

DISCIPLINING INNOVATION? AN EXPLORATION OF BARGAINS FOR
MOBILE INFORMATION ARTEFACTS IN KNOWLEDGE-WORK

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Abstract

Mobile information artefacts are an increasing presence in the pockets and palms of knowledge-workers, as suggested by their nomenclature: popular types are the Pocket Personal Computer (PC) and the Palm (Pilot). Accompanying the person from home to the office and back, such artefacts disregard and disrupt the work-life boundary. One study considers the consequences for employees can be ‘very positive’ (Breu, Hemingway and Ashurst, 2005); another a ‘dual-edged sword’ (Towers, Duxbury and Thomas, 2005). Both focus on work flowing into life: a flow unhindered, for no resistance beyond switching off the artefact is to be found. Neither considers the possibility of an inverse flow of life into work. This possibility – and its implications – will be the concern of this paper. In so doing, this paper reveals shortcomings in the models used to predict – and plan for – information artefact adoption and the lifecycles or phases used to structure the production and consumption of such artefacts.

The paper commences with the event (Greenhill and Fletcher, 2005) of the disciplining of a member of staff for their use of a technological innovation, a mobile information artefact. This event took place during nine months experience of work in the innovation centre of a mobile network operator. In contrast to other attempts to impose discipline on innovation work practices, the introduction of mobile information artefacts seems to be welcomed, indeed, requested, by knowledge-workers. Vendor

advertising, rather than the systems developer (Howcroft and Wilson, 2003), plays a Janus role: one head proclaiming that the artefact is a consumer good for the knowledge-worker; the other that it is a productivity tool for the employer. This enlightenment – and deception (Horkheimer and Adorno, 2002) – can result in knowledge-workers appeasing their employer by appropriating the productivity discourse of the vendor as their business justification. There follows a honeymoon phase of play and pleasure for these “techie”. But this is the prelude to resentment, as the knowledge-worker runs up against the ‘unmeetable payment-due dates’ (Baudrillard, 1996: 161) for their promised productivity. The artefact can discipline their innovation work, even erode it; thus the situation of the employment relationship within relations of consumption results in the knowledge-worker (and with them their employer) being exploited by the vendor.

Introduction

It was just a bit of fun – not yet a business project [i.e. not something that had been officially approved and funded] – but it could be a useful service, for parents to track their children, for instance, not just, or specifically, for employers to track employees.

It was just unfortunate that we should use Mike [a fellow Graduate Trainee] in the demonstration to Colin [a Senior Consultant and Manager of one stream of research in the innovation centre].

(Dave, Graduate Trainee)

The service ran on a smartphone – an artefact that blends the information power of a Pocket PC and the telecommunication power of a mobile phone – and enabled one to see the location of fellow subscribers to that network. The innovation lay not so much in the technology, but in the fusion of data: the information of a subscriber's strength of signal vis-à-vis three or more masts, used by any network to determine which mast your call will be directed through, and a standard digital mapping service. The phone numbers used in the trial were those of Graduate Trainees. During the demonstration of the service to a Manager the unexpected location of one such Trainee, Mike, was exposed: instead of being in a neighbouring town – for a medical appointment – they were several hundred miles away.

The disciplining of a member of staff due to their use of a technological innovation, a mobile information artefact, is a relatively unique event. However, the more standard services of mobile information artefacts – such as a task tool for 'to-do' lists and a calendar for time management – may be used to discipline – for good or ill

– the innovation of knowledge-workers. Such artefacts can be seen as one of many attempts to reduce knowledge-worker discretion and autonomy, other attempts in the innovation centre being: the roll out of a company-wide innovation inducement scheme; the global integration – i.e. reduction – of research and development resources; the re-layering of the management hierarchy; the recruitment of cheap labour – i.e. centrally-funded Graduate Trainees on placement – and the abolition of “seed money” to develop concept demonstrators. However, whilst these attempts were opposed by the knowledge-workers, the introduction of mobile information artefacts was welcomed, indeed, requested, suggesting a more complex picture.

Some Key Issues for Critical Research in Information Systems

Production and consumption. From academic literature to popular music, work and life are considered largely distinct. Spatially distinct, for home is the preserve of life, the office or factory of work. Temporally distinct, for the week is the preserve of work, the weekend of life. Their relationship is purely monetary: the week of production provides for the weekend of consumption. Popular music tends to take the latter as its primary concern.

Yeah I've been working a week, I'm shot

Yeah I've been working a week for what?

Just living for the weekend

(Hard-Fi, 2005)

Academic literature, until recently, took the former: now it is concerned with ‘the world of media and shopping malls, bedrooms and brothels’ (Eagleton, 2003: 3) as consumption has aroused considerable interest ‘throughout the social sciences’ (Miller, 1995: 1). It ‘does not seem to represent merely an additional accretion... Rather, in many cases the topic of consumption seems to present a fundamental challenge to the basic premises that have sustained each discipline up to the present’ (Miller, 1995: 1).

Unlike these fields of geography and literature, Information Systems (IS) seems to have resisted the fundamental challenge presented to it by consumption. A surprise considering that a key reason for this return to the ‘grand narrative’ (Miller, 1995: 1) is the shift from a production-led to a demand-led market economy, a shift enabled by the use of information systems by retailers (Miller, 1995: 7). This is not to say that studies of consumption do not exist, rather that they are limited in number and discrete in scope. For example, one study discovered unexpected emancipatory consequences of eCommerce for car buyers (Cecez-Kecmanovic and Janson, 2005). However, it did not connect this with attempts – largely unsuccessful – to discover emancipatory consequences of information systems for employees (Janson and Cecez-Kecmanovic, 2003).

Critical theorists. Brooke has stated that ‘IS research is becoming over-saturated with Habermasian analyses’, and suggests looking beyond ‘to other theorists, such as Foucault’ (2002a: 46). She considers that Foucault and Habermas are ‘co-creating a dialectical dance’ (2002b: 56). For instance, Habermas’ theory of communicative action identifies what is required for democracy to exist; Foucault identifies means of asserting oneself within a so-called democracy. To neglect one,

therefore, is to the detriment of the discipline. As well as looking to Habermas's contemporaries elsewhere, it may also be worth looking behind Habermas to his predecessors in the Frankfurt School, critical theorists such as Adorno, Horkheimer and Marcuse.

Resistance, misbehaviour and dissent. Some researchers have adopted and adapted Foucault's – and prior to him, Bentham's – conception of a panopticon. Such 'panopticons are now electronic and informational' providing for 'the increased and successful use of monitoring and surveillance' (Thompson and Ackroyd, 1995: 623). One study has 'found that, unsurprisingly, supervisors prefer electronic monitoring more than non-supervisors, and that the great majority of the latter group considered that electronic monitoring might cause heightened tension between managers and workers' (Bradley, Erickson, Stephenson and Williams, 2000: 106). This is at the same time as which employees 'internalise various forms of 'the gaze'' (Thompson and Ackroyd, 1995: 623). These ideas are 'particularly dangerous in closing the space to 'see' resistance' (Thompson and Ackroyd, 1995: 624). This is, in part, because they can conflate the intent of managerial practice – as embodied in discourse or texts – and its outcome. However, 'Foucauldian theory and research...is not the only mechanism for taking labour out of the process' (Thompson and Ackroyd, 1995: 627); one might also add mainstream research in IS.

There has been 'the virtual removal of labour as an active agency of resistance in a considerable portion of theory and research' (Thompson and Ackroyd, 1995: 615). Both critical researchers and mainstream researchers have left little scope for resistance and have seen management as the prime mover in bargaining since the changed context of the 1980s. This constituted a departure from post-war research

which revealed how employees adapted wage-effort bargains in their favour including ‘the (re)appropriation of time, in which workers use time for themselves instead of productive work’ and ‘the reappropriation of products, in which the employee uses materials for some other purpose than the productive process’ (Thompson and Ackroyd, 1995: 616). In such research employees were ‘active and innovative in attempts to survive in employment, recurrently breaking rules and actively re-negotiating them on a continuous basis, with a management frequently tolerant of, accommodating to, or conniving in, such practices’ (Thompson and Ackroyd, 1995: 616).

However, this one concept is not sufficient to capture employee practices. Resistance suggests merely a response to managerial initiatives. It may be that employees can express discontent towards management through the pro-active adoption of an information artefact. Thompson and Ackroyd developed the broader concept of misbehaviour: misbehaving employees ‘may anticipate management, and may lead rather than follow’ (1995: 617). However, this concept, too, is limited for it ignores forms of action ‘that don’t involve overt conflict with management’ (Jaros, 2005: 17). In practice, there is a ‘continuum of overlapping worker responses’ (Jaros, 2005: 22).

Whether it is the establishment of Taylorism, bureaucracy, human relations, or new technology, extravagant claims as to the rationality and effectiveness were made by managerial advocates and too often believed by academics. We now know that workers learned to bend the bars in these particular iron cages. Why should the current crop of new management practices be any different? (Thompson and Ackroyd, 1995: 629)

One might therefore ask how and where are employees bending the bars of mobile information artefacts?

Bargains Old and New

Bargains of old, formal and informal, explicit or implicit, tended to follow a pattern. The employer would propose a new technological artefact, initiating the bargaining process. The employee would then oppose the artefact, but after a period of negotiation would be appeased by a concession such as 'technology pay' (Noon, 1989). From thence on, the employee would be resigned to its adoption. Such a pattern is prevalent as an assumption behind much of the literature, whether of a managerial or more critical orientation. Such a pattern may still be relevant to most new technologies. However, in the case of mobile information artefacts such a pattern is being supplemented, if not supplanted, by a pattern of bargaining more like those made by individuals, from Falstaff to Faust, with the devil (Russell, 2006). Pacts with the devil tend to balance – or not – the pleasure of consumption now with pain later; pacts with employers tend to balance – or not – the pain of labour now for the pleasure of consumption later.

What concession do employees receive for adopting mobile information artefacts? Certainly not time or money: technology pay is near forgotten and mobile information artefacts capture downtime, intensifying work. Employers present the artefact itself as the concession, a benefit for the employee.

You'd be amazed at some of the things we came up with: free phone and reduced call charges.

(Orange, 2006)

*A dazzling financial package like this certainly helps... A laptop and a mobile phone *...*

** Graduates joining the Finance Professional Programme are not eligible.*

(Lloyds TSB, 2006)

A benefit that Lloyd TSB's finance graduates give up for that other employee "benefit": professional development.

Some employers, rather than paying you to adopt the artefact, let you pay to adopt the artefact, giving you the benefit of saving the tax.

Been thinking of splashing out on a handheld computer for personal use? Well, now you can... Paid over a two year period all handheld PDAs [personal digital assistants] are with a warranty and benefit from tax free status.

(AstraZeneca, 2006)

Such schemes may shortly end (Collinson, 2006) but their creation points to a (con)fusion of consumption with production. If it is for personal use, why is it tax free, unlike other products for personal use? If it is for organisational use why should the employee pay at all? It may be that employees have internalised their employer's

objectives and seek ‘biographic solutions to structural contradictions’ (Ulrich Beck cited in Bunting, 2004: xxv). However, it may be that mobile information artefacts, to a greater extent than the new technologies of old, permit a variety of uses of varying benefit for employer and employee.

Since the first software product in 1966 (Campbell-Kelly, 2003) information artefacts have been put to different uses than those intended at the time of purchase. The magnitude of difference between these uses has, however, increased, especially since the advent of networked computers in the 1990s (Greenbaum, 2004). An information artefact purchased for maintaining accounts could then be used to send email. As well as communicating with colleagues email can be used to communicate with friends and family. Later on such an information artefact could be used to shop online or download music and videos. The use of a production-provided information artefact for consumption can be a form of resistance, misbehaviour or dissent as it is an example of appropriating ‘materials for some other purpose than the productive process’ (Thompson and Ackroyd, 1995: 616). As such it can circumscribe the totalising rationalisation of the labour process. Mobile information artefacts extend this potential for consumption, for they can be used outside the office, away from the gaze of colleagues and managers. The smaller screen may even enable use for consumption within the office: a backflow of life into work to counter the intended flow of work into life. In the innovation centre knowledge-workers used their devices to: follow football scores; check their bank accounts; download music; view (often pornographic) pictures and videos. Employers may have little control for the artefacts – where traces of such activities may be left – are rarely, if ever, inspected or serviced by their technicians and the data traffic across a mobile phone network – in contrast to the office network – is beyond their surveillance. Some foresee or have experienced

problems (Sørensen and Pica, 2004); others see that such use for consumption may not preclude – and may be the prelude to – use as management intended.

The use of mobile information artefacts may be monitored – just as employers have subjected email communication to surveillance and restriction (Duane and Finnegan, 2005) – and this can incorporate into production one's outside life. Employees may be provided with a Blackberry and be expected to check their emails at home and on holiday, synchronise their device with their desktop in the office – thereby enabling surveillance by support staff – and make available their calendar – thereby enabling monitoring of their work arrangements by colleagues. Peer-management – and one might even postulate self-management – is potentially as arbitrary and destructive – if not more so – than that of line management; take, for instance, *Lord of the Flies* (Golding, 1997). Innovators routinely checked the calendars of those not in the office to ascertain the validity of their absence. Invalid or insufficient explanations would result in – at best – subtle or – at worst – sly remarks to the person concerned, their peers or more senior members of the centre.

However, as with the introduction of desktop visual terminals in the early 1980s (Storey, 1986) variation continues to exist in the extent to which companies adopt new technology and the degree to which they realise its control possibilities. An employer may provide a PDA; used without a mobile phone or card and independently of an office computer this is essentially an automated Filofax. The Task function of a Pocket PC could be said to automate a 'to-do' list or jottings on the back of an envelope. It has the advantage of keeping such lists together in one place and reminding one of when tasks fall due. As a tool that is personal, not accessible to other team members, it does not present a threat to knowledge-workers' autonomy or workload. Due to the lack of central control over mobile information artefact adoption

(Sørensen and Pica, 2004) – whether by the technology, human resource or finance functions – the artefact may well end up hidden at the back of a drawer, never to be used again, as happened in the innovation centre. In this case there will be little disruption to the work-life boundary, minimal advance of the frontier of control between employer and employee and no erection of – or extension to – a Foucauldian panopticon.

The fusion of consumption and production capabilities in mobile information artefacts has formed the basis of much of their advertising, for instance, for the PalmOne: ‘For work. For play. For life.’ (Shaw, 2004). Vendor advertising, rather than the systems developer (Howcroft and Wilson, 2003), plays the Janus role: one head proclaiming that the artefact is a productivity tool for the employer; the other that it is a consumer good. Consumption now drives acceptance directly, for instead of financial inducement the inducement is the consumption potential of the mobile information artefact – can the artefact be used to store music, play games, communicate with friends and family? – and the mobile information artefact’s own status as a consumer good. In an era when company cars or suits are no longer a sign of professional status community health visitors and psychiatric nurses – in wishing to keep up with the Joneses – have demanded mobile information artefacts because ‘as always, GPs seem to be better equipped’ (Amicus, 2002: 5). Bargains for mobile information artefacts may initially be individual and idiosyncratic: ‘i-deals’ (Rousseau, 2005). However, they may become collective through emulation, as employees covet that which belongs to their neighbour. Further evidence of the mobile information artefact as consumer good – and of employee agency in appropriating them – is found in the sales of Motorola pagers in the early 1990s. Motorola changed the colour of their pager from basic black to bright green, a change

that ‘actually cost...nothing could get...fifteen bucks extra per unit’ (Former Head of Motorola’s Pager Division cited in Postrel, 2003: 66).

Whatever value – aesthetic or otherwise – ascribed to the mobile information artefact, the engagement phase of anticipation and the honeymoon phase of play and exploration are the prelude to resentment, when the word ‘blackberry’ brings pain rather than pleasure (Hodgkinson, 2005) as the employee says farewell to downtime and time off (Jacques, 2006). They run up against the ‘unmeetable payment-due dates’ (Baudrillard, 1996: 161) for the productivity promised to the employer by the other head of Janus and appropriated by the employee in their business justification; they suffer as they would with post-consumption blues.

We are tempted to believe that certain achievements and possessions will guarantee us an enduring satisfaction. We are led to imagine ourselves scaling the steep sides of the cliff face of happiness to reach a wide, high plateau on which to continue our lives; we are not reminded that soon after reaching the summit we will be called down again into fresh lowlands of anxiety and desire.

(de Botton, 2004: 207)

Towards a Frame(that might)work

The new bargains struck for the adoption of mobile information artefacts reveal shortcomings in the models used to predict – and plan for – information

artefact adoption and the lifecycles or phases used to structure the production and consumption of such artefacts. As such a new conceptual framework is required.

Models of adoption. Most researchers investigating the adoption of new technologies select a model from the eight available ‘off-the-shelf’: the theory of reasoned action, the technology acceptance model (TAM), the motivational model, the theory of planned behavior, the model of personal computer utilization, the innovation diffusion theory, the social cognitive theory and the unified theory of acceptance and use of technology (UTAUT). TAM, the most commonly selected until very recently, forms the basis of several studies of mobile information artifact adoption (Yu, Yu, Liu and Yao, 2003; Breu et al., 2005); UTAUT, which seeks to supercede the other models (and more) forms the basis of several others (Anderson and Schwager, 2004; Garfield, 2005; Ristola and Kesti, 2005).

Whichever of these models the researcher chooses, they are choosing a managerialist frame. The authors of the UTAUT, for instance, declare that it ‘provides a useful tool for managers to assess the likelihood of success for new technology introductions and helps them understand the drivers of acceptance in order to proactively design interventions (including training, marketing, etc.) targeted at populations of users that may be less inclined to adopt and use new systems’ (Venkatesh, Morris, Davis and Davis, 2003: 425-426). Managerialism is explicit in the intention for it to be used by – and serve the purposes of – management. It is also implicit in that it assumes that the manager will be initiating the adoption of a new technology by others. This does not permit the possibility of employee-initiated adoption, as is proposed here for mobile information artefacts. It may well be that often the employees who have the power to initiate the adoption of mobile

information artefacts will be managers, however, it is their own adoption that they are concerned with. It may be that this study will explore managerial misbehaviour, something that 'few researchers have concerned themselves with' (Collinson and Ackroyd, 2005: 306). So 'that it is possible to 'see' resistance and misbehaviour' (Thompson and Ackroyd, 1995: 629) this research will need to develop a different frame.

These models are a packaging of selected elements of reference disciplines such as 'psychology, and sociology' (Venkatesh et al., 2003: 426). The elements selected may, within the reference discipline, be far from universally accepted, for instance, TAM is strongly behavioural. A common emphasis in all of the models is that adoption is planned and reasoned. In new bargains it may well be that emotionality as well as rationality (Avgerou and McGrath, 2005) has a part to play. In constructing a conceptual framework it may therefore be necessary to return to the reference disciplines and engage with alternative perspectives.

These models were primarily created for quantitative research. When they have been appropriated for qualitative research (e.g. TAM in Breu et al., 2005; UTAUT in Garfield, 2005) their findings have been prematurely prescribed. A different frame, if designed with qualitative research in mind, could move away from narrow and shallow variables, such as age and gender in UTAUT, to broader and deeper concepts.

Qualitative or quantitative empirical research? The choice of a qualitative or quantitative approach is far from straightforward. Critical research in IS allows for 'methodological pluralism' (Wilson and Greenhill, 2004); like labour process theory it 'is not analytically pre-disposed to any particular kind of method' for 'quantitative

or qualitative methods...may...be capable of shedding light on the nature of work under capitalism, depending on the specific research question being investigated' (Jaros, 2005: 23).

This research seeks to uncover practices of resistance, misbehaviour and dissent concerning mobile information artefacts whilst looking through the factory gate to the extra-organisational influence of the vendor. As practices of resistance, misbehaviour and dissent are 'covert and subterranean [they] are inevitably...difficult to identify and research' (Collinson and Ackroyd, 2005: 306). They are even more difficult to research when depending upon 'large data sets and increasingly available quantitative survey materials, rather than in-depth or longitudinal fieldwork' (Thompson and Ackroyd, 1995: 619). However, Jaros considers that: 'The nearly sole reliance on qualitative methods...has led to the formation of a research culture that produces 'deep' knowledge (nuanced, fine-grained understandings of particular workplaces) but not 'broad' knowledge (knowledge that is generalizable to other organizations, industries, countries etc.)' (2005: 19).

It may be that Jaros here is generalising about what is generalisable: whether research is qualitative or quantitative the only way to establish a theory's generalisability to a new setting is to test it in that setting (Lee and Baskerville, 2003). With regard to the research focus, employees may or may not be more forthcoming about practices of resistance, misbehaviour and dissent in an anonymous survey than an interview. However, it would be difficult to construct a survey that might penetrate through the false or faulty consciousness of employees on issues such as the impact of vendor discourse on their actions.

This research will adopt a qualitative method, exploring patterns of adoption and their driving or influencing factors within a specific organisational context. By

drilling to some depth it is hoped that ecological validity can be claimed. Recognising that the particular arrangement of patterns and factors will differ between spatio-temporal contexts, the research will proceed to explore further organisations – two such sites are envisaged – each time revising the analysis. An analysis applicable to a number of cases will therefore be built up, an analysis transferable, at least in part, to other contexts.

Drivers and influences. Sensitivity to the creation of surplus desire requires attention to that forgotten (f)actor in the adoption of mobile information artefacts: the vendor. Adopting Adorno (Adorno, 1991; Horkheimer and Adorno, 2002), one can picture the vendor manipulating the consumer's idea of a product's worth to them – its use value – through the medium of advertising which deceives under the guise of enlightening. Such manipulation helps to create the surplus desire that enables the product to sell at its exchange value: use value is the alibi for exchange value (Baudrillard, 1996). In the conceptual framework shown below, use value is divided into organisational and personal use value. The former would be the consideration – or prediction – of what is best for the employer; the latter what is best for the employee whether in their work or non-work life. These two drivers of mobile information artefact adoption are influenced by vendor discourse. Exchange value, traditionally conceived as the product of such manipulation of use value, is here excluded, for the employee, rather like a child, is not primarily concerned with the exchange value: that is the concern of the person who pays. It may be that a dissatisfied employee would wish to maximise the exchange value so as to have the most – detrimental – impact upon the organisation's success; also they may wish to minimise the exchange value as there may be a trade-off, for instance, a laptop comes

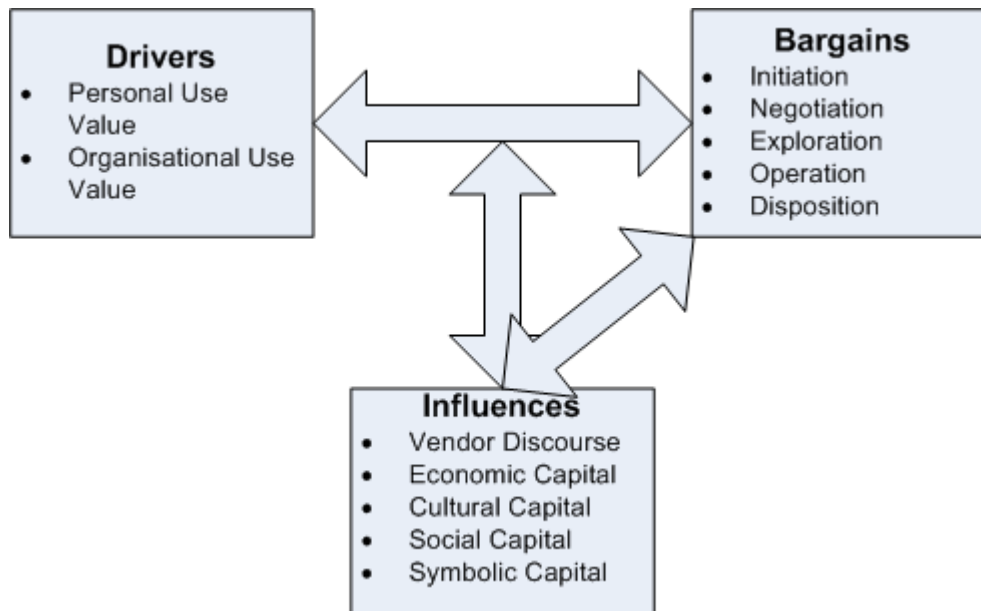
out of the same training/resources budget as attendance at conferences. However, these instances are considered relatively rare.

Vendor discourse is not the only influence upon conceptions of use value. Moving beyond simple variables such as age, Bourdieu's capitals have been adopted as broad categories to encompass what actors bring from their habitus into the field of play. Such an approach has worked well for exploring another case of (non)adoption: the digital divide (Kvasny, 2002). It is considered that these capitals influence the adoption process in addition to the employee's conception of the artefact's use values. Various capitals exist such as educational capital and literacy capital; the set selected here are from *Distinction* (Bourdieu, 1984) and are considered most relevant to the adoption of a cultural artefact. It is an assumption that mobile information artefacts are cultural artefacts, however, it is justified for the software and computer industry is considered to form part of the creative economy according to the Department of Culture Media and Sport (cited in Warhurst and Thompson, 2005). It is also evidenced by the 'interpretive flexibility' (Pinch and Bijker, 1987) that such artefacts enjoy.

FIGURE 1

A Conceptual Framework for Exploring Bargains for Mobile Information

Artefacts



Lifecycles of production and consumption. A re-conceptualisation of the stages of adoption is employed in this framework. It revises stages conceived in the fields of IS and Industrial Relations (IR). The Systems Development Life Cycle (SDLC) is the standard expression of the IS development process. It usually consists of ten phases which may be structured sequentially e.g. Structured Systems Analysis and Design Methodology (SSADM) or iteratively (after adaptation) e.g. Rapid Applications Development (RAD):

1. *Initiation Phase*
2. *System Concept Development Phase*
3. *Planning Phase*
4. *Requirements Analysis Phase*
5. *Design Phase*
6. *Development Phase*
7. *Integration and Test Phase*
8. *Implementation Phase*
9. *Operations and Maintenance Phase*
10. *Disposition Phase*

(Department of Justice, 2003)

The existence of such phases may be argued for on logical grounds (Weaver, 1998) i.e. one must plan (phase 3) before one implements (phase 8). However, the specificity of these phases also reflects the ‘pernicious form’ (Braverman, 1998: 227) of the division of labour that arose in the systems development industry. In the development of early systems ‘the programmer was generally a systems analyst as well, and combined the two functions of devising and writing the system’ (Braverman, 1998: 227). Later control and execution were separated: ‘it became clear that a great deal of the work of programming was routine and could be delegated to cheaper employees’ (Braverman, 1998: 227). Such programmers were still at the upper level of the hierarchy; below this level, later in the SDLC, systems development ‘enters the realm of working-class occupations’ (Braverman, 1998: 228): testers, operators, technical support. These occupations, and therefore the phases of the SDLC, may still suit the development of large-scale large-budget systems such as

those required by the United States Department of Justice and the Welsh Assembly Government (Berger, Beynon-Davies and Cleary, 2004). But if such custom-written systems had become rare by the mid 1970s (Campbell-Kelly, 2003: 89) they are even rarer today.

Most large-scale systems, such as those for Enterprise Resource Planning (ERP), are customised rather than custom-written. Customisation provides for little control, enabling the roles of systems analyst and programmer to be largely re-united in the role of systems developer. Without the logic of the division of labour behind it, these software developers pay “lip service” to the SDLC and the methodologies based upon it. Checkland and Scholes (1990) employ a sporting analogy:

The schoolboy batsman learning the craft of cricket thinks consciously about getting his left foot to the pitch of a good length ball, keeping his elbow up and swinging his bat through a vertical arc. Only when he has stopped thinking consciously about these things... can he begin to be a real batsman.

A “real batsman” tends to select only parts of a method, combining these with parts of other methods and may even invent their own techniques. They do not adopt methods; rather they adapt fragments of methods to a development situation. Where developers purport to follow the SDLC, the documentation only captures the developer’s rationalised reconstruction of the system development events. If this is the relevance of the SDLC to the customisation of large-scale systems it is unlikely to prove relevant in its current form for the adoption of mobile information artefacts.

An alternative conceptualisation of technological change may be found in the field of IR, consisting of three stages:

1. *Initial planning of technological change*
2. *Selection of equipment/system*
3. *Implementation of change*

(Williams and Steward, 1985: 64)

Produced to assist in the analysis of the ‘application of new technology’ (Williams and Steward, 1985: 58) in general, rather than the development of custom-written software, this conceptualisation may be better-suited to the definition of information systems accepted in the IS discipline: ‘any hardware/software capability employed within organisations to do some task’ (Orlikowski, 1988: 23). However, the stage ‘selection of equipment/system’ suggests a rather straightforward choice between existing products: the term negotiation might be more appropriate. This stage could embrace negotiation of specification but also negotiation between employer and employee and between different levels of management. In terms of employer-employee negotiation it has been found that it is at this stage that trade unions are most likely to be involved (Williams and Steward, 1985); in terms of negotiation between different levels of management it has been found that at this stage budgetary constraints and considerations play an important role in determining which system is selected (Noon, 1989).

Further modification is required. At the time the SDLC was conceived there was limited difference between the intended use of an information system at the time of its purchase and that to which it would be put in practice. The magnitude of difference between these uses has subsequently increased. This suggests two stages

of use: exploration when the possibilities are experimented with, and operation when routine use becomes the norm.

Even routine is time-bounded. The development of mass-market software from the mid 1970s (Campbell-Kelly, 2003: 4) meant the cost of development being spread over significant volumes, rather than the one purchaser for custom-written software. This led to systems being seen as more disposable and suggests a need for a disposition stage as in the SDLC. It also led to a reduction in risk and less need for planning: the first phase – ‘initial planning of technological change’ – might therefore be better phrased as initiation.

Utilising the resulting conceptual framework in critical fieldwork is not without potential pitfalls. Two aims of critical research are emancipation and non-performative intent (Howcroft and Trauth, 2004). If this research results in employers or vendors restricting or exploiting the personal use value of mobile information artefacts then these will not be fulfilled. Employers may also strive to set the boundary and scope of the investigation (Wilson and Greenhill, 2004) and employees in such organisations may not be especially keen to speak of resistance, misbehaviour and dissent. Due to the lack of central control over mobile information artefact adoption (Sørensen and Pica, 2004) – whether by the technology, human resource or finance functions – access will need to be of sufficient breadth, depth and duration. Furthermore, when exploring the role of vendor discourse it may be challenging to reconcile the possible false consciousness of the employee with the possible false presumption of the researcher regarding the effect of such discourse, the latter a leap of which Adorno has been accused (Crook, 1994).

Conclusions

It is hoped that this research will contribute not only to theory but also praxis by addressing ‘the dearth of empirical studies’ (Howcroft and Trauth, 2004: 202) in critical research in IS. As such a study it will complement those undertaken of the ambulance service (McGrath, 2003), nursing (Wilson, 2002), telehealth (Klecun-Dabrowska, 2002), call centres (Richardson, 2003) and the digital divide (Kvasny, 2002). It is hoped that it succeeds in providing for the possibility of identifying new bargains, bargains that might follow a pattern such as this:

1. *Initiation: the play discourse of the vendor appeals to the employee who may then propose the artefact.*
2. *Negotiation: the employer is appeased by the productivity discourse of the vendor.*
3. *Exploration: the employee experiences a honeymoon phase of play, followed by*
4. *Operation: the employee runs up against the ‘unmeetable payment-due dates’ (Baudrillard, 1996: 161) for their promised productivity, possibly leading to*
5. *Disposition: the employee hides the artefact at the back of a drawer.*

This enhanced employee agency might suggest that the bargain favours the employee, enabling them to consume use value for themselves as opposed to producing exchange value for their employer. However, this may be more of a con than a bargain for as their work life encroaches further upon their non-work life

production is maximised and consumption minimised. The empowerment of self-managing one's work-life boundary means little in practice for the knowledge-worker: the structural pressures and demands make it impossible not to let work permeate into life; the permeation of life into work is still controlled by the employer. In contrast to the traditional (Protestant) work ethic it is not the gratification that is deferred but the dissatisfaction. The artefact may also result in further disciplining of innovation work; even its erosion as their loss of downtime means less time for reflection, for those quieter moments when a new idea emerges. The situation of the employment relationship within relations of consumption may result in the knowledge-worker (and with them their employer) entering into a new relationship of exploitation where the (con)fusion of consumption and production results in a bargain only for the vendor.

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