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SCHOOL OF ACCOUNTING, FINANCE AND MANAGEMENT

Digital technology and governance in transition: The case of the British Library

Martin Harris
Department of Accounting, Finance and Management
University of Essex

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Martin Harris
Department of Accounting, Finance and Management,

University of Essex, UK

Abstract

Comment on the organizational consequences of the new information and communications technologies (ICTs) is pervaded by a powerful imagery of disaggregation and a tendency for 'virtual' forms of production to be seen as synonymous with the 'end' of bureaucracy. This paper questions the underlying assumptions of the 'virtual organization', highlighting the historically enduring, diversified character of the bureaucratic form. The paper then presents case study findings on the web-based access to information resources now being provided by the British Library (BL). The case study evidence produces two main findings. First, radically decentralised virtual forms of service delivery are heavily dependent on new forms of capacity-building and information aggregation. Second, digital technology is embedded in an inherently contested and contradictory context of institutional change. Current developments in the management and control of digital rights are consistent with the commodification of the public sphere. However, the evidence also suggests that scholarly access to information resources is being significantly influenced by the 'information society' objectives of the BL and other institutional players within the network of UK research libraries.

Introduction

Recent years have seen a large volume of comment on the radically new, decentralized organizational forms that have emerged in the context of 'global' information networks and the rapid growth of the Internet. Comment on these developments has been embedded in an overarching 'discourse of endings' (Reed and Courpasson, 2004) – a discourse whose origins can be traced to the belief that the age of 'high' modernity has given way to a period of late or post-modernity. The view that the advanced industrial societies have reached an historic 'ending' is germane to the 'disorganized' forms of production that emerged in the 1980s and 1990s (Lash and Urry, 1987; Harvey, 1989). A parallel and related 'ending' is the perceived decline of the welfare state, a growing disenchantment with bureaucratic modes of organizing, and the rise of the 'New Public Management' (Hood, 1998). The new information and communications technologies (ICTs) have featured prominently in this discourse, and leading commentators such as Manuel Castells have added weight to the idea that highly devolved 'post-bureaucratic' modes of governance will provide the template for the emergent 'network society' (Castells, 1996, 2000, 2001, 2004). These developments are cognate with an intellectual climate that emphasizes indeterminacy (Cooper and Burrell, 1988), the roll-back of the state (Greenwood et al, 2002) and the idea that production is being organized 'outside the bounds of imperative coordination' (Tsoukas, 2003:610).

Whereas in the 1970s Daniel Bell and other theorists of post-industrialism regarded both the bureaucratic form and the state as a central feature of technological society (Bell, 1974; Kumar, 1995; Edwards, 1996; Mattelart, 2003), the closing decades of the last century saw a marked rise in anti-bureaucratic sentiment and a growing conviction that the private sector corporation was now the primary locus of technology-led economic growth. Comment on the Internet and the 'global' reach of information networks was, from

the early 1990s onwards, inextricably bound up with the ideology of free markets, effectively marginalizing earlier conceptions of the Internet as a public utility (Schiller, 1999; Sassen, 2000). The belief that public sector bureaucracies are out of step with the new 'informatized' modes of production features prominently in contemporary accounts of 'networked' (Castells, 2000), 'virtual' (Davidow and Malone, 1992), or 'knowledge' organizations (Quinn, 1992; Tsoukas, 2003; Newell et al 2002).

This paper questions the idea that virtual production can be equated with disaggregation and dispersal on the basis of three counterfactuals, each of which has a strong bearing on information technology and the theme of 'governance in transition'. The first is that the 'end of bureaucracy' thesis has been challenged by work that shows the complex interpenetration of 'hybrid' bureaucracies and new virtual forms (Harris 2006). A second counterfactual explored by the paper is that currently influential accounts of information technology and organizational dispersal ignore the broader institutional context in which change is embedded. Finally, and more substantively, it is argued that the broader discourse of virtuality seriously underestimates the extent to which public institutions are adding technological and organizational capacity that allows them to develop the new forms of service delivery in the emergent 'information society' (Bellamy and Taylor, 1998; Margetts 2005). The paper begins with a short review that brings together some relevant literature on the above issues. The paper then presents case study findings on the British library where an extensive programme of digitization is supporting some new and emergent forms of virtual service delivery. The discussion of findings that follows relates the case study evidence to the key issues of bureaucratic hybridity, service integration and institutional change. The concluding section offers some final theoretical reflections on bureaucracy and the longer-term implications of digitization for scholarly access to information resources.

ICT, bureaucracy and the information society

The term 'ICT' has been used to denote the convergence of previously seperate information technologies and telecommunications infrastructures (Jackson and van der Wielen, 1997). These technologies enable 'virtual' forms of production that transcend traditionally fixed constraints of time and space (Davidow and Malone, 1992; Nohria and Berkley, 1994). These technologies are also associated with the restructuring of advanced industrial societies (Kumar, 1995, Mattelart, 2003). Whilst there is a long tradition of research on the 'information society' broadly conceived, (Lyon, 1998; 1995) research on the organizational capacity to deliver new digital services within the public sphere is limited and there is a need for a more penetrating treatment of how public sector bureaucracies might introduce ICTs in ways that support 'information society' objectives. The present research addresses this shortfall in relation to three separate but related aspects. The first is that many public services are now dependent on 'post bureaucratic' organizational forms; the second is the idea that substantial technical and organizational changes might coexist with elements of institutional continuity. The third aspect is that 'virtual' or 'networked' forms of service delivery can be understood in relation to organizational integration as well as disaggregation.

As noted in the introduction, comment on the 'end' of bureaucracy is derived from the view that bureaucratic rationalisation can no longer provide a viable basis for organizing in the current context of radical uncertainty and turbulent change (Harvey, 1989; Castells, 2000). Whilst some very powerful currents of anti-bureaucratic thought continue to influence discussion of the new technologies, a growing number of scholars in organization studies have argued that 'epochalist' perspectives on contemporary restructuring have produced a highly restricted, caricatured and ahistorical view of bureaucracy (Hill et al, 2000; Clegg and Courpasson, 2004; Alvesson and Thompson,

2005; Kallinikos, 2004; du Gay, 2000, 2005; Harris and Hopfl, 2006; Clegg, 2007). Recent comment and debate on the 'post bureaucratic' organization suggests that we are now seeing a more nuanced view of the bureaucratic form and its role in the governance of advanced technological societies. As large complex organizations have become increasingly heterodox, what has emerged is not 'the end of bureaucracy', but a more complex and differentiated set of hybrid forms that have acted to undermine the time-honoured distinctions of market *versus* hierarchy, centralization *versus* decentralization; and public *versus* private sectors) (Borys and Jemison, 1989; Hill et al, 2000; Farrell and Morris, 2003; Alvesson and Thompson, 2005; Skelcher, 2005).

Whilst it can be argued that there is a complex interpenetration of 'hybrid' bureaucratic forms and 'virtual' service delivery, this does not address the question of how bureaucracies might be transformed by ICT. The new technologies allow tasks that were previously embedded in the 'fixed space' of traditional organizations (for example accounting, inventory management, production operations or financial management) to be dissolved and recomposed as 'informatised' modules or services. There is however, no necessary causal link between the technical capabilities of ICTs and the radical organizational changes that are required to implement new forms of 'virtual working' (Harris, 1997; Jackson and van der Wielen 1997; Kallinikos 2006: 96). A second, more fundamental point is that contemporary understandings of the bureaucratic form have long been embedded in a narrowly instrumental view of formal organization (Kallinikos, 2004; 2006). The idea that bureaucracy can be reduced to its purely formal properties (e.g. centralization, formalization, routines, roles or standard operating procedures) has had the effect of detaching organizational analysis from the idea that bureaucracy is constituted as an enduring social form [1]. Thus, Kallinikos argues that formal organizations cannot be construed as mere 'functional- structural assemblages'. They need to be seen as

institutional arrangements constituted by the historically accumulated rules, laws and regulations that are integral to the landscape of modern society (Du Gay 2005; Fligstein, 2001; Jepperson and Meyer, 1991 cited in Kallinikos, 2006:116). Institutions embody a range of cultural, ethical and cognitive orientations that underpin historically variable, but nevertheless enduring sets of practices such as property rights, legal contracts and systems of accountability. These reflections on ICT and institutions are corroborated by Barrett et al (2006) who have argued that these 'institutional' aspects have a powerful influence in promoting certain technological applications whilst excluding, or limiting others. [2]. The above brief notes highlight the notion that new technologies might be embedded in ways that maintain key elements of institutional continuity as well as change. This is of particular relevance to the question of how ICTs are deployed in the public sphere and it is to this that we now turn.

The introduction noted that comment on ICTs and radically new organizational forms has tended to characterise public sector organizations as technologically 'laggard' recipients of private sector expertise (Heckscher, 1994; Heckscher and Donnellon, 1994), with the result that the state and the public sector has been discounted as a source of innovation. Recent years have, however, seen a considerable debate on the idea that public sector activities might be managed by networks of actors (for example those associated with public-private partnerships and co-governance arrangements) rather than within single bureaucratic hierarchies. Some commentators have argued that 'networked' forms of governance offer an organizational template for more integrated ('joined up') forms of government, (Newman, 2003; Osborne, 2000; Pollitt, 2003), whilst others have related the idea of an information based 'network society' to the 'governance' narratives that have pervaded discussion of pubic sector reform (Klijn, 2005:259; Meier and Hill, 2005; Ferlie and Geraghty, 2005). The literature on public sector

governance allows us to question the master theme of virtuality – that of organisational dispersal - on three specific counts. The first of these relates to the broader context of public sector 'reform' in the advanced industrial societies. The management of these reforms has been dominated by the language of contracts, consumers, and markets - but a growing body of evidence suggests that the public sector continues to operate on the basis of political accountability to the state (Farrell and Morris, 2003; Fredrickson, 2005; Meier and Hill, 2005). A second point is that networks and bureaucracies are not mutually exclusive. Studies of the new 'administrative technologies' in public sector settings show that these are emerging *within* hierarchical systems of governance (Hill and Lynn, 2005:33; Fredrickson, 2005:298). Finally the disaggregation thesis can be questioned on the basis that the ICTs might be deployed in ways that support new forms of capacity building rather than the organizational dispersal advocated by proponents of the virtual form (see for example Quinn, 1992). Whilst these technologies have become closely associated with outsourcing, inter-organisational networking and public-private sector partnerships (Dunleavy, 1994; Dunleavy et al 2005), the literature suggests that the key to managing these new forms is *service integration* (Margetts: 2005:321) – and several commentators have shown that inter-organizational networks are most effective when integration is coordinated by powerful core agencies (Heinrich and Lynn, 2000; O'Toole and Meier, 2003; Milward and Provan, 2003, Pollitt, 2005).

Analytic focus of the research

We can now summarise the foregoing discussion and focus more specifically on the research issues addressed by the paper. Comment on the new information and communications technologies (ICTs) is embedded in an overarching 'discourse of endings' that construes new forms of virtual production as synonymous with organizational disaggregation and the 'end' of bureaucracy. This sits uneasily with recent theorizations of ICT and the bureaucratic form and contradicts the available research on the emergence of new digital services in the public sector. Existing work on bureaucratic hybridity suggests that public sector bureaucracies are likely to incorporate a variegated mix of centralized and decentralized forms as well as private-public sector partnerships. The public sector governance literature suggests, moreover, that the capacity for realizing 'information society' objectives through digital technology requires an integrated approach to service provision.

These aspects have some bearing on service provision within public and academic libraries. Both types of institution have been subject to extensive digitisation since the early 1990s (Borgman, 2000), and they are currently providing new digital services to a wide variety of users. The empirical focus of the present paper is on ICTs and service redefinition within the British Library (BL), the largest information provider serving the UK higher education system. Recent comment on 'virtualised' service delivery by institutions of higher education has been dominated the idea that these institutions are becoming progressively more enmeshed in the logic of global markets (Dutton and Loader, 2002:7; Robins and Webster, 2002:5). A major sub-theme within this debate is that the ubiquity of information may undermine the institutional *raison d'etre* and autonomy of higher education institutions (Delanty, 2002:42). However, the specialist literature on ICTs and libraries emphasises the ways in which the new technologies can enhance the

modernising and democratising mission of these institutions (see for example Borgman, 2000; Anttiroiko and Savolainen 2007). UK government strategies for libraries have underscored the role of public libraries in sustaining learning, social inclusion and innovation (Muir and Douglas, 2001) - but there is a strong tension between these 'information society' objectives and a policies that emphasise value for money, efficiency and 'the new public management' (Kinnell Evans, 1991; Anttiroiko and Savolainen, 2007). The case study account of the British Library (BL) sheds light on a number of key issues raised by the preceding discussion. The research on which the case study is based (see Harris, 2005 and 2006 for a full account) shows the ways in which digital services are being delivered through collaborations involving a range of private and public sector partners. It also shows the ways in which scholarly access to information resources is being shaped by the BL and other institutional players within the UK higher education (HE) system.

Bureaucratic hybridity, ICT and institutional change: digitisation at the British Library

The British Library operates as the national library of the United Kingdom and is the largest single provider serving the UK higher education sector. As a library of 'legal deposit', the BL is responsible for the integrity of the UK national published archive, and has been the single most influential body in lobbying for the principle of legal deposit to be extended to electronic resources in the UK [3]. The annual report for 2005/06 (available at www.bl.uk/news/report.html) features statistics on performance indicators (many of them laid down by the Department of Culture Media and Sport) for throughput and efficiency measured, for example, by number of visits to reading rooms or the number of items supplied online. This is redolent of the 'hard' variants of the new public management described by commentators such as Ferlie and Geraghty (2005). Investment in

digitalization is, however, also associated with those aspects of 'the governance narrative' that emphasise capacity-building and moves to enhance the distinctive value of particular public services (Ferlie and Geraghty, 2005:432). A series of annual reports have affirmed that the BL is accountable to traditional users in higher education whilst highlighting the new services currently being offered to business users. The BL has, in addition, responded to government policies on social inclusion by extending its public sector remit to include 'non-traditional' users such as lifelong learners and schoolchildren. Table 1 provides an overview of two digitisation initiatives and relates these to changes in the organization of service delivery.

Table 1: ICT and changes in service delivery at the British Library 2001-2004

ICT APPLICATIONS	CHANGES IN ORGANIZATION AND DELIVERY OF SERVICES
EDD (Electronic document delivery) - Marketization of online document supply	Redefinition of BL document supply service mediated by public-private sector hybrids
Development of new research infrastructures including: - subject-specific portals - institutional repositories - digital preservation	Web-based access to national collections and new research tools mediated by negotiations on 'deep sharing' of library resources

Electronic Document Delivery (EDD)

The BL has long been recognised as a leading supplier of documents to academic and business users in the UK and abroad. The introduction of electronic document delivery (EDD) in 2003 enables library users to choose from a range of delivery options and packages. The EDD operation is essentially a franchising arrangement whereby the BL is licensed to distribute copyrighted material in the form of encrypted files that are emailed to readers. Approximately 80 % of the basic charge made to readers is levied on behalf of the publishers who hold the copyright on the material supplied. The BL has secured its position as a leading web-based document supplier not simply on the basis of copyright compliance

but also on the basis that it is one of the world's largest and best-known repositories of intellectual property [4]. EDD has allowed the BL to consolidate this position by enhancing its role as a broker of information, thus introducing a significant element of marketization into its document supply service.

The development of new research infrastructures

As noted, the BL is the largest research library serving the UK HE system. The development of a national electronic research network is being coordinated by the UK Joint Information Systems Committee (JISC). The development of the new infrastructure involves consortia that include the BL, the national libraries of Scotland and Wales and a number of UK university libraries. Recent developments in electronic research infrastructure suggest that large research libraries are having a significant influence on new forms of scholarly communications. There is a widespread recognition amongst library professionals that the most prominent journal titles are concentrated in a small group of multinational publishers. These publishers now offer electronic access and site licences to universities and university consortia – but recent years have seen heavy and sustained price inflation in serials subscriptions (HEFCE, 2003), and it has been argued that electronic subscriptions 'are comparable in price to their paper based equivalents, notwithstanding the low marginal costs of providing information over the Internet' (Bjork 2004:5). Open access journals offer new forms of self-archiving that allow individual authors to post material on the web. Self-archiving has become widespread in scientific publishing where 'preprint' versions of published articles offer rapid dissemination of scientific findings – but there are few signs that these formats are replacing established print-based journals. The latter offer a bundle of services including peer review, marketing, citation and indexing by major libraries. Open access journals are typically small and poorly resourced offering few, if any, of these features. An alternative to open access formats is offered by the institutional repositories and subject specific portals now being established by university libraries (MIT is a highly regarded example). A key feature of these repositories is that they require digital content to be preserved in accordance with frequent changes in electronic formats. Digital preservation is relatively costly and is best achieved in a collaborative environment which

encourages common standards and protocols. In the UK the JISC SHERPA programme (www.jisc.ac.uk/sherpa), established in 2003, has been successful in providing the requisite forms of collaboration on technical issues such as indexing protocols and data harvesting. Institutional repositories have so far had a limited impact, but nevertheless offer a potential challenge to the “Faustian grip” of large publishers on scholarly communications (Parks, 2002).

Plans to develop new research infrastructures have been closely bound up with the question of how national library resources might be rationalised in ways that will reduce the widespread duplication of collections (HEFCE, 2003:16-25). The background to this rationalization, noted above, is that sustained rises in subscription costs, together with the growing volume of new research periodicals has lead to resource shortfalls that cannot be met by individual research libraries. Senior curators within the BL are active in a high level advisory body known as the Research Libraries Support Group (RLSG) [5]. This group has lobbied for the rationalization of national library resources and for more collaboration on the mapping, assessment and management of collections presently dispersed throughout the UK’s research libraries [6]. The RLSG final report (HEFCE, 2003:48) calls for the formation of a new public body, the Research Libraries Network (RLN).

Whilst the costs associated with traditional printed sources are distributed across the whole of the UK higher education system, the report argues that:

'The costs of maintaining holdings in an electronic environment may be aggregated over time in a smaller number of repositories serving others…thus delivering economies of scale but potentially requiring a large spend by a few providers'. (RLSG, 2003 par 140).

The report argues for a more directed approach to the coordination and rationalization of library resources. Thus:

'**Maintaining the service that researchers have come to expect will require concerted and collaborative action to improve the resource efficiency of the system….We strongly urge, therefore, a concerted shift from the comparatively loose network of providers, each serving its own user group, to a more coherently managed network in which providers work together to develop and deliver an agreed national agenda'.** (RLSG, 2003 par 82-83).

The report notes some progress being made in negotiations at national level [7], but the current level of support for collaborative acquisition or rationalisation between individual libraries is clearly very limited. The report highlights the need for closer coordination between institutions - but it also acknowledges that ongoing developments in research infrastructure and collection management are being enacted by through essentially 'collegiate' forms of collaboration that are rooted in traditions of curatorial and institutional autonomy. Thus, the report ends its discussion of 'deep resource sharing' and collaborative management of collections by stating that:

'strong constraints exist upon deeper resource sharing. These include concerns about loss of control by an institution over resources for its own staff and students; and about what would happen if a scheme collapsed or a participating institution changed its policies. (RLSG, 2003 par 76).

The eventual form taken by the proposed 'Research Libraries Network' is thus likely to be influenced by library professionals. It would also seem likely that its implementation will depend on complex and protracted negotiations between different institutional stakeholders

(e.g. the UK research councils, HEFCE; specialist committees such as JISC; universities, and academic user groups).

Discussion of findings

The paper has presented case study findings on the UK national library, where a variety of network technologies and infrastructures are being used to create new integrated services and modes of access to information resources. The broader institutional context for the changes observed at the BL is the restructuring of the UK higher education sector (Newby, 1999; Schuller, 1995), and changes in the role of libraries in the emergent 'information society'. As noted earlier in the paper, some commentators have argued that the virtualisation of education can be equated with the logic of global markets (Noble, 1998; Schiller, 1999; Robins and Webster, 2002) whilst others maintain that the autonomy and institutional purposes of large HE providers is being undermined by the rapid spread of 'global' information networks (Delanty, 2002:42). The BL case provides little support for the idea that the institutional purposes of the library are being undermined by the present context of digitization. To the contrary, the BL has been active in shaping its own jurisdiction within the 'digital environment', as shown by its success in lobbying for the principle of legal deposit to be extended to electronic media in 2003. The findings suggest however, some very substantial changes, and it can be argued that the institutional consequences of digitisation are essentially contradictory and Janus-faced. On one hand, the introduction of electronic document delivery resonates strongly with comment on the commodification of the public sphere. On the other hand, public institutions are playing a key role in shaping scholarly access to new digital services.

The franchising of copyrighted material can be seen as part of a wider process through which business models are imported into the public sphere (Ferlie et al 1996).

Public-private sector hybrids juxtapose different (and often conflicting) principles of governance within particular institutional settings (Reed: 2001:220) – and some commentators have noted that this variant on the theme of hybridity creates an inherent tension between the interests of private sector partners and those of public sector organizations within these hybrids (see for example Skelcher, 2005). The introduction of EDD has sharpened the tension between the principle of scholarly access and the commercial interests of publishers. This tension was substantially mitigated by the relatively modest level of the fees levied when the scheme was first introduced in 2003, but it can be argued that the introduction of increasingly differentiated and higher value-added variants of EDD from 2005 onwards has undermined the principle of public and scholarly access to information. The discourse of virtuality construes networks as self-organizing formations that lend themselves to the emergence of highly decentralised and distributed modes of organizing. The findings on EDD contradict this atomised view and point to a much more explicitly 'managed' view of virtual service provision (Knights et al, 2001). Large publishing groups are characterised by the concentration of intellectual property rights and the control of digital content. The BL has been able to secure its position as an information broker not just on the basis of copyright compliance but also on the basis that the library acts as the national repository for a very substantial volume of intellectual property rights. These patterns of concentration and control are cognate with the 'agglomeration economies' observed in other forms of digital production (Saundry, 1998; Schiller, 1999; Sassen, 2004).

As noted in the review carried out in the first part of this paper, the discourse of virtuality has downplayed the extent to which public institutions may be adding to, rather than divesting themselves of technological and organizational capacity to operate in the emergent information society. The powerful imagery associated with networking – for

example that promoted by Castells' much-cited 'variable geometry' of production and exchange (Castells, 2001: 67) - also downplays the need for network stability and integration. Research on public sector networks suggests that integration may be enhanced when networks are coordinated by core agencies (Heinrich and Lynn, 2000; O'Toole and Meier, 2003; Milward and Provan, 2003). Access to institutional repositories and subject-specific portals is enabled by information networks, but these elements of the new infrastructure are relatively costly, and agreement on how these costs are distributed is inherently problematic. JISC has performed an important advocacy role within the network, coordinating both technical liaison and the negotiation of protocols between different university libraries.

The HEFCE-sponsored RLSG report puts service integration, technical collaboration and co-governance at the centre of its analysis – but the report also argues that the shift to electronic formats requires a more directed, standardised and 'coherently managed' approach to the distribution of library resources. A number of commentators have argued that the introduction of progressively more integrated IT systems into higher education institutions has entailed a shift to a rule-bound environment that subjects collegiate forms of governance to more intrusive forms of managerial control (McNay 1995; Agre, 2002; Cornford, 2002; Reed and Deem, 2002). Some of the formal structures being advocated by the RLSG report are predicated on nationally agreed rules and protocols governing the management of library collections. This is broadly consistent with the erosion of professional autonomy observed elsewhere in the UK public sector (Clark and Newman, 1997). The scale of the integration being considered is, however, such that senior curators personnel interviewed at the BL have emphasised the inherently uncertain character of the negotiations on new protocols and agreements. The 'bureau-

professionalism' and 'expert power'of these curators is a necessary and central element in these negotiations (Reed, 1996: 2001).

Taken together, the findings suggest a picture of substantial change, but the idea that 'bureaucractic' modes of coordination and control are being directly challenged by the advent of 'networked' organizational forms is not corroborated by the evidence. The BL has retained its legal-institutional remit to provide scholarly access to information, and the digitisation of library provision can thus be equated with a revitalised 'electronic public sphere'. On the other hand, digital rights are being managed and controlled in ways that favour the interests of private sector corporations, suggesting the commodification of the public sphere (Schiller, 1999; Sassen, 2002; 2004). Whilst there are some signs of a possible shift to a more directly managed system of provision within the network of UK research libraries, curatorial expertise is being extended to the new field of digital preservation and it is apparent that the 'bureau-professionalism' of senior curators is playing a highly significant role in defining the shape of library provision for the UK HE sector, regardless of whether the system that emerges remains a loosely managed one based on institutional autonomy, or one that is more tightly managed and more fully integrated than at present.

Conclusions

The paper began by noting that comment on the virtual organization is based on the belief that 'global' information networks are creating increasingly fluid and decentralized organizational forms that depart substantially from those traditionally ascribed to bureaucracy. The evidence considered by this paper indicates that the radically decentralized access to information resources is underpinned, not by a generalized tendency towards organizational dispersal, but by some highly specific forms of capacity building

and information aggregation. This pattern is broadly consistent with the scale economies observed in other HE settings (Daniel, 1998; Harris, 2002) – and it is also cognate with the 'agglomeration economies' observed in other fields of digital production (Saundry, 1998; Schiller, 1999; Rifkin, 2000; Sassen, 2004; Thompson, 2005; Auchard, 2007).

The franchising of electronic material reflects an increased emphasis on the buying, selling and licensing of intellectual property in higher education (Chartrand, 1989). This clashes with the tradition of scholarly enquiry and resonates with the view that digitisation can be equated with the commodification of higher education (Noble, 1998; Robins and Webster, 2002; Jackson and McDowell, 2002). Whilst the extent of this commodification may be overstated by some commentators, it would appear that there is an increasing symbiosis of HE institutions and private sector corporations (Etzkowitz and Leydesdorff, 1997; Curie and Newson, 1998; Daniel, 1999; CVCP/HEFCE, 2000).

As noted in the introduction, contemporary understandings of technological change have been very substantially influenced by an overarching 'discourse of endings' that has emphasized the master themes of disaggregation and the 'end' of bureaucracy. This commentary underplays the ways in which rapid technological change is juxtaposed with key elements of institutional continuity (Kallinkos, 2006), and it also ignores the link between bureaucracy and the historical development of information systems (Mattelart, 2003; Kallinikos, 1996; Edwards, 1996; Shenhav, 2002; Kennedy, 1989). The 'discourse of endings' is still firmly in the ascendant, but these broader perspectives suggest some key elements of an effective counter-narrative. The findings presented in this paper corroborate this broader view of bureaucracy and its role in shaping the basic contours of the emergent 'information society'.

Footnotes

[1] Kalllinkos (2006) draws on earlier reflections on the longer-term future of bureaucracy (Kallinikos 2004). He questions the assumption that centralization, routines and standard operating procedures represent the essence of the bureaucratic form, arguing that the key feature of the latter is the 'non-inclusivity' of organizational roles and identities. Whilst the possibilities for organizational change are inextricably linked to, and constrained by, institutional legacies and power relations, capitalism has made historically significant inroads into the social provision established over the course of the last century. For Kallinikos, the most pressing threat to the bureaucratic form is not the imputed 'dematerialization' of work processes, nor even managerial efforts to create new and more 'inclusive' organizational alternatives to traditional bureaucracy, but the erosion of stable employment contracts. It can thus be argued that the key issue is not whether, or how, the 'brick and mortar' activities of traditional organizations will be displaced into the realm of the virtual, but that technology is being deployed in ways which reflect the near-total dominance of market values (Kallinkos, 2006:109).

[2] Barrett et al (2006) argue that the failure of teleworking to displace traditional face-to-face forms of engagement in the physical workplace can be ascribed to the fact that this transgresses long-established institutional norms which determine the social ordering and control of work (Orlikowski and Barley 2001). Whilst the 'new institutionalism' has become associated with the idea that institutions generate 'convergent' patterns of change, current interest in institutions is by no means restricted to this view. Recent work has emphasised the significant role of sectoral and institutional fields, whilst arguing that the organizational outcomes associated with a given technology are unlikely to be homogenous (Barrett et al, 2006:10).

[3] The principle of 'last resort' access through libraries of legal deposit, available for all publications printed in the UK since 1911, was extended to electronic resources by the Legal Deposit Libraries Act of 2003.

[4] At the time of writing, holdings at the library's Boston Spa repository included an estimated 283,000 journal titles, 3 million books, 433,000 conference proceedings, 5 million reports, and 4 million patents records.

[5] The RLSG was established in 2001 with the purpose of reporting on the future of library provision in the UK higher education sector, assessing the technological requirements of academic researchers over a ten-year period.

[6] Holdings of serials in individual libraries are both under-exploited (because it is difficult to establish what is available across the library system) and in need of rationalization, in large part because academic libraries will typically retain very substantial back runs of rarely used serials. The RLSG supports efforts by JISC and others to develop integrated 'resource discovery' and collection mapping tools that will help to create a comprehensive national catalogue of serials holdings.

[7] The shared licensing of electronic resources has been achieved through the National Electronic Site Licensing Initiative (NESLI) whose purpose was leverage lower prices, thus reducing the need for individual university libraries to negotiate licenses independently.

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