payments were previously triggered by the Business Technical Team. These were replaced by a new position – the Global Payroll Administrator – who uploads all the files and triggers payments. All steps in the payroll function were therefore consolidated within the payroll team who now see the whole process through to its end.

The new system also facilitated the devolution of many functions to line managers. For example, with the bi-annual performance management rounds, HR would previously send out reports to line managers requesting that relevant employees be given ratings that would then be entered in the system and trigger remuneration changes. Now line managers are able to do the entire process themselves – managers enter ratings for staff directly onto the PeopleSoft system and this automatically updates pay rates. Furthermore, the self-service functionality of the new system has meant that employees are now able to do more HR processes themselves. For example, in the past where employees sought reimbursement for work expenses, they would fill out a paper form, get it signed by their manager and then send it to HR for processing. Claims can now be sent electronically to their manager, who can authorise the claim on line and then this automatically triggers payment.

In certain areas, the introduction of the ERP has not necessarily led to efficiency gains such as shorter processing times. The senior HR manager pointed out that in some cases processing is now *more* time consuming because:

the transactions on PeopleSoft can take longer [than they did on the legacy system]… For example, in the case of a separation, where an employee leaves, the entire data processing task used to take between 30 and 35 minutes whereas it now takes an hour, because the system is so inept. Data processors are required to enter the data manually.

In sum, the new PeopleSoft HR modules implemented at BankCo appear to have had two main advantages – facilitating the extension of self-service HR and ensuring integration and consistency
with other PeopleSoft ERP modules such as PeopleSoft Financials that were already in place. Despite reporting that the HR module had been “relatively successful”, the senior HR manager conceded in hindsight that while PeopleSoft HR was “better at some things than others”, it had proven to be “no better than the legacy systems” that it replaced. As the implementation had progressed BankCo had adopted a pragmatic approach (and associated discourse) to the implementation of PeopleSoft HR. This was epitomised by senior management’s acceptance that because there was a poor fit between some of BankCo’s HR processes and practices and the PeopleSoft HR Software it was necessary to customise some features of the HR modules in order for them to work properly – something that ideally it would have liked to have avoided.

**OzUni – Resisting ERP**

The case of OzUni is somewhat different to those of FoodCo and BankCo in that it does not involve the organisation embracing ERP nor adopting a pragmatic perspective of what it could or could not offer them. Rather, OzUni took a long hard look at whether it should implement an ERP based student administration system, decided that it did not like what it saw and instead designed, built and operated its own “in house” system. Our interviews with the Deputy Director of Student Services and a senior member of academic staff at OzUni were thus suffused with a discourse that was about resisting ERP implementation. Both of these individuals were heavily involved in the decision not to implement an ERP based student system.

In order to understand the circumstances surrounding OzUni’s decision to forgo an ERP system, it is necessary to go back as far as 1995. At this time it was recognized by the university that a new student administration system was necessary. The system in operation was losing its functionality in light of the university’s need for ever more complex and accurate data about student enrolments, fees, degree structures etc. A university working party was therefore set up which started to design a replacement, in house system. However, by 1998, it was decided that the university should also explore the possibility of adopting an “off the shelf” ERP based system. A
large well known international consulting organisation was appointed to evaluate which of the ERP student systems available would be the most appropriate for OzUni. These consultants were also charged with getting an early version of the university designed student system up and running within six months and to determine its long-term viability.

After one year, the consultants had identified PeopleSoft Students as the ERP package most appropriate to OzUni’s needs and suggested dropping the idea of an “in-house” system. However, the university went on to reject the purchase of PeopleSoft and decided to go ahead with its own in house system. The reasons as to why it took this decision makes interesting reading in light of the technological determinist discourse surrounding ERP.

In essence OzUni’s decision to reject PeopleSoft, along with other off the shelf ERP systems, was based on the belief that such software should satisfy the university’s business needs. As the senior academic explained, “OzUni were never satisfied that packaged solutions could achieve this.” The consultant’s evaluation of PeopleSoft Students on behalf of the university led them to identify a number of potential advantages if it were adopted. These included commonality across information systems and the ability to interface seamlessly with other PeopleSoft Finance and HR modules already in place at the organisation. From the university’s perspective, however, adoption of PeopleSoft Students came at a price, for although the university could readily accept generic finance and HR systems, a generic student system was a different matter. In Australia, which is increasingly competitive in terms of both the quality of the students and the income that can be derived from them, being different from competitor institutions can be an advantage and in the case of OzUni, necessarily led to it developing a complex, idiosyncratic student administration system. The university felt that if it took the vanilla PeopleSoft solution, the system would not be able to cope with these anomalies and that, given the package had been developed primarily for the US market, further development might become tied to the requirements of a far larger US clientele. As the Deputy Director explained:

[I]implementing full suite ERP systems to support processes that are fairly common across organisations, in terms of the functionality that must be supported, such as finance or HR, I
expect makes good sense. Student systems, however, can be highly idiosyncratic, possibly for good reasons. Because of this, an ‘off the shelf’ solution, in our experience, was not desirable.

The Deputy Director and the senior academic listed several idiosyncrasies present at OzUni that the vanilla version of PeopleSoft Students was unable to deal with. They included, for instance, not being able to handle multiple concurrent degree enrolments nor could it cope with non-standard teaching periods which was a rapidly growing requirement at the university. Indeed, the logic of the system was inconsistent with the nature of the university’s degree and course (unit of study) structures. In addition to these potential problems the university had discovered that the system had been poorly received when implemented at its first Australian university. A similar story emerged after the senior academic was sent to the US in order to talk to senior academics and administrators at four institutions where the system had been trialled and after he attended a users conference in the US at the invitation of PeopleSoft. He described the discussions he had with his US colleagues as “frank exchanges which were not very promising”. In sum, those that he talked to identified a number of significant problems with their operating the system, such as an inadequate interface with financial systems and an inability to deal with complex degree structures. These problems were presented in a written report he prepared for OzUni and contributed to the institution’s decision not to adopt the PeopleSoft student system.

To implement the PeopleSoft system would have required the business to alter itself to suit the system – something that OzUni was unwilling to do. In the Deputy Director’s words: “In some ways this would have been unnatural and suffered badly from the ‘tail wagging the dog syndrome’”. As the university moved towards the decision to reject PeopleSoft Students and go with an in house student system the consultants it had hired became increasingly concerned. They cautioned that there was clear evidence of a significant failure rate with in-house developments and saw ERP solutions, or off the shelf packages, as the more secure alternative. They also argued that being one of a number of customers of a particular product ensured that where legislative change was applied by government, something not uncommon in the Australian university scene, the
university could be fairly sure that the system would be enhanced to support it in good time. The suggestion was that this would also be cheaper than the in-house alternative.

When it became clear that the university would not accept the vanilla PeopleSoft solution, the consultants stopped arguing that the university needed to change its business processes and practices to fit with the software and instead began to suggest that the package could be easily customised to meet OzUni’s specific requirements. As each problem or anomaly at OzUni was identified that might impede the effectiveness and thus sale of the product to the university, the consultants would attempt to work around them. The more problems and anomalies that the university identified, the more customisations that the consultants promised to carry out. As both the Deputy Director and senior academic pointed out, there were two problems with this. Firstly, the more the package was customized, the more unwieldy, complex and user unfriendly it became, thus making it a less viable option. Second, customizations are expensive, so with each customization the consultants were actually pricing themselves further out of competition with the university’s proposed in house option.

The Deputy Director was clearly concerned that the consultants had a vested interest in getting the university to implement the PeopleSoft package irrespective of the outcome of their evaluations of the both the university designed system and PeopleSoft Students. He noted that they had already implemented PeopleSoft Students at one other Australian university and at a large number of universities in the US. In his words their relationship with PeopleSoft was such that: “Their motivation clearly was not to provide OzUni with the best product; their motivation was to sell a particular product – PeopleSoft.” He also believed that it was likely that they were keen to see PeopleSoft Students implemented at OzUni – one of the premiere universities in Australia – since this would be seen as a major coup and might encourage other Australian universities to buy the product. Finally, both he and the senior academic pointed out that the nature of the ERP business is such that to have sold PeopleSoft Students to OzUni would have involved a lucrative
long-term contract for the consultants in conjunction with PeopleSoft to provide regular service releases and implement further customizations and upgrades as necessary.

In sum, the university’s decision to reject PeopleSoft Students appears to have been based on an evaluation process that suggested to the university that the system in its vanilla state was simply inappropriate for what it wanted it to do. The decision to reject the PeopleSoft option was taken despite contrary advice from consultants, who initially appeared to adopt a technological determinist stance about what PeopleSoft student could achieve and how it should be implemented. When the university resisted this and made it clear that it was unwilling to change its business practices in order to suit the software, the consultants executed a volte-face and suggested that the software could be tailored to suit the university’s business processes and practices – an option that transpired to be too complicated and expensive. OzUni, has now been operating its own in house student information system for some five years and after a series of internal reviews into its performance, claims to be very satisfied with the way it is operating.

**CONCLUSIONS**

As was noted in the introduction, much of the vendor and consultant rhetoric surrounding ERPs is technologically determinist in character. ERP systems are extolled as having the potential for transforming the nature, structure and management of work in a beneficial way, regardless of organisational context. Thus their customisation to suit the client’s needs is supposed to be avoided on the grounds of cost and a belief that it is necessary for the organisation to fit with the requirements of the ERP being implemented, not the other way around (Booth et al., 2000). The case studies question this technologically deterministic presentation of ERPs in two ways.

First, each of the three cases provides evidence that ERPs do not produce the beneficial organisational outcomes which vendors and consultants claim. In the case of FoodCo, the organisation accepted the technological determinist view of ERPs and commenced their implementation believing that they should adopt a vanilla version of the software and is so doing alter business processes and practices to fit its demands. However, while the system delivered some
benefits where there was a good fit between the software and existing practices and processes, in those areas where business processes had to be changed the organisation experienced considerable resistance from managers and employees and found it difficult to realise the promised benefits of the system. At BankCo, while the management was aware of the potential benefits of vanilla implementation, they felt the need to customise aspects of the software to fit with existing business processes and even turned off some of the functionality offered by the system. Indeed, the assessment of many involved was that, despite it promises, the ERP was no better than the legacy systems it replaced. At OzUni, the perceived inability of software to accommodate critical business needs, specific to the organisation, was central to the decision to reject an ERP and build an in-house system. These findings suggest that technologically deterministic depiction of ERPs, advanced by consultants and vendors, amount to little more than a false promise.

The second set of conclusions that can be drawn from the case studies relate to the role of discourse in the social shaping of ERP implementation and highlight the role that systems of meaning may play in how and why these systems are adopted. In each of the case studies, key stakeholders in the ERP implementation process took adopted different discourse in response to the technologically deterministic discourse that surrounds ERPs. FoodCo wholeheartedly embraced it, BankCo developed a discourse of pragmatism in relation to it and OzUni constructed a discourse of resistance to it. These discourses played an important role in shaping the response of the organisations to the implementation of ERPs. At FoodCo efforts were made to adjust the organisation to the demands of the software and problems with the implementation were explained in terms of the failure to align the organisation with these imperatives. At BankCo, the discourse of pragmatism created the conditions under which the organisation customised aspects of the system and also flavoured its assessment of the benefits that the Peoplesoft HR module delivered the organisation. At OzUni, the evaluation of the ERP was continually couched in terms of the special needs of the organisation and whether the ERP solution was going to able to meet these needs. Such fluctuations in position reinforce the idea that the social construction of a particular discourse,
and with it, the negotiation of meaning is an ongoing, recursive process (Grant and Hardy, 2004). Each of the cases therefore highlight both the importance of the social context in shaping the process of technology adoption and the role that discursive practices play in producing this social context. While the case studies reported here focus mainly on the process of implementation, they suggest that there is considerable scope for further discourse analytical studies to contribute to an understanding of interplay between the material and social aspects of technology in use.

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