

Association for Information Systems AIS Electronic Library (AISeL)

ECIS 2006 Proceedings

European Conference on Information Systems
(ECIS)

2006

Users as professionals: A study of IT deployment and its relationship to professional Autonomy

Beryl Burns

University of Salford, b.j.burns@pgr.salford.ac.uk

Ben Light

University of Salford, b.light@salford.ac.uk

Alison Adam

University of Salford, a.e.adam@salford.ac.uk

Follow this and additional works at: <http://aisel.aisnet.org/ecis2006>

Recommended Citation

Burns, Beryl; Light, Ben; and Adam, Alison, "Users as professionals: A study of IT deployment and its relationship to professional Autonomy" (2006). *ECIS 2006 Proceedings*. 7.

<http://aisel.aisnet.org/ecis2006/7>

This material is brought to you by the European Conference on Information Systems (ECIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in ECIS 2006 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

USERS AS PROFESSIONALS: A STUDY OF IT DEPLOYMENT AND ITS RELATIONSHIP TO PROFESSIONAL AUTONOMY

Burns, Beryl, University of Salford, IS Organisations and Society Research Centre, 5th Floor, Maxwell Building, Salford, M5 4WT, UK, B.J.Burns@pgr.salford.ac.uk

Light, Ben, University of Salford, IS Organisations and Society Research Centre, 5th Floor, Maxwell Building, Salford, M5 4WT, UK, b.light@salford.ac.uk

Adam, Alison, University of Salford, IS Organisations and Society Research Centre, 5th Floor, Maxwell Building, Salford, M5 4WT, UK, a.e.adam@salford.ac.uk

Abstract

It has been argued that the rise of professions in society has been on the increase for over a century, to the extent that they are seen as integral to post-industrial society. Yet, within information systems minimal research has considered users as professionals. Instead, professions and professionalism as units of analysis have usually been intertwined with discussions of IT workers and systems development. In this paper, we focus on professionals as a user group and consider the implications of the deployment of IT in such contexts. In particular, we attend to the influence of technology on a central feature of professional identity – autonomy. In order to do this, we discuss the deployment of a module of an enterprise-wide student information system in a department of a UK university. From this come insights into regulation through inscription, the deskilling of work, system acceptance in the face of self-interest, the retention of autonomy in a regulated environment and the overt exercise of professional power. Whilst the student information system had an effect on professional identity, within our study, it appears that any encroachment upon autonomy has, overall, been viewed as minimal or easily managed. We suggest that future work might focus upon much more contentious sites of IT roll out where professionals exist – where they feel and experience much more significant effects.

Keywords: Professional Identity, Autonomy, Enterprise Systems, Packaged Software.

1. INTRODUCTION

It has been argued that the rise of professions in society has been on the increase for over a century (Perkin, 1989), with law and medicine as the archetypes of professional groups, and that such groups are seen as key in post-industrial society (Bell, 1973; Tofler, 1980). Whilst we acknowledge professionals have been part of some work in sociology (McLaughlin and Webster, 1998; Novek, 2002) and management (Dillard and Burris, 1993; Harris, 2002; Button, 2003; Timmons, 2003), within information systems (IS), the focus on professions and professionalism has mostly centered on the nature of IS as a profession rather than thinking about users as professionals in their own right. This work is wide ranging, focusing for instance, on the power IS professionals might exercise over users (Markus and Bjørn-Anderson, 1987), ethical codes of practice for systems development (Wood-Harper et al., 1996) and commercial professional and ethical considerations (Adam and Light, 2004). However, minimal attention has been paid to environments where the user population constitutes a professional group despite the fact it is recognised that the way a specific technology is used by people is shaped by their ideas, viewpoint and perception of the nature of that technology and its relation to the broader user context (Orlikowski and Gash, 1994; Lamb and Kling, 2003). This state of affairs is perhaps not surprising given that historically the modes of deployment of technologies in

organisations have sought to increase efficiencies in low skill, blue and white-collar areas. However, advances in technologies have seen their expansion into other environments, including those where professionals operate, as we shall discuss later.

In this study, we attend to academics as a professional group, with a specific focus on the autonomous aspect of professional identity, and follow their experiences throughout the pilot of a standard enterprise-wide package module. By academics we mean the lecturers, senior lecturers, readers and professors who make up the academic staff, or faculty, of a university. This group is characterised by a high degree of autonomy. Indeed they are possibly the most autonomous group within salaried professions (as opposed to the self employed). On one hand, it might be supposed that such a group would jealously guard its autonomy; on the other hand this group may be more tolerant than other professional groups of minor incursions into its autonomy, particularly those involving the use of information systems. Similarly, as the medical consultant, in Mclaughlin and Webster's study stated "I didn't have any skills that were susceptible" (Mclaughlin and Webster, 1998:793). This is partly because minor incursions might be seen as leaving the major elements of autonomy (such as freedom of speech and freedom to organise one's work) relatively unaffected and partly because university academics are shaking off the dusty old 'ivory towers' image in carving a newer professional identity, which embraces high technology in teaching, administration and research.

Our aim is to provide insights into professional autonomy by exploring the mutual shaping of technology and professional practice, as revealed with this somewhat unusual professional group. The paper is structured as follows. In the next section we offer some background on professions in general and after this we consider some of the implications of IT use in organisations for those in professional groups. We then briefly overview our approach to the research. An interpretation of the findings of the study are then provided through a thematic analysis which offers insights into the regulation of professions through technological inscription, the deskilling of work, from professional to managerial and administrative, system acceptance in the face of self interest, the retention of autonomy in a regulated environment and the overt exercise of professional power. Finally we conclude the paper and offer some recommendations for how the work can be further extended.

2. PROFESSIONAL IDENTITY, AUTONOMY AND TECHNOLOGY

The constitution of a profession, and in turn what is professional, has often been debated although professional identity continues to remain ambiguous (Carr-Saunders and Wilson, 1933; Freidson, 1983; Crompton, 1987). Indeed, it has been noted that the concept of a profession changes over time based on the economic, social and historical context under consideration (Freidson, 2001). Generally speaking, and for the purposes of this paper, professions can be characterised as being associated with: mastery of an esoteric body of knowledge, autonomy, formal organisation and code of ethics and a social function (Johnson, 2001). Within the defining features of a profession, occupational autonomy is described as one of the major characteristics as compared to other occupations where people act on given orders (Moore, 1970; Pavalko, 1988; Johnson, 1995). Moreover, even where professionals work within formal organisational arrangements, it is argued that they continue to exercise unusual discretion through their technical autonomy or freedom to employ discretion in performing work in the light of personal, schooled judgment unavailable to those without the same qualification (Freidson, 1986). Our focus is on autonomy as an important consideration where information systems are rolled out to professionals. How far can information systems be seen as undermining professional identity? Alternatively, even when they do impose constraints on professionals, how far does the professional group accommodate these without major revision of its working practices or professional roles?

The introduction of IT into organisations has brought about a techno-centric interpretation of its effects on management-worker relationships and changes in structure. A pivotal theme within management and organisational research has been the identification of new industrial methodologies

and technologies that focus on the generation of greater workforce commitment and flexibility (Wilson, 1995). The hope is that the new information based technologies will allow the practices and beliefs of Taylorism and Fordism, once the foundation for industrial development, to be brushed aside, therefore developing an environment of commitment and trust (Wilson, 1995), rather than one where routinised and overly efficient work practices are foisted on the worker. This is epitomised by 'empowered' semi-autonomous units of production, where a highly trained and skilled workforce could exercise freedom and authority within a decentralised mode of control and coordination (Wilson, 1995; Hayes, 2001).

Thus, many see the introduction of IT as ushering in a management style that is qualitatively different from Taylorism. Insofar as IT requires that workers apply intellectual effort to their tasks (Zuboff, 1988), control of information by management, and the desire for obedience in general, can constitute a constraint on realising the gains of IT. According to this interpretation, obedience to management has the effect of limiting the type of innovative behaviour that would make use of the expanded possibilities presented by IT, and the type of problem solving skills that would deal with the new questions that come with broadened parameters. Therefore, to take advantage of IT, workers must be empowered to make process decisions implying that workers also take on greater responsibility with management also taking on a new role in such an environment. This position is therefore complimentary to traditional notions of professional identity, which incorporate autonomy as a defining characteristic as Randle states: "professionals have been depicted as wishing to have autonomy, the freedom to make their own decisions without pressure from outside of the profession, including from their own managers" (Randle, 1996:740).

Yet there is also a considerable thread in traditional sociological arguments about professional work that sees autonomy as either nullified or corrupted by technological change. The monitoring, controlling and surveillance of employees, is for example, one strong strand even though it is recognised that the effects and uses of electronic performance monitoring may not be predictable in advance of their deployment (Zuboff, 1988; Akrich, 1992; Lyon, 1994; Mason et al., 1999; McCahill and Norris, 2002). Indeed, the paradox of electronic surveillance in the workplace is that it is much used and little understood (Vorvoreanu and Baton, 2000). In addition, there are also those who consider the mutual shaping of technologies and society (MacKenzie and Wajcman, 1999) thus there are further implications for professions in terms of the role Information Communication Technologies (ICTs) may have in shaping their environments and roles within these. A particularly important idea here is the notion of inscription (Akrich, 1992), the idea that technologies may embody a preferred reading, that of the designer of the technology. The preferred reading may embody a political stance as in (Winner, 1995) description of the design of the road structure of Long Island incorporating low bridges so that buses, the mode of transport of many working class people, would be excluded from the desirable parkland areas frequented by the middle classes in their cars.

In terms of our case, within IS this theme has been widely considered in relation to packaged software based enterprise systems (Lucas et al., 1988; Hanseth and Braa, 1998; Soliman and Youssef, 1998; Markus and Tanis, 2000; Sia et al., 2002; Wagner and Newell, 2004; Light, 2005b). Such systems comprise a suite of integrated, process oriented, standardised modules that are pre-written and thus, are inscribed with ways of work. Indeed, it is now broadly recognised that such systems potentially 'force' ways for work upon users, although in order to make enterprise systems work, certain studies have revealed a number of strategies (Soh et al., 2000; Brehm et al., 2001; Light, 2001; Alvarez, 2002; Benders et al., 2002; Pollock et al., 2003; Scott and Wagner, 2003; Light, 2005a). However, to date, the implication of adopting and implementing such systems in environments where professionals who will require a good deal of autonomy in some aspects of the processes that underlie their daily work has received scant attention. This is our purpose here.

3. RESEARCH APPROACH

This work is part of a wider programme of work into the deployment of IT in professionally populated environments. Here we present some of the findings from one of the cases, which is drawn from the pilot of a module of the Hayward¹ University Student Information System (HUSIS). Within IS, the case study is widely accepted and is a commonly used method for conducting qualitative data informed research (Walsham, 1993; Walsham, 1995; Orlikowski, 1996; Klein and Myers, 1999). Thus a range of techniques associated with the case study method were used given the researcher's concern for the effects and influence of the information system within the organisation rather than the technical aspects of the information system alone (Myers, 1997). The findings reported here are based on qualitative data, which has been collected via participant and non-participant observation of various processes surrounding HUSIS' examination boards module. In addition, 19 of 34 members of academic and support staff involved in the pilot were interviewed. All the interviews were recorded and transcribed providing 130 pages of transcription. As this research is based on a sensitive area encompassing student recruitment we have deliberately avoided reproducing quotes from these interviews to protect the anonymity of participants. Documentary evidence regarding the pilot study, university policy, and UK higher education policy directly and indirectly associated with the processes surrounding the pilot were also drawn upon as necessary. Analysis and data collection were conducted concurrently. This began with a fairly broad objective of finding out about the nature of academic professional identity and the environment within which academics worked. Then, data was collected guided by Johnson's (2001) conceptual map of the characteristics of professions combined with an ongoing literature review of IT use. As data was collected it was coded in relation to the literature and the characteristics of professions framework, and then a subset of this, as related to autonomy was further unpacked. This eventually led to the identification of the themes of analysis as reported here.

4. INTERPRETATION OF FINDINGS

The higher education sector in the UK has undergone significant change in recent years. Government led initiatives such as the creation of more universities and the widening participation agenda which aims to increase the number and variety of entrants into higher education coupled with a proportionate decrease in funding have brought significant pressures to bear on the sector. Furthermore, because of the introduction of student fees, the sector is becoming much more market oriented especially in the light of the potential positive and negative effects of various teaching and research league tables that attest to an institution's quality in various subject areas. These pressures have been translated by many higher education managers into a need for improved efficiency and part of this response has been to follow the lead of commercial organisations by standardising work practices and centralising them through the deployment of enterprise systems. At Hayward University such a project was initiated in 2003. The enterprise system has modules that support university processes in areas such as student admissions, registrations and records and finance. The focus of our study is upon a pilot of a particular module that we shall call 'Marksheet'.

Marksheet was developed during 2003. The university brought in a contractor to manage the project. Following a series of briefing sessions he configured and customised the module, based on his analysis of the administrative requirements of the student assessment and examinations board processes. The pilot of the module began in 2004. Several academic departments were involved and we followed the project within one of these. The aim is to replace the existing technologies and ways of work used to record exam and assessment results, which feed into examination boards. Marksheet allows users to enter marks for assessed work directly into HUSIS via a browser based interface. The system then calculates the module mark for each student from the marks entered and the relative weights defined

¹ Hayward is a pseudonym we use for the university in question.

for each piece of work. The system is inscribed with various policies associated with academic programmes of study at departmental and university level, for example, undergraduate and postgraduate assessment scales and ratification and decision coding for marks, assessment, compensation and personal mitigating circumstances status. Thus the system can be used to support the examinations board processes.

The management of the academic department in this study decided to participate in the pilot because their own system started to become unwieldy and it was evident that flaws were emerging in the original system. In common with many other IS projects legacy information system problems had been identified, in particular relating to difficulties in maintaining the accuracy of data. The rollout of Marksheet began in November 2004 with a training session for the academics. At the session the academics were given a username and password and were shown round the system. They were also given the opportunity to provide feedback on the system. Some of their suggested changes were incorporated into the system and the software was trialled in support of three examination boards that year. The pilot is still ongoing, but the system is effectively in use. Moreover, the academics reported that examination boards are now generally better run as a result. It is from this process that we have identified the themes related to the use of IT in environments where professionals constitute the majority of the user base, which were outlined above. The themes are regulation through inscription, the deskilling of work – from professional to managerial and administrative, system acceptance in the face of self-interest, the retention of autonomy in a regulated environment and the overt exercise of professional power. However, it is important to note that there are wide ranging views within our study as to whether academics are professionals even though everyone involved in our study recognised some element of professional identity within the group. Importantly, autonomy was a recurring feature that was deemed important. Our experience is therefore consistent with the literature, that the definition of professional identity continues to be a highly contested issue (Carr-Saunders and Wilson, 1933; Freidson, 1983; Crompton, 1987; 1994; 2001).

5. REGULATION THROUGH INSCRIPTION

Autonomy is seen as an attractive aspect within academic life, even though this has been eroded in recent years. In particular the roles of certain policies and corresponding technologies that have been installed in support have been seen to contribute to this. Several university policies related to examinations boards have been implemented in the name of improving teaching quality in recent years. Moreover, these policies have become inscribed within the Marksheet module. Thus, for example, it would not be unusual for some students in a given year to have experienced personal difficulties in some shape or form during their studies. Historically, the way these students were dealt with was a matter of professional judgment on the part of the academics in attendance at a meeting prior to the board, or at an examinations board. There are a number of ways this might be dealt with; the central tenet of the process would be to do what is best for the student whilst being consistently fair to others year on year, in other words examination boards operated a form of ‘case law’. However, a new university wide policy was introduced which standardised the practice of dealing with student problems so that if a student was in such a situation and their performance had been affected, then they would be allowed another chance to repeat a piece of assessment/exam, module or year as necessary. Prior to this there were many more ways of dealing with such a student, such as compensating marks based on say overall performance in the year or on the programme of study as a whole. The process of dealing with the question of student problems in a more rigorous way, and outside the examination board, is consonant with a general move in UK universities to recognize that many students may have personal difficulties that affect their studies and to move away from an ‘ad hoc’ approach to recognizing these difficulties in the assessment process.

The new approach to student difficulties is now inscribed in Marksheet and thus combined with the new policy, it restricts the decision making process of the academics. A similar inscription is in effect

regarding students who have completed the programme and are on the border between two classifications. A mark has been set at enterprise level and coded into the system, which must be adhered to. This again is something that would have been subject to considerable discussion in UK university examination boards in the past. In practice, there is still a great deal of discussion about marks and boundaries between degree classes at university examination boards throughout the length and breadth of the UK. What is different, and what is inscribed in this system, is the consistency of grade boundaries year on year. So, while this could be seen as removing an element of autonomy from academics, instead it provides them with a more consistent defence of grading procedures.

We found that academics feel they still need the flexibility to exercise their professional judgment. At present this seems to be restricted by the system to an extent and it is recognised that the system could encroach further. However, academics have different ways of exercising their professional judgment and as the examination board process has become more rigorous and, in some ways less open to judgment as we note above, autonomy is exercised elsewhere. For instance, it is now common in UK universities for student problems, for example, illness that might affect performance, to be dealt with by a separate process so that the examination board does not have to make a decision about the severity of an illness. With this in mind, McLaughlin and Webster's (1998) study recognizes that the medical knowledge held by certain other professional groups, such as nurses, was devalued by doctors as a way for the doctors to maintain the knowledge claims associated with their professional identity. In our case, we show how the academics may *draw upon*, rather than marginalize other professional groups' knowledge (doctors) to help them retain their own professional autonomy. Additionally, where there is less flexibility in assigning degree class boundaries in the examinations board, more effort is expended whilst assembling the marks to ensure that students receive a fair assessment. We note that whilst we see certain processes inscribed in the software of Marksheet, these are part of a higher level inscription of Data Protections and Freedom of Information legislation where students are entitled to have a detailed breakdown of their marks.

6. DESKILLING: FROM PROFESSIONS TO MANAGEMENT AND ADMINISTRATION

Numerous studies from the mid 1960s to mid 1990s have examined white-collar work focusing primarily on clerical work exploring the extent to which computer technologies have deskilled or eliminated white-collar status, for example, (Mumford, 1964; Glenn and Feldberg, 1977; Barker and Downing, 1985; Crompton and Sanderson, 1990; Webster, 1990; Fearfull, 1992) but ways in which new technologies are impacting other white-collar work such as managerial and professional occupations seem to be under examined. Advances in technology can lead to deskilling and is capable of reducing the need for much of the decision making in the examination boards as we have already outlined.

Issues were raised regarding data input with a general feeling that the increase of logging data/paperwork is cutting into the academics' workload when they should be doing their 'job'. Some respondents reported that data entry was not a professional role. In the past some academics handed over marks to a third party to be entered on their behalf but as the data entered was sometimes inaccurate it was decided by department management that academics should take full ownership of entering their students' marks. This may be efficient but it is also constraining. According to some academics, when they enter data, they consider they are undertaking an administrative role and they see the system as taking away their professional status. One academic's viewpoint was that there is a destabilising effect that introducing technology can have in terms of what it means to be a professional and that aspects of autonomy, self control and self discipline are traded off when systems are introduced. With regard to decision making in examination boards, an automated system could be seen to be eroding professional judgement by reconfiguring the process so it becomes managerial monitoring and controlling. Whenever a new system is introduced into an organisation it seems

inevitable that it empowers some and de-powers others, so not everyone will ever be happy about the implementation of them. It is well documented that skill and knowledge of a trained workforce was swept away with factory automation in the late nineteenth and early twentieth centuries (Wilson, 1995) and it appears that technology is still having the same effect today, albeit less dramatically, with regard to this profession. But this is not an isolated case, similarly, as shown in Mclaughlin and Webster's (1998) study, the Medical Laboratory Scientific Officers spoke of certain aspects of the system as deskilling because they stripped them of responsibilities which they believe were central to their professional identity – choosing which tests to run for instance.

7. SYSTEM ACCEPTANCE IN THE FACE OF SELF INTEREST

The management of the department purposely adopted a policy whereby academics were forced into a situation where they have to use Marksheet because that is what the system was designed for. It was also argued to be the best way to stop data being entered at so many different points, by third parties, where it was almost inevitable that errors would occur. However, the Marksheet system puts the onus of correct data entry on the academic. If there is an error, the responsibility for the error is very clear. Thus, it might be expected that widespread resistance to the system would occur. Yet, by and large, but not outright, academics seem to have accepted using the new system despite its encroaching on their autonomy, and there is evidence that they accept it even though they do not want to. A few claimed they preferred entering marks the old way but were told they no longer had a choice and they had to use the new system. The academics response in this sense, is unsurprising, we note that across the higher education sector, there is wide variation in responsibility for entering marks. In some universities academic staff would not do this by any means so it is no surprise that some academics in this study regarded this as an administrative task, which was not appropriate for them. However, this still leaves the broader issue that the system was accepted despite its potential to erode autonomy. As we detail above, the UK university environment has gone through rapid major changes and the academics in our study, whilst being very aware of autonomy and any potential erosions as we note above, did not regard Marksheet as a major issue, in other words, it was not worth having a battle over.

8. RETAINING AUTONOMY IN A REGULATED ENVIRONMENT

Certain university policies are inscribed in the system and we have ascertained that there is apparently less freedom in discussing and assigning degree class boundaries in examination boards, but several academics claim that the system can be 'worked around' to enable them to retain control therefore retaining their professional autonomy to some degree.

Entering marks into Marksheet has resulted in discussion and time spent in examination boards being dramatically reduced from two or three hours to one hour or less in some cases. Taking away all the assessment sub-components, for example, has also reduced complexity, resulting in a lot less data to manipulate and discuss. On one hand it looks as though there is less discussion of student grades at examination boards. However in the examination boards before the introduction of Marksheet, much of that discussion revolved around ensuring data was accurate. Secondly, old style examination boards involved discussion of students with problems whilst in the new system these discussions take place elsewhere. There is a tension here in that newer examination boards may feel to the academics involved as if they are diminishing their professional judgement as they are shorter, whereas, in fact they may make little difference to academic autonomy as academics still have the same level of professional judgement in awarding marks to their assessed work at the outset.

The policy inscribed in the technology is now more rigid; there are a new set of rules concerning progression and graduation. One such rule university management has put in place is if a student is more than a certain percentage away from a first class degree, professional discussion on that matter

can no longer take place in an examination board, and one could argue that that is quite consciously taking away an academic's professional autonomy. But there are certain automatic compensations for fails and discretionary compensation for failing a number of modules, and coding to award these compensations is embedded in the system. Additionally, as we note above, subject to moderations and second marking, quality controls which have been common in the UK university system for many years, academics still primarily have much freedom in awarding marks.

It is generally agreed that all errors and anomalies should be observed and dealt with before the examination boards. Once marks are entered and saved they can be altered if errors are found before they are finally saved to 'academic history', so it is important that an academic makes certain the marks are correct before this 'point of no return'. The final mark and grade cannot be seen until it is calculated by the system. The system then produces a report to be presented at the examination board. As we have mentioned, being over a certain percentage outside a certain degree class, unless automatically compensated, is no longer professionally discussed at length. Such controls are commonplace in UK universities, with more rigid assignment of degree classes being common in some universities. Some academics feel this is problematic. It is possible to calculate a student's marks in advance of an examination board so that an academic would know if a student was likely to end up on a boundary between two grades and therefore whether some original marks should be revisited before the board. Although it is doubtful whether academics adopt such 'workarounds' in practice, it does offer some way of preserving the autonomy of deciding a student's degree class which was present in the old system.

(Albrecht, 1979) reminds us that professionals must evaluate their own work because they alone fully understand the goals and the complex work tasks required to achieve them. Self-regulation therefore has considerable merit. Academics possess a large amount of 'academic freedom' and the user group we looked at were able to develop mechanisms to exercise slight workarounds. Yet, if academics were to openly resist the use of the system instead of using it in the expected manner would they receive the same level of reprimand that others might receive in other professions? For example, during the Marksheet training day it was openly suggested that some academics might dislike the idea of others being able to see that they had changed a student mark in the system after it had been entered because they did not want to admit that the submission data was incorrect. With the new system, once the original entry is made, an audit trail is formed and the user cannot change an entry without saying why and consequently they may refuse to categorise the change in the way the system requires (the old system did not request reasons for making changes to data entry). They may also be concerned that at some point an analysis could be conducted resulting in a form of monitoring, using the system as a 'surveillance tool'. In light of this one academic suggested that they could opt to label a change as a 'manual override' as opposed to an 'error entry'. Thus, we suggest there is evidence that some academics have resisted the use of Marksheet and will exercise overt professional power by manipulating how they use the system to retain their autonomy.

9. CONCLUSION

We have examined and drawn from our study on professional identity and autonomy highlighting that the technology has regulating effects, with the implication that some deskilling might occur. Although professional groups are usually highly educated and organized, we show that in certain circumstances, they might to an extent, accept a system that potentially works against their interest in that it reinforces an erosion of autonomy. In this case, the autonomy relates to the area of student grading. However, it is clear the matter is more complex as strategies are deployed to retain autonomy and a big contributor is 'academic freedom', or more broadly the exercise of professional power.

The system erodes the autonomy of these academics as professionals. It constrains them to enter marks in a given way and it is part of a more general 'new managerialism' in UK universities and a

‘culture of audit’, where quality is seen as an important and measurable attribute (both of teaching and research) and there is considerably more openness as to student marks, in the wake of data protection and freedom of information legislation. Although some academics grumbled about the system turning them into data entry clerks, the autonomy they were giving up was only a small part of their overall autonomy, which has, in any case been under attack from the establishment for some time. In terms of autonomy, the freedom to come and go largely when one pleases, to work on a research topic of one’s choosing and to hold an unpopular point of view without one’s employer objecting – all these are at the core of academic autonomy and one might expect a much more adverse reaction if a system were to attack these. For instance the management of the department, in accordance with university policy, attempted to adopt a system of academics logging when they were working at home or were absent. Although some academics notified when they were absent, a significant number continued in their traditional practice of coming and going from the university without any notification. This was a far more important aspect of their autonomy. The fairly minor encroachment on academic autonomy that Marksheet demonstrates is tolerated, especially as it does appear to provide for more rigorous reporting of student marks which, despite all the difficulties of contemporary academic life, academics still hold to as important as their own autonomy. Future work, therefore, might examine much more contentious areas of IT deployment – where professionals feel it encroaches on their professional identity in a much more significant fashion.

References

- Adam, A. and Light, B. (2004), "Selling Packaged Software: An Ethical Analysis", in *Proceedings of the 12th European Conference on Information Systems* Turku, Finland.
- Akrich, M. (1992), "The De-Description of Technical Objects", in Bijker, W. E. and Law, J. (Eds), *Shaping Technology/Building Society: studies in sociotechnical change*, MIT Press, London, pp. 205-224.
- Albrecht, G. L. (1979), "Defusing Technological Change in Juvenile Courts: The Probation Officer's Struggle for Professional Autonomy", *Sociology Of Work And Occupations*, 6(3), pp. 259-282.
- Alvarez, R. (2002), "The Myth of Integration: A Case Study of an ERP Implementation", in Hossain, L., Patrick, J. D. and Rashid, M. A. (Eds), *Enterprise Resource Planning: Global Opportunities and Challenges*, Idea Group, London, pp. 17-42.
- Barker, J. and Downing, H. (1985), "Word Processing and the Transformation of Patriarchal Relations of Control in the Office", in Wajcman, J. (Ed.) *The Social Shaping of Technology. How the Refrigerator Got its Hum*, Open University Press, Milton Keynes.
- Bell, D. (1973), *Coming of Post-Industrial Society: A Venture in Social Forecasting*, Basic Books, New York.
- Benders, J., van der Blonk, H., Batenburg, R. and Scheper, W. (2002), "Conforming to Standards: ERP Systems and Technical Isomorphism", in *Proceedings of the European Association for the Study of Science and Technology Conference* York, UK.
- Brehm, L., Heinzl, A. and Markus, M. L. (2001), "Tailoring ERP Systems: A Spectrum of Choices and their Implications", in *Proceedings of the 34th Hawaii International Conference on System Sciences* IEEE Press: Maui, Hawaii, pp. CD-ROM.
- Button, G., Mason, D. and Sharrock, W (2003), "Disempowerment and resistance in the print industry? Reactions to surveillance-capable technology", *New Technology, Work and Employment*, 18(1), pp. 50-61.
- Carr-Saunders, A. M. and Wilson, P. A. (1933), *The Professions*, Oxford University Press, Oxford.
- Crompton, R. (1987), "Gender and accountancy: a response to Tinker and Neimark", *Accounting Organizations and Society*, 12(1), pp. 103-110.

- Crompton, R. and Sanderson, K. (1990), *Gendered Jobs and Social Change*, Unwin Hyman, London.
- Dillard, J. F. and Burris, B. H. (1993), "Technocracy and Management Control Systems", *Accounting, Management and Information Technologies*, 3(3), pp. 151-171.
- Fearfull, A. (1992), "The Introduction Of Information And Office Technologies: The Great Divide?" *Work, Employment and Society*, 6(3), pp. 423-442.
- Freidson, E. (1983), "The Theory of Professions: State of the Art", in Lewis, P. (Ed.) *The Sociology of the Professions*, London: Macmillan, pp. 19-37.
- Freidson, E. (1986), *Professional Powers: A Study of the Institutionalization of Formal Knowledge*, University of Chicago Press, Chicago.
- Freidson, E. (1994), *Professionalism Reborn: Theory, Prophecy and Policy*, Polity Press, Cambridge.
- Freidson, E. (2001), *Professionalism: The Third Logic*, UK: Polity Press, Cambridge.
- Glenn, E. N. and Feldberg, R. L. (1977), "Degraded and Deskilled: The Proletarianization of Clerical Work", *Social Problems*, 25(1), pp. 52-64.
- Hanseth, O. and Braa, K. (1998), "Technology as Traitor: Emergent SAP Infrastructure in a Global Organization", in Hirschheim, R., Newman, M. and De Gross, J. I. (Eds), *Proceedings of the 19th International Conference on Information Systems Association for Information Systems*: Helsinki, Finland, pp. 188-196.
- Harris, L. C. (2002), "The Emotional Labour of Barristers: An Exploration of Emotional Labour by Status Professionals", *Journal of Management Studies*, 39(4).
- Hayes, N. (2001), "Boundless and Bounded Interactions in the Knowledge Work Process: The Role of Groupware Technologies", *Information and Organization*, 11(2), pp. 79-101.
- Johnson, D. G. (1995), *Computers, Ethics and Social Values*, Prentice Hall, New Jersey, USA.
- Johnson, D. G. (2001), *Computer Ethics, 3rd Ed.*, Prentice Hall, New Jersey, USA.
- Klein, H. K. and Myers, M. D. (1999), "A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems", *MIS Quarterly*, 23(1), pp. 67-94.
- Lamb, R. and Kling, R. (2003), "Reconceptualizing Users as Social Actors in Information Systems Research", *MIS Quarterly*, 27(2), pp. 197-235.
- Light, B. (2001), "The Maintenance Implications of the Customization of ERP Software", *The Journal of Software Maintenance: Research and Practice*, 13(6), pp. 415-430.
- Light, B. (2005a), "Going Beyond 'Misfit' as a Reason for ERP Package Customisation", *Computers in Industry*, 56(6), pp. 606-619.
- Light, B. (2005b), "Potential Pitfalls in Packaged Software Adoption", *Communications of the Association for Computing Machinery*, 48(5), pp. 119-121.
- Lucas, H. C. J., Walton, E. J. and Ginzberg, M. J. (1988), "Implementing Packaged Software", *Management Information Systems Quarterly*, 12(4), pp. 536-549.
- Lyon, D. (1994), *The Electronic Eye: The Rise of Surveillance Society*, Polity Press, Cambridge.
- MacKenzie, D. and Wajcman, J. (1999), *The Social Shaping of Technology*, Open University Press, Buckingham, UK.
- Markus, M. L. and Bjørn-Anderson, N. (1987), "Power Over Users: Its Exercise By System Professionals", *Communications of the Association for Computing Machinery*, 30(6), pp. 498-504.
- Markus, M. L. and Tanis, C. (2000), "The Enterprise System Experience - From Adoption to Success", in Zmud, R. W. (Ed.) *Framing the Domains of IT Research: Glimpsing the Future Through the Past*, Pinnaflex Educational Resources, Cincinnati, pp. 173-207.

- Mason, D., Lankshear, G., Button, G. and Coates, S. (1999), "Surveillance-Capable Technology at Work: A Privacy Issue?" in *17th International Labour Process Conference* School of Management, Royal Holloway University of London.
- McCahill, M. and Norris, C. (2002), *On the Threshold to Urban Panopticon? Analysing the Employment of CCTV in European Cities Assessing its Social and Political Aspects*, RTD Project (September 2001 - February 2004), 5th Framework Programme of the European Commission, Contract No.: HPSE-CT2001-00094, University of Hull., Hull.
- Mclaughlin, J. and Webster, A. (1998), "Rationalising knowledge: IT systems, profesional identities and power", *The Editorial Board of The Sociological Review*, 46(4), pp. 781-802.
- Moore, W. E. (1970), *The Professions: Roles and Rules*, Russell Sage Foundation, New York.
- Mumford, E. (1964), *Living with a Computer*, Institute of Personnel Department, London.
- Myers, M. D. (1997), "Qualitative Research in Information Systems", *MISQ Discovery (a production of MIS Quarterly)*, <http://www.auckland.ac.nz/msis/jsworld/>, Accessed: November 21st, 1997.
- Novak, J. (2002), "IT, Gender, And Professional Practice: Or, Why An Automated Drug Distribution System Was Sent Back To The Manufacturer", *Science, Technology and Human Values*, 27(3), pp. 379-403.
- Orlikowski, W. J. (1996), "Improvising Organizational Transformation Over Time: A Situated Change Perspective", *Information Systems Research*, 7(1), pp. 63-92.
- Orlikowski, W. J. and Gash, D. C. (1994), "Technological Frames: Making Sense of Information Technology in Organizations", *ACM Transactions on Information Systems*, 12(2), pp. 174-207.
- Pavalko, R. M. (1988), *Sociology of Occupations and Professions (2nd Edition)*, F. E. Peacock, Itasca, IL.
- Perkin, H. (1989), *The Rise of Professional Society: England since 1880*, Routledge, London.
- Pollock, N., Williams, R. and Procter, R. (2003), "Fitting Standard Software Packages to Non-Standard Organizations: The 'Biography' of an Enterprise-Wide System", *Technology Analysis and Strategic Management*, 15(3), pp. 317-332.
- Randle, K. (1996), "The White-coated Worker: Professional Autonomy in a Period of Change", *Work, Employment and Society*, 10(4), pp. 737-753.
- Scott, S. V. and Wagner, E. L. (2003), "Networks, Negotiations, and New Times: The Implementation of Enterprise Resource Planning into an Academic Administration", *Information and Organization*, 13(4), pp. 285-313.
- Sia, S. K., Tang, M., Soh, C. and Boh, W. F. (2002), "Enterprise Resource Planning (ERP) Systems as a Technology of Power: Empowerment or Panoptic Control?" *Data Base for Advances in Information Systems*, 33(1), pp. 23-36.
- Soh, C., Siew Kien, S. and Tay-Yap, J. (2000), "Cultural Fits and Misfits: Is ERP a Universal Solution?" *Communications of the Association for Computing Machinery*, 43(4), pp. 47-51.
- Soliman, F. and Youssef, M. A. (1998), "The Role of SAP Software in Business Process Re-engineering", *International Journal of Operations and Production Management*, 18(9), pp. 886-895.
- Timmons, S. (2003), "A failed panopticon: surveillance of nursing practice via new technology", *New Technology, Work and Employment*, 18(2), pp. 143-153.
- Tofler (1980), *The Third Wave*, William Morrow and Company, New York.
- Vorvoreanu, M. and Baton, C. H. (2000), "Examining Electronic Surveillance in the Workplace: A Review of Theoretical Perspectives and Research Findings", in *Conference of the International Communication Association (ICA)* Acapulco, Mexico.

- Wagner, E. L. and Newell, S. (2004), "Best for Whom? The Tension Between 'Best Practice' ERP Packages and the Diverse Epistemic Cultures in a University Context", *Journal of Strategic Information Systems*, 14(4), pp. 305-328.
- Walsham, G. (1993), *Interpreting Information Systems in Organizations*, John Wiley & Sons, Chichester, UK.
- Walsham, G. (1995), "Interpretive Case Studies in IS Research: Nature and Method", *European Journal of Information Systems*, 4(2), pp. 74-81.
- Webster, J. (1990), *Office Automation: The Labour Process and Women's Work in Britain*, Harvester Wheatsheaf, London.
- Wilson, F. (1995), "Managerial control strategies within the networked organization", *Information Technology and People*, 8(3), pp. 57-72.
- Winner, L. (1995), "Do artifacts have politics?" in Wajcman, J. (Ed.) *The Social Shaping of Technology, 2nd Edition*, Open University Press, Buckingham, UK, pp. 28-40.
- Wood-Harper, A. T., Corder, S., Wood, J. R. G. and Watson, H. (1996), "How We Profess: The Ethical Systems Analyst", *Communications of the Association for Computing Machinery*, 39, pp. 69-77.
- Zuboff, S. (1988), *In the Age of the Smart Machine: The Future of Work and Power*, Basic Books, New York.