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**Customising Industry Standard Computer Systems for Universities:
ERP Systems and the University as an ‘Unique’ Organisation**

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Abstract

Enterprise Resource Planning (ERP) systems are widely used by large corporations around the world. Recently universities have turned to ERP as a means of replacing existing management and administration computer systems. In this article we provide analysis of the rollout of an ERP system in one particular institution in the UK, the particular focus being on how the development, implementation and use of both generic and university specific functionality is mediated and shaped by a fundamental and long standing tension within universities: this is the extent to which higher education institutions are organisations much like any other and the extent to which they are ‘unique’. Our aim is not to resolve this tension but rather to show how similarities and differences are actively constructed and literally ‘brought into being’ during various phases of this technical project. This occurs both as a process of standardisation within the University and as series of struggles to customise the system. Our conclusion is that managing this process has become a key task, as well as difficulty for universities. The research presented here is based on a participant observation study carried over the period of three years, and is informed by ideas from actor network theory as well as material culture.

Universities are ‘unique’ organisations?

It is a truism that universities form one of the oldest established institutions in the western world - far older, for example, than the joint stock company or indeed the bureaucracy of the nation-state – and despite changes in form, function and fashion, the very latest universities retain some links, however tenuous, with their Medieval forebears. Equally, while bodies bearing the title university vary dramatically in terms of their structure, function and form, the very fact they choose to label themselves as universities rather than any one of a number of other alternatives suggests at least a desire to capture and share in that thousand year old tradition.

On the one hand, then, it is tempting to see the university as something different or set apart from other organisations - as a unique institution in the modern world. Frederick Balderston, for instance, describes how historically universities grew as an institution that was and still is to some extent ‘distinctive’ with an ‘...autonomous place in society and the right to choose its members, settle its aims, and operate in its own way’ (1995, 2). On the other, it is also clear there are many similarities. As Geoffrey Lockwood has put it ‘universities as organisations face many problems common to most modern organisations’ (1985: 29). These could be, for instance, the problems of co-ordinating resources, maintaining costs, or of stimulating and facilitating enterprise among staff and so on (ibid.). Thus it might be argued that since universities possess problems common to a wide range of organisations, then, the standard tools of contemporary organisational analysis and institutional management – including today, computer systems used by large corporations around the world, such as Enterprise Resource Planning (ERP) systems - can be equally applied across universities.

Albeit complex, some have attempted to resolve this issue of difference or similarity. Lockwood, for instance, argues that universities are unique only to the extent they possess certain characteristics, which he lists as: complexity of purpose; limited measurability of outputs; both autonomy and dependency from wider society; diffusion of authority; and internal fragmentation (1985: 31-32). While organisations in general might possess one or more of these characteristics or components it is only the combination of them within universities that make them truly different, argues Lockwood. The aim of this paper is not to attempt to resolve this issue of similarity/difference in one way or another (as if that was at all possible), or, indeed, to evaluate the appropriateness of new forms of computer systems for universities. Rather, through reporting on a fine-grained study of the implementation of an ERP system within a university, we want to explore how some of these differences and similarities are actively constructed and ‘brought into being’.

Initially conceived according to a narrow set of assumptions about how organisations operate, ERP systems have, as they have been continually applied to new contexts, been expanded to include an ever-increasing range of organisational characteristics. These characteristics are embodied in the system as modules and ‘ready made business process templates’ and, as is made clear in supplier brochures, are ‘applicable to a wide variety of user organisations’. In some senses, this might be thought of as the practical implementation of Lockwood’s view: such systems are fundamentally based on the notion that organisations contain common elements and through combining the various modules or

templates an organisation can create for itself its own 'unique solution'. Yet, as we will see this is not, or at least not for universities, simply the case.

In the Institution where we carried out research, many of the University's characteristics underwent a process of standardisation. This, we want to argue, could be seen as a course of action where procedures, processes and discourse are rendered similar to those embodied in the system and, consequently, other forms of organisation¹. Though, as we want to go on to demonstrate, this occurs partially through choice but also by 'default'. Reducing institutional diversity is invariably complex, however. Two further aims, therefore, are to demonstrate the particular ways in which the University has engaged with the system, and to show how the ERP system is also subject to much change. Both these processes are accompanied by a struggle, where this construction of difference and similarity occurs not simply within the close confines of the project team (although this is an important part of it) but is the outcome of a complex set of relationships the University has with the system, its various departments, other institutions involved in similar implementations, and the system supplier. Our argument is that managing this process has become a key task, and difficulty for universities.

The material for this paper was gathered during a participant observation study carried out over a three-year period. As well as sitting in on meetings, presentations and talking to members of the project team and users of the system, various documents concerning the Enterprise project were also collected and analysed. A number of focus groups were also conducted with the users of the system. One of the authors also observed system testing sessions conducted at the supplier organisation. Before presenting our empirical material, however, it will be useful to provide: firstly, a brief review of the theoretical notions and concepts that have informed this study; secondly, some background information on the Institution and the project underway; and, finally, a brief description of ERP systems.

Studying 'Translation' & 'Biographies'

The paper focuses on the relationships developing between system suppliers, whose aim is to extend their technologies into as many different settings as possible, and a higher education institution, who are intent on capitalising on the benefits of standardised software whilst maintaining and supporting specific features of its organisation. In order to capture the various dynamics operating here – the introduction of new roles and work practices, as well as the reshaping of various identities – we are adopting a fine-grained, micro-sociological approach that is informed by a range of perspectives from actor network theory, the sociology of science and technology and material culture.

As yet, few studies of the implications of such systems for universities have been carried out: Cunningham et al (1998) mention the potential of ERP for reshaping organisational aspects but do not present empirical evidence to illustrate or substantiate such claims; Heiskanen et al, have conducted a detailed study but conclude that such industry standard systems are 'inappropriate' as universities as organisations are unique, particularly in terms of their decision making processes' (2000, p7). However, as we want to argue, the significance of these systems would be appreciated and understood if we were to resist viewing universities (or, for that matter, computer systems) as stable entities or as having

characteristics that are *given in the order of things* (*a` la* Lockwood, Heiskanen et al), and, instead, explore some of the processes that might generate these characteristics as ‘effects’. Theoretically, this move has most famously been explicated in the work of Elias, Foucault, and, more recently, in actor network theory, where it has been painstakingly shown how the development of scientific, organisational and bureaucratic processes and practices, simultaneously involved the development of scientific institutions (Latour, 1988), organisations (Cooper & Law, 1994), and the ‘modern state’ (Bowker & Star, 1999).

Moreover, a number of terms and concepts are synonymous with the actor-network approach, including viewing the world in terms of the emergence of competing ‘actor-networks’, where various elements are brought together or ‘enrolled’ into an assemblage, which is capable of ‘acting as one’ (Latour, 1987). As part of this network building, there are continuous processes of multilateral change or ‘translation’, where one actor will attempt to channel the goals of others in new directions. In doing so, however, an actor will often find her own route re-directed (cf. Latour, 1987). Finally, the approach has also famously described how this process of translation can occur not simply at the hands of humans but technologies and things, which are also to be treated as actors (Callon, 1986).

As well as actor-networks, we also want to capture something of the history or ‘biography’ of these systems – both what they *bring with them* and what this *means* for the new sets of users. Appadurai (1992) and Kopytoff (1992), writing from the perspective of material culture, use the notion of biography to describe established artefacts as they move around and are adapted and redefined according to the needs of each new place. Biographies, they argue, highlight the various relationships and meanings an object established among one community may have for actors and communities in different places. As Kopytoff emphasises: ‘...what is significant about the adoption of alien objects – as of alien ideas – is not the fact that they are adopted, but the way they are culturally redefined and put to use’ (1992, 67). The biography of a car in Africa, to use his example given in Kopytoff’s, paper reveals enormous amounts of information about: ‘...the relationship of the seller to the buyer, the uses to which the car is regularly put, the identity of its most frequent passengers and those who borrow it....’ (67), and so on. Crucially, all these details, would: ‘...reveal an entirely different biography from that of a middle-class American or Navajo, or French peasant car’ (67).

The benefits of a biographies approach, combined with the actor-network perspective, is that it ‘sensitises’ us to the various dynamics in play as these systems are translated from a general or commercial organisational context to a specific, university setting. This is in keeping with the approach suggested by Williams (1997), who argues against those studies that emphasise simply the ‘flexibility’ of technology, as well as its potential for re-adaptation to a new setting, without considering the complexities and dynamics of what he describes as a technology’s broader social and historical context².

Restructuring the University, Customising an ERP System

The acquisition of well-established, generic and corporate computer systems is increasingly common and not just among universities. After more than 30 years of computer systems development in an every growing variety of institutional and organisational settings, few

systems are developed from scratch. Rather, most large-scale institutional computer systems are constructed by adapting existing elements to new organisational contexts. Firms and organisations, rather than commission and build bespoke systems and packages, are adapting general solutions to their local context (cf. Brady et al, 1992). Having access to 'tried and tested' software, as well as the benefits of constant upgrades and new products, are seen to outweigh the lack of specificity associated with such systems. ERP systems are a case in point: initially conceived for use within manufacturing firms, their diffusion among industries has been rapid, such they are now seen as the 'de facto standard' for the replacement of legacy systems in large multinational companies (Parr & Shanks, 2000).

The institution in question is a large civic university based in the UK, which for the purposes of this article shall be called 'Big_Civic'. The rationale for embarking upon the project as given by the Pro Vice Chancellor in charge of the project was both to replace existing systems that were seen as 'limited', and also that the ERP system promised to provide the fundamental restructuring that was indicated as necessary in a recent consultancy study. Related to this, it was also hoped that the system would encourage the development of procedures and practices more commonly found in large corporations, so called 'best business practice':

I think why all the bigger universities are beginning to go towards [Enterprise], is that it has come out of a multi-national environment where in essence what [multi-national companies] are involved in doing is having highly decentralised structures where you're giving your line managers a lot of autonomy and responsibility within a framework of an overall corporate entity; where the role of higher level managers is to have an oversight of the business as a whole and take strategic decisions and so on (interview with Pro-Vice Chancellor).

The system - let us call that 'Enterprise' - is produced by a large European software producer and includes a number of modules dealing with particular functions or aspects of the University, including finance, human resources, project management and (eventually) student records. The project involves a wide range of actors, including the University's management and central administration, the software vendor itself, and 'third party' consultants. At the heart of Enterprise is a very large and complex relational database that will eventually contain information on the status of staff, students, buildings, equipment, documents, and financial transactions.

Customisation

Proponents of ERP systems have argued that in terms of their organisational fit they have 'universal applicability' (cf. Lozinsky, 1998). However, despite such extravagant claims, there is a growing body of evidence to suggest that because the structure of the system embodies a series of strong assumptions about the nature of organisations and the ways in which they operate (i.e. divisions of labour, methods of working, etc.) adopters often find that these run counter to existing structures and work practices³. The suppliers of these systems will, in truth, often acknowledge and try to accommodate organisational variety through the continued addition of new and sector specific modules. Moreover, many of the

more local incompatibilities between the system and the organisation, from their point of view, can be reconciled through the effort of customisation. Indeed, these systems are marketed on the flexibility of their modular design, as well as the ability to choose from thousands of business process templates and the tailorability of the various parameters and settings. A supplier brochure describes this in more detail:

From a broad spectrum of functions and alternative business processes, you select the modules that you want to mould into an internally consistent organizational system for your company, depending on your specific requirements... We match its core processes to your needs by customizing additional applications, which we or our partners implement for you. Or your own IS staff can do the work simply and easily with the [Supplier Specific] Development Workbench, which is an integral part of the [Enterprise] system.

On one hand, then, a user organisation is able to choose from the 800-plus ready-made business processes, some of which have already been specifically tailored to match certain sectors⁴. On the other, and perhaps unsurprisingly, the reality of customising these systems is somewhat different. Pollock (submitted), for instance, notes some of the problems that arise when there are ambiguities as to which parts of a system can be modified, or there are 'blurred' boundaries about the roles of designers and implementers (cf. Trigg & Bodker, 1994). Moreover, just as modifying the 'wrong' parts of a system can lead to problems, so can customising industry standard systems 'too much' (cf. Tierney & Williams, 1991; Brady et al, 1992; Hanseth & Braa, 2000). Heavy customisation can mean that a system in is taken away from supplier standards, meaning it will be difficult to make use of later upgrades or new system functionality, the reason why many systems are acquired in the first place.

Unregulated and too much local customisation is at one end of the scale. At the other end, lies the problem of systems not being tailored at all. There is, for example, evidence building to suggest that because of the sheer number of organisational and technological discrepancies that arise during attempts to customise (cf. Hanseth & Braa, 1998, Ciborra et al, 2000; Walsham, 2001), and the complexity and time-consuming nature of each modification, most adopters simply end up fitting their organisation to the system rather than the other way around (Koch, 1999; Markus et al, 2000). One study, for instance, found just 5% of organisations out of 1000 questioned had attempted major customisation (Davis, 1998). That is, rather than attempt to reconfigure each and every aspect of standardised systems (the various templates, system parameters, authorisation profiles and so on), implementation teams simply accept those 'default' features already embodied within systems, what one author has called the 'power of default' (cf. Koch, 1999).

In what follows, we turn to Big_Civic's engagement with Enterprise. Firstly, we consider how the University (its hierarchy, senior management team, and various committees) attempt to take customisation decisions. Secondly, we investigate how users affected by the implementation come to terms with new working practices. Finally, we analyse a new 'student management' module that the supplier is in the process of building in conjunction with Big_Civic and other pilot universities

That's a matter for policy!

When the chips are down and you've got to deliver, the collegiate model doesn't work⁵

When we conducted the first part of our research, the University was in the process of implementing the financial, human resource and research management modules, and this was prior to adopting the student management module. As already mentioned, the implementation was being handled by a project team made up of University staff and external consultants from small organisations specialising in the implementation of Enterprise. On a number of occasions, members of the team met with the 'faculty support team' (members of central departments, such as finance, attached to the faculty) and representatives of academic departments where they were going to pilot the new system. We directly observed some of these meetings.

Building the System and the University

During one of the sessions, the consultants had a set of 'workflow process diagrams', which described the proposed sequences of events by which tasks, such as setting up a research account, raising a purchase order or issuing an invoice, would take place within the new system. Each step of the process was described in detailed flow diagrams indicating which parts of the process take place 'on the system' and which take place 'off the system', as well as constraints on who can undertake which tasks and the order in which tasks were to be undertaken. Each of the workflow process diagrams was discussed with the departmental representatives and faculty team. The aim of the session was to clarify the workflow processes, iron out any problems that might arise, and identify who does what and when.

As the meeting moves through the workflow diagrams a number of basic rules of the system are made clear. For example, two separate 'logins' are required to complete each and every external transaction – the same 'login' cannot order and receive goods. At some places the workflow diagrams are amended to better reflect the current practice (although this amendment tends to happen more with 'off system' events). At a number of points in the process it becomes clear that there is more than one way in current practice in which a particular step in the process can be handled and, often, a detailed discussion would follow. If the issue cannot be resolved one way or another, the consultant leading the meeting identifies the issue as 'a matter for policy', a matter on which a definitive ruling must be given by the university centrally.

What appears to be happening here, as the computer system is rolled-out is a standardisation of working practices and roles. Moreover, as Enterprise makes visible the variety of local practices and where these cannot be reconciled with the system (and thus with each other), this goes onto generate a constant flow of 'demands for policy'. Indeed from later interviews with members of the team we know that there were hundreds of such requests for a central policy decision; these were logged by the team in a database and passed onto the senior management to resolve. In principle, then, the process not only sees the 'tightening up' of roles and procedures but it also demands a tightening up of policy

which will apply not locally, but across the whole university. We might say that these customisation procedures involve both the building of a university specific system and the re-building of the university: the roll out of Enterprise is requiring the simultaneous rollout of a new (and more standardised) institution to host it (Cornford, 2000).

This 'co-production' of system and university is a complex process, however. As we found out in a later phase, these demands for policy were so copious that many of the requests simply remained on the database without senior management ever having the time to deal with them. The Committee overseeing the system roll-out (made up of a number of Pro-Vice Chancellors, the Registrar, Bursar, various Deans, and senior administrators) met once a week intending to resolve these demands but, as described by the project administrator: '...the Committee were getting 20 issues a week to resolve and therefore they usually did not get past the first or second one on the agenda'⁶. In other words, as the rollout of the system begins to highlight the variety of local practices around departments and these cannot be reconciled within the system, the sheer number of issues generated provides a problem for those attempting to decide on the future direction of the University. As a result most of the issues have to be resolved within the project team on more technical grounds; meaning the team had to deploy their own criteria whilst configuring the system. And, in many cases, this meant just accepting default settings⁷.

Here, then, is a further elaboration of the power of default view of implementation: because the University cannot decide on the details of the system, the decision is defaulted to the project team and, then, ultimately onto the system itself. In term of the construction of uniqueness of universities in relation to organisations more generally, the University, through its relationship with the system, emerges almost by default as an organisation to be treated like any other.

Living with an ERP system

...the University is still trying to cope with all the problems Enterprise has generated⁸.

The period following the implementation of Enterprise revealed the extent to which the new system led to changes in established ways of doing things. More specifically, this period provided insights about how Big_Civic assimilated the 'tightening up of roles and procedures' required by Enterprise's default settings. As it turned out, organizational members found such assimilation quite 'uncomfortable.' This viewpoint is explained and supported with empirical data in the next paragraphs

We can say that the system has stretched out across the University - its terminals, for instance, sit on each and every member of the support staffs desks. Yet, its actual integration into people's everyday practices has been more equivocal. For instance, many of those based in the centralised administration departments report how they 'like' Enterprise and that the system (and its defaults) have become part of their daily work routines⁹. Nevertheless for others, especially those in outlying academic departments, the system has not had the immediate take-up that was initially anticipated, and still remains 'outside' of everyday practices. Partially this has resulted from the incommensurability of

the system with practices in departments. Some of the new processes put in place have been described as 'laborious', 'inflexible', 'inadequate' and the 'source of much frustration'¹⁰. One feature that has been subject to much change is 'procurement'.

Working-around standardised processes

The procurement of goods or services throughout the University officially commenced with the raising of a 'purchase requisition' and this is then authorised by pre-identified individuals. However, this process was often flexibly adapted within various departments; non-authorised staff often made orders over the telephone, and the appropriate paperwork was raised much later in the process. Under Enterprise this informal practice (and many others like them) was proscribed, as this was not the procurement procedure operating within the system. Moreover, as a method of enforcing this proscription, the University's major suppliers had received written instructions informing of changes to procurement policy, and that they were to supply goods and services only for orders detailed on the appropriate paperwork and bearing a Unique Order Number, both of which were generated by Enterprise. The quote below is from a focus group conducted with support staff directly affected by this aspect of the implementation. Here, one member of the support staff is describing her worries in relation to some of these new procedures:

Now when [Enterprise] comes in, the academics are going to have to conform to quite a lot of rules and regulations that they don't now. How on earth I am going to get my lot to do it, I do not know. Whether the centre has realised this, and is just not telling us what they are going to do about it, whether they are just going to trust to luck and hope that it works I just don't know. But, I am quite concerned about that. I mean it does create bad feeling if you are saying to somebody: 'Look you just can't just make an order of the phone; I won't pay for it if you do. It must come through the office, that's the system'....And I can see that they are going to start screaming, as soon as I say to them: 'Sorry, you can't do that anymore you have got to do that now, that's what the system is supposed to do'.

Indeed, while support staff have pushed through many of these new rules, in many instances we also found many of the most inflexible processes were often ignored or 'worked-around'. In one instance, and we do not imagine this is the only case, we observed how staff in one research centre developed 'strategies' to live with the new procedures. As in other departments, procurement procedures here were often flexibly adapted to deal with urgent problems, such as the need for a 'travel ticket'. As before, once Enterprise was implemented, this flexibility was no longer possible and this created problems. If the centre administrator was unavailable, which often happened, the other staff did not have an appropriate 'login' or 'user profile', and thus could not generate the paperwork when it was required. To circumvent this, a copy of the Enterprise order form was designed on a word-processor (available to print out at any time by the remaining support staff) and this was adorned not with the Enterprise Order Number but with what the staff called a 'pseudo number' or 'Secretarial Requisition Number'.

Janus-faced Users

What does this tell us about what is going on? At one level, described here is a practice known and well understood within the sociology of science and technology and other allied disciplines; that is the implementation would not be possible without numerous ad-hoc modifications (cf. Gasser, 1986; Trigg & Bodker, 1994; Star, 1995; Ciborra, 1999). This said, at another level, such work-arounds indicate the nature of Enterprise and its relationship to the University (cf. Appadurai, 1992; Kopytoff, 1992). True, the system has been ‘fully’ implemented within the university, but for many people (i.e., the majority of academic staff, for instance) many procedures have carried on as before. Pivotal to this is the inter-mediation role undertaken by certain users, typically, administrative staff working at the ‘interface’ between old and new ways of working. Under Enterprise, these staff have become ‘Janus faced’ (cf. Latour, 1987), meaning they face two directions at once. As long as these workarounds are maintained, the departments, for all the central University knows, working according to the new procedures, and, equally, as those out in departments see it, traditional methods carry on much as before¹¹.

In summary, through the added work of maintaining a system that does not reflect the department’s working practices, various users are obliged to translate between, we might even say ‘perform’, their specific part of the University to the system, and, simultaneously, translate the system back to departments. Thus, more generally, one way of managing the tension between universities as unique organisations and as organisations like any other is through this process of *pretending to live with defaults*.

Where do defaults come from?

So far we have looked at how the system is implemented according to the power of default, and the way in which the University has come to live with (or at least perform) these defaults. As yet, however, we have not discussed in much detail where these defaults come from. Enterprise systems, to recap, are based on the practices and processes of many different organisations, and, because of this, they are often described as embodying ‘best business practice’. One element that is not available within Enterprise, however, is templates for the core function of universities: the management and administration of students. In recognition of this ‘discrepancy’, the suppliers are currently developing new functionality that can be used alongside and possibly integrated into Enterprise – a student management module.

The ‘Self-Service’ student

What is interesting about the design of the student module is that it is conceived on the idea that students are to move from being passive objects of administration to becoming one of the main groups of ‘active users’ (Pollock & Cornford, 2000). This draws on a model that the supplier refers to as the ‘self-service’ student:

For students, self-service functions improve the quality of information and ease the burden on administrative staff. Instead of having to wait for appointments and documents in long lines by the financial aid and admissions offices, students will be able to access a wide variety of services at Campus Management’s electronic kiosks (intranet) or from their residence hall via the internet. Additional services will also be

provided, for example, students can apply for on-campus housing, request additional balances on their tuition, inquire about their current academic standing and look-up facility changes for current classes – all over the intranet (Supplier Brochure).

This raises the following questions: if students are to be one of the system's primary groups of users, then, how did designers understand their role and identity, as well as their relationship to the university and its staff?; moreover, in conceptualising the student as a user were they to assume that students had the same competencies, needs and interests as, say, an employee working within a commercial organisation, the typical user of the Enterprise system? How, in other words, did they manage this difference between the typical users of the Enterprise system and the student as a unique type of user. Indeed, was there a difference?¹²

As part of the process of learning about students, a requirements analysis phase was conducted. This entailed a series of visits to pilot universities where key actors were interviewed and observed whilst carrying out their work. On top of this, hundreds of questionnaires were dispatched, asking more specific questions about system access for those students based on campus, what information was relevant to them, what they could and could not see, and so on. In developing this new functionality, in other words, there is a recognition that Universities are not after all like other organisations. And, in this sense, it is not accurate to simply say that universities face problems common to other organisations. Clearly, within the Enterprise system there is no element to deal with the specific issue of students.

No default, however, is completely remade anew. Even though the suppliers are in the process of designing and writing software for the new student module, 'new' is meant in a loose sense here. The module is a reworked version of the training and events management module used by firms to plan and run internal training programmes. A report from one early adopter, for instance, describes how the tendency to re-use software was not always sensitive to their needs:

Until now the Real Estate module has always been referred to for student housing. This only contains the functionality to 'let' rooms (very commercial). For some universities this is not enough. Student rooms are often part of student aid. A lot of extra activities have to be organised in association with this (e.g. meals).

In terms of the supplier understanding, students are something of a 'residual' category (cf. Bowker & Star, 1999). On the one hand, there is an explicit recognition that universities are different - they have components not found in other organisations. On the other, there is also a feeling that at a basic level there are lots of similarities; students are also very much like the other entities the supplier typically deals with. More generally, we might say that despite this recognition that students and universities in general *are* different, they are, nevertheless, always being rolled back towards a default (i.e., the history of Enterprise appears to win through).

Coping with the Specificity of Universities

There is one more aspect that we wish to expand on here. The supplier also regularly tested the system with the pilots and early adopters, where university personnel would periodically travel to an arranged venue where they would sit in a large classroom and work through test versions of the system. We observed one such meeting. In fact, unbeknown to the pilots (and us), this was to be the last workshop of this kind. During the session most of the time was devoted to demonstrations of new software, with consultants asking for comments as to whether this or that aspect of the system was appropriate to each institutions. A second aim was to find some form of ‘consensus’ about what common needs there were among universities, if any.

Finding a Concept

One method of doing this was to develop a ‘concept. For example, there was a discussion around the issue of ‘holding’, the process whereby a student may not be permitted to re-register for a new academic term because of outstanding library or tuition fee, a failed exam, or unpaid rent etc. The issue is to what extent holds should be input manually or automatically triggered by Enterprise. According to one consultant, manual inputs are a ‘system limitation’, therefore, if universities could only ‘better define’ their specific holding processes, then, the procedures could be ‘automated’. She begins by asking for comments on what currently happens in various situations:

Consultant: Students with bad marks, what do you do with them, leave them in limbo, or give them a second chance?

New Town U: Depends on timing, if just before a session and there is no chance of them bettering their mark, then we refuse them. Or, alternatively, we could say we’ve not decided yet. That is not a hold but a ‘waiting status’.

CITY U: If you are doing something that might pick up your grades?

Consultant: I wouldn’t call that a hold, that’s a ‘provisional situation’.

Rural U: We have a ‘partial hold’, so holds effects some things...

Large Campus U: Isn’t that a ‘half-hold’...

From the discussion, it is evident that the pilot universities each have a diverse set of rules and practices regarding how they currently process holds. After some time discussing each of the variations, the group appeared to be in a state of confusion, where the participants are no longer sure exactly a hold might be (i.e., a ‘waiting status’, a ‘provisional situation’ or ‘a half hold’)¹³. Interestingly, and perhaps rather counter-intuitively, it is in the supplier and not the universities who attempt to promote this diversity. Indeed the participants were becoming increasingly frustrated by the supplier’s attempts to understand each and every difference among all the universities present. For the suppliers, such a process is useful as it allows the concept (i.e., the default) to become more robust and, thus, applicable to the widest variety of higher education institutions. For the pilots, the process, while drawn out, appeared to be similarly useful as it ensured that all of those present would be able to find their own unique solution within the standard module.

In a later stage, however, a process of closure begins to set in around the extent to which each pilot could continue to shape the module. In contrast to the search for robust concepts,

each new request is labelled as 'university specific'. Low Country University, for instance, reports to the other pilots how:

We have the feeling that it's becoming a strategy to try to label issues as 'university specific until proven differently'. Should it not be the other way around? Should [the supplier] not search for generic concepts behind the specific situations at the different pilot universities?

Moreover, since there were to be no more pilot workshops it was becoming increasingly difficult for the universities to prove their needs were similar to those more generally required:

Now we have to prove that we are not the only one needing something, and that is not easy if we don't come together anymore in workshops. The basic concepts seem to be fixed (based on past roll-in?), and 'sacred'. Everything that doesn't fit in is 'specific'. An example of this is timetables per program and per stage. This is labelled as '[Low Country University] specific reporting issues', although we see them also on the websites of [Big_Civic] and [New Town universities]...

The suppliers are concerned with the continued transferability of the module. This is in contrast to the pilots who, rather than simply demand a locally specific system, appear to require an application that is both local *and* global (cf. Williams, 1997), both customised and a default:

If from now on they only talk separately to each university and look for solutions for their specific situation, my fear remains that we will all end up with separate products, and we can start planning a 'back to the standard' project after a couple of years.

In other words, they want a system that matches their current practices but at the same time they increasingly became aware that ending up with a 'separate products' would be counterproductive. Would their customised version be supported? Could they make use of later upgrades? The answer, they fear, is probably 'no', and, thus, they begin to actively look for how their practices are common to other universities (i.e., checking websites, discussions during testing sessions etc). So, here we see how the development of the student module has moved the discussion of the identity of the university from one where the issue was simply the extent to which they were different or the same from other organisations more generally, to one where the question is: are universities different or the same among themselves? And, indeed, once they were thinking in terms of the higher education sector, there was a further shift where they recognise the increasing need to identify similarities among each other.

Conclusion

The extent to which universities are similar or different from other organisations has been the principle issue governing this article. This paper has attempted to show how it is not simply a question of identifying *a priori* a set of characteristics and elements which set universities apart – though this is the way that it is often portrayed in the literature (cf.

Lockwood, 1985; Heiskanen et al, 2000). Rather, through examining how a computer system designed with commercial organisations in mind is made to fit within the context of a university we have shown how some of the differences and similarities are actively constructed and brought into being.

Moreover, we have emphasised the antagonistic as well as contingent nature of this process – i.e. the extent to which their successful realisation of differences and similarities depends on the struggles of various actor-networks – we have used notions such as translation and biography. We have described the ways in which aspects of Big_Civic's identity, role and working practices, are taken or translated towards the system. In some respects this in accordance with the initial goals of the Pro Vice Chancellor in charge of the project, who wanted to make the university less organisationally specific through importing 'best business practice'. There is an increasing pressure to rethink many of the existing procedures and concepts according to new business process terms and Enterprise terminology even when such a process causes confusion and irritation. We also found, however, that in order to avoid the exigencies of the systems, various users took on new roles in order to mediate between new and existing practices.

We have also described the ways in which Enterprise is expanded and brought closer to universities. This occurred where there was recognition of just where universities are different, such as those identified during processes of customisation. However, the extent to which this uniqueness could be realised was also something of a struggle: Enterprise threw up so many 'demands for policy', that implementation decisions were never properly discussed, and change often occurred, therefore, through a process of default. Where Enterprise could be tailored, moreover, this increasingly meant at the level of the sector: universities specifics would be incorporated only if they could be proved to be common to all (which was becoming increasingly difficult). Finally, even where differences were articulated and measures were taken to ensure that these were recognised within the system, it seemed that the system was often unable to shake of its history (i.e. students are much like employees, aren't they?).

In conclusion, the practices, procedures, and processes, being laid down with the introduction of these new forms of management and administration systems have important consequences for the way in which the University is being reconfigured, and particularly the way in which certain key relationships are being developed. It would seem that the form of organisation that is emerging, now that there has been added the Enterprise system, plus a need to update and review internal processes and technologies in light of upgrades and new modules, as well as respond to the needs of other universities (who will also make demands upon the systems future shaping), is simply very different to how we might once have imagined conventional university structures and the processes that govern them. This said, it is well known that information and communication technologies provide powerful incentives for standardisation, as well as the renegotiation of internal and external linkages in this way (cf. Agre, 2000). Universities, if they are to make the most of standardised software, whilst resisting such pressures, must learn how to manage these complicated *translation* processes, as well decipher their *biographies*. We wonder, to use the sentiments expressed by one member of the implementation team excited by the future possibilities

that the system might offer, to what extent is Big_Civic beginning to think that its uniqueness is centred on the fact *that it now has an Enterprise system*¹⁴.

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¹ Another way of looking at this, following Powell & DiMaggio (1991), might be to suggest that there were various pressures towards isomorphism.

² By this he means the way a technology is developed in one context, and the processes and mechanisms by which it is diffused for use in other settings. For instance, how a piece of software designed for one client is 'packaged' and incorporated for general release as one component of a supplier's offering.

³ Davenport (1998), for instance, investigating a number of large corporations, describes how one company had developed a practice of giving its most important customers preferential treatment, which included sometimes shipping them products that had already been allocated to other accounts. Under the ERP system, however, it no longer had the flexibility to process orders in this way (see also Walsham, 2001).

⁴ The version of the human resources and finance modules adopted by Big_Civic, for instance, embody aspects that are already specific to higher education institutions, and during the implementation these modules will be further tailored to meet local conditions.

⁵ Interview with Enterprise Project Director.

⁶ As an aside, it could be argued that certain issues suffered from their place on the agenda: while those on the top, were heavily debated, those lower down received only scant attention. What we are witnessing here is the organising power of the agenda, and agenda setting is, of course, a foundational activity within universities (cf. Lockwood, 1985). See Boden (1994) for a discussion of the role of the agenda more generally in organisations.

⁷ Interview with Project Administrator.

⁸ Interview with Project Administrator.

⁹ This was one of the findings from an internal review of Enterprise commissioned by the University's management team.

¹⁰ These were findings from the same internal review.

¹¹ Other ways in which staff find redefined the nature and meanings of such systems was often through irony. For instance, one seemingly trivial (but revealing) example of this is where in the system it refers to the process of selecting a degree module for a student in its own more commercial terminology. Indeed, during one particular testing session where we were observing one member of the Student Office turned to one of the authors and noted mockingly how she was now 'booking a student onto an event'.

¹² For a discussion of the identity of students, see Silver & Silver (1997).

¹³ Such is the confusion that laughter breaks out and one participant shouts how all of this is beginning to '... sound like a philosophy class!'

¹⁴ This was an observation from one project team meeting where the discussion centred on the current review of the Student Office, where the Registrar (and others) were carrying out research to compare themselves with the practices and procedures in Student Offices elsewhere. For one member of the project team this seemed nonsensical: 'What they are doing is looking at other universities, but it will not be accurate because we have [Enterprise and the Student Module] and no other [British] university has that – *we are unique!*'