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Work and the city in the e-society: A critical investigation of the socio-spatially situated character of economic production in the digital content industries, UK.

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Abstract
The aim of this paper is to ground debates about the 'new economy' or 'e-society' in the practice of individuals and companies producing 'new media'. Our uncontroversial starting point is to question the generalisation in much theorising, and the tendency to technological reductive accounts of social and economic change. Our focus here is to point to the intellectual sources of much policy in this field. We present case study material of three very specific parts of the new media/digital content industries (film special effects, computer games and web design). The paper concludes that both technological reductive and agentic accounts have underplayed the continuing importance of the social and economic embeddedness of production, and of the situated co-constitution of technologies, people and places. We highlight the differences between industries associated with labour processes, labour markets, users and markets for goods. These particularities begin to offer more robust accounts of location and organisation.

The death of geography, the death of sociology?

It has been a favourite trope of futurologists to locate workers at home in cyber-cottages, usually situated in an area of natural beauty (Toffler, 1980). A similar notion has achieved a place in popular consciousness through a number of speculative reports on the 'death of cities/geography' as access to the internet becomes near universal in Western countries (Cairncross, 1998). Moreover, there has been a significant debate about the new economy, again, premised on the mobilisation of new computing technologies (Daniels et al., 2007). Finally, in recent years policy instruments have highlighted the potential positive role of co-location, or the clustering of activities, as a desirable objective of cities and regions seeking to attract

mobile investment (DTI, 2001). Surprisingly little attention has been paid to the actually existing forms of new media activity either in an organisational or a locational manner. The few empirical studies that have been carried out would seem to challenge the theoretical accounts (see Pratt, 2000, Scott, 2000, Indergaard, 2004), and, to undermine policy makers assumptions (as they are based upon popularist theoretical accounts).

This paper takes issue with these ideas, and others related to them, offering instead an empirical check on the tendency of broad-brush generalisation. Our central point, both at a conceptual and empirical level, is that whilst attention has been given to the potential of technologies, it has often as not been interpreted as a determining factor. What we see less evidence of is debate, and subsequent investigation, of the location and organisation of work, and their interaction; moreover, the relationship between work and non-work (but see Deuze, 2007). We argue that it is precisely in these fields that we can find the outcome of the uses of new technologies. We stress that technology, social relations and space are co-constitutive of one another, and accordingly the particular configurations will be situated in character, quite possibly having a number of different manifestations.

In order to gain some precision in our task we focus on one aspect of the application of digital communications technologies to work, that of new media[1]. Moreover, we focus on three distinct industries within new media: web design, film special effects, and computer games. We will argue that specificity of industry and process needs to underpin the robustness of accounts of the location and organisation of work.

The evidence that we use draws upon a larger research project concerned with the location, and in particular the clustering and interaction, of new media companies, and on the changing nature of work in these companies[2]. The research was undertaken in a number of locations in the UK. Elsewhere, we report on various aspects of the nature of work in new media (Pratt, 2000, Gill, 2002, Pratt, 2002, Gill, 2007), as well as their relationship with 'non-work' (or, the rest of life) (Jarvis and Pratt, 2006). Moreover, we offer a robust criticism of the death of geography thesis, and the lack of explanatory power of the 'new economy' (Pratt, 2007b). In this paper we draw upon some of these points but offer a unique focus on the organisation-location issue, using a constructivist perspective. We begin by situating our work in relation to the broader sweep of theorising about the knowledge, or network, society.

The structure of the paper turns on our local cases studies grouped by industrial activity: web design, special effects and computer games. We preface this discussion of the nature and organisation of these individual industries by a short overview of the current state of the new media industry in the UK as evidenced by secondary sources. However, before embarking on this analysis we launch a discussion regarding the theoretical context of explanations of the location and form of new media activity in particular, and the information society more generally.

The problem with generalisation and the information society: Geography and sociology revivified.

The aim of this section is to review the main strands of work on the transformative impact of technology on society, and in particular, work. We take three representative bodies of work and tease out some testable expectations, some of which we interrogate in the remainder of the paper. It is reasonable to question the selective nature of our survey, to be sure it is not comprehensive or exhaustive. However, we have chosen these particular strands of theory as they are influential with policy makers at a national and international level. We argue that it is important to understand the particular strengths and weaknesses of these approaches if we are to engage in more public discussion about these issues. The broader debate about the explanation of the information society has had a comprehensive airing in a recent issue of this journal (Burrows, 2005, Fuller, 2005, Webster, 2005, Gane, 2006), specifically concerned with the success or failure of sociology and cultural studies in understanding it. Following this debate, we too would point to the limited adequacy of explanation of empirical phenomena by theoretical accounts, and the lack of empirical work. However, we also want to stress the fact that the quasi-journalistic or 'FT lite' style of writing that these texts are presented in makes them appealing to policy makers and politicians looking for some 'grappling hooks' on a fast changing economy and society. The very 'accessibility' of these 'sociology-lite' texts and their uptake in policy contexts makes this critique of them all the more urgent. Our point is that the situated nature of [3] human action and the use and application of technologies transforms meanings and consequences, and accordingly does not lend itself to simple or generalisable prescriptions. We follow Burrows' call (Burrows and Ellison, 2004, Burrows, 2005) for a more spatially and socially sensitive account of the 'information society'; and in particular to account for the actually existing forms of the urban that it co-produces[4].

The overall research programme to which our current project was related was the 'e-society' programme; so, our first problem is to position our project in relation to an 'e-society', as we will note below, we are sceptical of the theoretical utility of such a concept, especially if it is meant to be part of an 'epochal' taxonomy. We accept the term as a label that indicates a nexus of activities facilitated by digital communications [5]; of course, those emergent forms of work are important; possibly, the term has more purchase in relation to the development of various surveillance technologies discussed in other papers in this special issue. Our objective in the remainder of this section is to situate our approach in relation to a number of influential accounts of what is variously known as the 'e-society', the knowledge society', the 'information society', and so on.

We take as the first of our themes, the knowledge society, in the work of Bell (1973) and its extension by Castells (1996, 2000, 2001, 2004). A key argument for Bell was the need for, and socio-economic accommodation of, a new technical and scientific class; in effect a new division of labour. Bell's broader social point concerned the re-shaping of society to accommodate the needs of this class. There is little on location

in Bell's thesis, the focus is upon structural change. A recent iteration of this debate, one that underlines the challenge that non-normative accounts face, can be found in Florida's (2002) work on the 'Creative class'[6]. Florida's point is broadly that Bell's technical workers have a desire to consume cultural capital, and as such they like to be associated with, and co-locate in such locales, so called 'bourgeois-bohemia' (Brooks, 2000, Lloyd, 2006). Moreover, as skilled workers are in short supply, employers who need highly technical labour will be drawn to where workers want to be. Florida offers this as both an outcome, and a potential policy tool, for regions and cities competing in a unified global economy. Florida's argument is based upon the consumption preferences of 'hi-tech workers' and as such it ignores production, or cultural production (Pratt, in press, a).

By contrast, Castells's thesis is drawn along by technology, in a form of techno-economic paradigm (see Dosi, 1983). Even discounting the techno-economic reductivism there is – for us – another problem with such formulations. Castells offers a seductive notion of the 'space of flows' that draws upon structuationist concepts of place and organisation; in particular, the distanciation of organisations and institutions (after Giddens, 1984). In so doing Castells provides a (spatially) nuanced vision of the mosaic of linked (networked) but not co-located nodes of social and economic interaction as evidenced by a range of networked organisation. However, the emphasis is upon the virtual potential of interaction and less on the material processes and the resulting cityscape. Thus, we should expect to find globally connected but locally disconnected organisations; and, following Florida, growing hi-tech industries attracted to natural, or constructed, amenity. However, we are also concerned that the network ontology that Castells employs includes a priori objects as nodes, and as a consequence his analysis focuses almost exclusively on flows (Castells, 1996). For us, one of the key insights to draw from Latour's (Latour and Woolgar, 1986) work has been the stress the co-constitution of nodes and flows; or in this case places and socio-economic interaction (or technologies and users)[7]. To re-iterate, from a constructivist point of view we want to add an equal stress on the construction of objects (and spaces) by flows, and their construction through their relationship with one another.

A different strand has a far more idealist underpinning. It is the body of work on the nature of virtual interaction, that which examines online worlds. Here we can find an extreme examination of one potential of technology and society. Most accounts are based upon a strong material-immaterial dualism; or, the material is totally effaced by the immaterial; thus, the discussion of the mutability of on-line identities (see for example Burrows and Featherstone, 1995, Robins, 1995, 1999, Bell and Kennedy, 2000).

Without doubt discussions of virtual space are instructive, however, as is often the case that they are underpinned by rather restricted concepts (in this case, what geographers call absolute, or Euclidian, space: the abstract Cartesian grid. Such notions of space have been heavily criticised by geographers in favour of 'relational space': a co-constitution of places in relation to one another, or between socio-economic relations and places) (for more discussion see Pratt, 1991). It is this

absolutist concept of space that is internalised in 'on-line worlds' and 'neo-classical economic informed spatial modelling'; consequentially, much is made of the free agency of actors in cyber-space, and power relations (e.g. relating to gender and 'race') seem to evaporate (Ahmed, 1998, Nakamura, 2002).

A related strand of debate is that which is concerned with the consumption and use of digital technologies. Hence, the contrast between moving 'bits and atoms' (Negroponte, 1995), and the infinite reproducibility of software (Quah, 1999). These factors were heralded as the foundations of a new economy with no ties to location. Of course, ordering a book from Amazon requires a book to be written, printed, packaged and distributed, lots of atoms involved there, and lots of conventional friction of socio-spatial variety (Dodge, 1999). Moreover, software may be able to be copied into an infinite number of originals but the code has to be written, edited and managed by people; and when have we experienced a 'final version' of software that is not constantly re-written; it has often been noted that code is always under-development. In our accounts of work and play in the e-society, we often overlook the labour of design and construction, as well as materialisation (this may be infrastructure such as computers, or code such as programmes). In one of the few studies of software construction we can see evidence of both craft as well as mass production technologies (Cusumano, 1991); not so different from other forms of work (Piore and Sabel, 1984). So, the points that arise from this body of work are about the tensions between the on-line and off-line worlds; and between production and re-production[8]. In the idealist form we might expect to find work and home totally disembedded from space and social relations.

Finally, there is the body of work that has stressed the development of reflexivity in work practices, and in the management of them (Beck and Ritter, 1992, Beck, 2000, Beck *et al.*, 2000). This includes the discussion of the totalising technologies of control that is possible, for example: monitoring key-strokes, Radio frequency identification tags, identity cards, or closed-circuit cameras on people. Another significant line of research concerns the development of artificial intelligence and expert systems to manage risks. Plus, the utilisation of further soft knowledge such as new management techniques to control workers (Boltanski and Chiapello, 2005, Thrift, 2005). Another perspective still is provided by the range of work on precarious labour that links directly to shifts in capitalism more generally, but is specifically related to the cultural industries (which would include new media) (Hardt and Negri, 2004, Virno *et al.*, 2004).

This paper has a closer affinity to this third strand of research; in particular we are interested in the intersection of new organisational practices, digital production, and immaterial labour (Ross, 2003, Deuze, 2007). All of these practices are, from our perspective, situated practices - even the 'online' ones - which whilst not reducible to spaces, have an analogue presence in space and time (Pratt, 2002). Our conceptual approach is thus one that seeks to avoid the reductivism of technologies, spaces, virtualities, economies, and sociologies. We are focused on various assemblages. This

positions us against notions of epochal changes, and generalisation; we are concerned with the production of specificity[9].

For the purposes of this paper we retain our scepticism of the notion of e-society as one that is reducible to technologies, or the technology of the internet. A more general usage, to label a current phase of socio-technical assemblages is perhaps more appropriate. Our purpose, aside from conceptual rigour, is to stress continuities and new mobilisation of existing technologies (material and organisational) as well as the re-positioning of old ones. The paper is divided into three main sections where we discuss the specificity of industry (computer games, film special effects and web design) highlighting markets, organisation and location. Before describing the methodology used in the research we provide a snapshot of the new media industry in the UK from the only available secondary data.

A snapshot of employment in New Media in the UK

The origins of new media as an industry can be dated to 1995 in the US, and shortly after in the UK. Much of the initial development of new media in the UK took place in central London by a number of artist-activists; this matured into a number of large companies that fragmented at the end of the 1990s[10]. Since that time, the industry has expanded, most notably in specialist applications such as film special effects and computer games. As we can note from Figure 1 derived from the Skillset survey (Skillset, 2006) the field of what Skillset refer to as 'Interactive Media' corresponds to our sample target. In all, these industries represent about 25% of all employment in new media. Over half of those working in the audio-visual industries are located in London. Approximately 25% of those working are employed on a freelance basis; particularly in film special effects are higher (39%), with a lower proportion of freelancers in web design (14%), and computer games (8%). The overall representation of women in the sector is 38% and lags behind the economy as a whole (46%); women's employment in web and special effects is near the sector average, but much lower in computer games (12%). Finally, whilst employment of ethnic minorities in the sector is more or less at the UK average (7%), given that half of the industry is located in London the figure should be closer to 24% (ethnic minority employees in all industries in London); so interactive media is far from ethnically diverse (see Gill, 2007 for similar findings in The Netherlands).

<Figure 1 about here>

Methodology

Our objective in the broader research project was to explore the process of clustering in new media activities; for this reason we selected three different industries in six locations. As the new media industries are of recent origin, little data is available from census sources as to their location or form[11]. There is no alternative to primary

information collection, complemented by industry journalism and reports of trade associations. We began by preparing an overview of the industries from the secondary data and local reports available. We used on, and off-line, company directories, company home pages, Companies House data, and the Fame database [12]. In addition, we also used 'LinkedIn[13]', a social networking site that the industries use; we were invited by the community to join the network and gained significant trust relationship through it, we were also able to contact a number of key interviewees this way[14]. Finally, we used traditional snowballing techniques to gain access via established interviewee networks. We succeeded in carrying out six case studies: one in London, on the film special effects industry; three on the games industry (Scotland, North West and Yorkshire); two on digital design (Brighton and London). We carried out 180 usable interviews in all[15].

It was possible to calculate an estimate of the numbers of companies and employees in the games industry from the Skillset Census[16]; however, similar data was not available for the special effects and digital design industries. Based upon the data that we were able to ascertain we contacted via email the whole population of companies in these locales; between 25-35% responded positively (the response was worst in games, and best in digital design); of those that agreed to be interviewed we were able to actual interview 80%. We were not able to schedule meetings at a mutually convenient time with the remaining 20% of companies. The interviews were semi-structured, based around a personal biography narrative linked to the companies worked for. We used this strategy of tracking employment biographies as it has been proven to be a reliable method of capturing the employment patterns of serial contract and freelance working, and sequential short-life companies[17].

The Web Design industry

Web design is the activity to generating an on-screen interface which links to assets (either files to download, or databases that generate orders). There is considerable skill in creating a user interface that is attractive and quickly navigable by intended users. For the most part web designers provide a 'front end' for businesses on the web – they are the means of communication. Existing companies from all sectors of the economy approach a web designer to develop (and maybe maintain) a site. Many web design companies are single purpose operations and are run by individuals or small teams (depending upon how extensive the web site is, and how specialised the graphics and database systems are). As a web site may only take a few days to develop contracts tend to be very short, and they operate on a for-hire basis. Other large web design companies have begun to offer '360 degree' services – where they may offer management consultancy, and re-branding services, as well as web site design. Clearly, the attempt here is to position the company in a more profitable and sustainable market place.

Overall, we found the web design companies to be far more based upon freelancing and markets; their niche was commonly related to either distinctive design, or a deeper understanding of logistics (the so-called 'back-end' of the web site). All

companies had project teams that recruited freelance labour for specific projects. A particular tension was that between the creative and the technical content; however, as companies tended to mobilise their activities towards one or the other as a unique selling proposition these tensions were balanced within the company strategy.

Web design companies tended to be located closer to the market, that is, more evenly distributed across cities, with more in London and an outlier in Brighton[18]. These companies provided professional services for companies to have a 'web presence'; those that were more at the design intensive or advertising services end of the business tended to co-locate with advertisers in Soho (or Hoxton) (Pratt, 2006, in press, b). In the late 1990s a few large web design companies emerged (c.150 persons); however, post-2000 these have fragmented. Critically, the workers from these larger pioneers comprise many of the new mid-sized companies (20 persons). The social networks of these ex-colleagues were claimed to be important by insiders. Thus the clustering of web design is not so distinct; being linked to market, and to the origins of digital design in Hoxton in the 1990s, the most distinctive shift in the centre of gravity of London's web design community is away from Hoxton, west to Clerkenwell and Soho where the advertising and film industries are clustered. There are few connections between web design, the SFX industry or computer games. However, an interesting sub-group of web designers had developed a cross-over expertise in games development but were primarily involved in advertising.

The film special effects industry

Film special effects (SFX) companies cover the gamut of computer-generated images (CGI) from rendering a stars' face onto a stunt person, to the complete animation of natural, and un-natural, disasters and the creation of large crowds. Companies tend to operate within the fragmented but highly organised film industry. Films are single projects for which a number of teams are recruited to perform specific tasks. In this sense SFX is a service activity, like web design, but it has a higher degree of specialisation and skill associated with 'quality'; that is the quality of the CGI and its fitness for purpose. The SFX team operate as a 'special unit', sometimes even having their own producer credit in the film, having a degree of internal autonomy, and linkages with peers (involved in the artistic and technological solution of problems). SFX firms have to invest heavily in people and technology, and this is a considerable barrier to entry, as is reputation. As the percentage of CGI frames have increased[19] in films offering such services for hire has become logistically difficult as the work is labour intensive and time-limited. So, for example two or three major CGI-intensive films can soak up the whole of London's capacity for a short time. Clearly, the SFX market is very specialised.

The history of the SFX industry is tied up with US investment in film in London; 1970s blockbuster franchises such as James Bond and Star Wars created the capacity and expertise so that when digital effects developed the investment and application base was available (Pratt and Gornostaeva, in press). SFX relocated from the film sound stages on the edge of London and concentrated in the traditional post-

production heart of Soho and Hammersmith. Initially, post-production work had required physical transfer of film by runners, recent developments such as Sohonet have created a cable network within Soho, moreover this has now been extended to Bristol[20] and Burbank, Los Angeles[21].

<Images 1 and 2 here>

SFX companies are specialised and tend to have a few key personnel who are supplemented by freelancers, although a very specialist labour market. We spoke to one company who although based in Los Angeles sited a project in London to pick up key personnel, and to exploit the physical proximity of facilities in Soho (which they contrasted with LA saying that driving time between facilities was costly and time-consuming). Interestingly, the proximity referred to concerned social networks and linkages rather than physical transfer (of film cartons, for example). The UK SFX community had developed from an adjunct to Hollywood to being an equal in its offering. The extreme volatility of the SFX market clearly favours multiple sites contributing to CGI capacity.

The computer games industry

The outputs of this industry are computer games for the various platforms associated with competing companies: Sony, Microsoft and Nintendo; plus generic PC games. Globally this industry has grown from nothing in the early 1990s to an economic force (Crandall and Sidak, 2006). The computer games industry has a different structure associated with the history of the industry, which began much like the music industry with 'bedroom producers' (like bands) who sought out publishers, who would then broker deals with the major platforms (for example Nintendo, Sony, Microsoft) (Johns, 2006). As the industry developed game narratives became more complex, as did the graphics. Investment in computers, coders and scriptwriters led to the development of complex games that at the time of research were commonly 24 months in production. The funding model tends to be like the music industry, where a royalty is paid; thus, a major issue in the industry in the early 2000s was investment. Some developers retained independence; others became vertically integrated with the platforms. Due to the longer-term development and cyclical nature of the product development many companies have shifted from single sequential product to multi-product producers, however, like advertising agencies they tend to have dedicated teams formed from their employees for new projects.

The computer games industry companies that we spoke to seemed to be far more stable than web design or SFX in the sense that significant teams were constructed with a distinct division of labour and maintained for an extended period. The products were extremely profitable when successful and this fed stability and concentration of a few larger companies. The industry as a whole has been unstable, with much takeover and ownership transfer from the UK to France due to financing problems. The establishment of post-graduate training courses that have generally had close relationships with companies has introduced a further stability. In this sense there

have been examples of regional public sector supported developer's networks. The industry, as one of the most successful of the creative industries worldwide, is also well represented by a commercial trade body.

Whilst some developers have formed networking relationships with trainers (in the North and Scotland) elsewhere much larger games companies have established a stand-alone nature. Moreover, they are not located in cities; a good example is Rare (not one of our interviewees), who is part of the Microsoft network, and formerly supplied Sony, which was initially located in a farmhouse located on a 20 acre plot in rural Tywcross, Leicestershire, a site which is still remote but which has been redesigned as a state of the art building to accommodate 200 employees. Of all the digital content industries computer games came closest to the 'death of geography' model; however, industries are not footloose, interview evidence points to very strong labour market dependencies, and, in some cases, to training networks.

<Image 3 here>

Emergent themes

Four salient themes emerged from reviewing the industry case studies that we carried out. First, that the three industries are quite different to one another. Despite, at first impression, having similar skillsets and using similar technologies, it is clear that the same 'occupations' (for example, producer, writer or editor) are quite different in each industry. Analytically we can conclude that the sensitivity to the content and objectives of the product are as important as technical skills (they are necessary but not sufficient).

Second, that the industries vary in their institutional form and operation associated with the financing and supplies structure of the markets that they operate in. Even at a basic level it is not surprising to observe that providing a service (web design) is different to a functional contribution (SFX), or a consumer product (Games). The length of product development, and the balance of technical expertise and artistic sensibility are also critical to different practices. [22]

Third, in terms of work organisation, project working and freelancing were important forms; however, again, these characteristics were experienced and interpreted differently in each industry. In the games industry, whilst the industry was volatile companies were able to grow on the basis of longer projects, bigger projects and substantial returns on investment, selling their products to a rapidly maturing distribution and retail system. In a sense the SFX industry echoed this. The contrasting feature was that SFX was a new discipline in the film industry and they had grown very quickly, however, there was an institutional isomorphism that they accommodated to. The film industry itself has a far from typical organisational structure (Wasko, 2003), but SFX fitted within this and was thus relatively 'normal' for that industry. In the case of the web design industry activities had been shaped by market overconfidence and collapse, but was underpinned by constant growth in

activity and a rapid turnover of technologies and software. The growing demand for web designers has created a very buoyant, although competitive, freelance market that companies have exploited. A rapid turnover of work, low barriers to entry into the field, as well as uncertainty over costing jobs has created very unstable conditions for web designers, this is amplified by the fact that little or no training is available (Christopherson, 2002, Gill, 2007). Again, it is interesting to contrast this situation with the specialist academic courses and support that has been developed around the games industry.

Fourth, the patterns of location and local interaction of the three industries was also contrasting and thus alerts us to the differing pace of change and inter-industry variations within the 'digital content' sector. The games industry broke most clearly with our expectations about clustering/co-location. Despite a few examples of regional networks, developers tend to keep themselves to themselves often locating in physically remote locations. We would argue that this remote location is a result of particular institutional conditions in the games industry; companies have contracts with publishers to take products to market. Much like the Formula One motor sport industry the high pay and prestige that seems to go with the job allows the retention of staff (Henry and Pinch, 2001). Also, we consider it likely to be the case that the industry has had to develop more 'family friendly' policies to retain staff[23]. This is a topic that would repay further in investigation; it is notable that in the Skillset survey that the games industry was the worst in terms of gender balance. The web design industry best fits the urban clustering model; it clearly has a market orientation, but also a capacity to operate on small margins with minimal numbers of staff. We found that this related to the role that web developers perform: logistical integrators who rely upon business-specific expertise or a strong linkage with advertising (Pratt, 2007a, in press). At the most extreme end of the locational spectrum the SFX industry is extremely clustered in London, almost no activity is found outside of here and Bristol; moreover, these firms are literally 'hard-wired' into Hollywood. However, despite the technologically rich linkage the day-to-day creation of SFX is a face-to-face operation with many days spent in editing suites arguing over micro-differentiation of design. Because SFX is so diverse and so dependent on particular qualities firms use specialist freelancers to comprise unique teams for particular projects.

Conclusion

The aim of this paper has been to ground debates about the 'new economy' or 'e-society' in the practice of companies producing 'new media'. Our starting point was to question the generalisation in much theorising, and the tendency to technological reductive accounts of social and economic change. Our case study of three very specific parts of the new media industries (film special effects, computer games and web design) has highlighted three significant points.

First, in contradistinction to many expectations, we found no evidence of the 'death of geography'. In general, we found that many firms had become more sensitive to place

and space, they were also increasingly distanciated in their economic actions. This produced a complex pattern of location. For example in SFX, Soho was highly rated compared with Burbank (LA) precisely because of the physical proximity of the different actors involved. However, this was required not for physical transfer, but for social networking. Thus while the internet alleviated the necessity of face to face interaction, it remained prized, but for different- less tangible – reasons. More generally, within the three industries that we investigated we found contrasting outcomes associated with the structure of the market that the companies were embedded in, the degree of specialisation of their tasks and customers, and the barriers to entry often associated with size of investment and the expected period of return on that investment. Our research has stressed the importance of acknowledging and accounting for the situated nature of the social relations of production and consumption, a sensitivity to the institutional and regulatory contexts, and the role that subtle quality differentiation plays in employment, contract and 'winning' products.

Second, in terms of employment and work, it did not appear that there was any evidence of a new technocracy of new media workers. In fact, it has been suggested by many that new media in particular, and the cultural industries more generally, are leading a trend of freelance work. A more extreme version of this has been discussed in terms of a growth of the 'precariat' (Lazzarato, 1996, 2007, Neilson and Rossiter n.d.). We did not find that new media workers were exclusively freelancing. Whilst estimated levels were higher than in the economy more generally, there was variation within the industries we looked at, and also –crucially – within the industries we examined. In particular the prevalence of the project form of work organisation gave rise to a number of core workers/principals of companies, surrounded by a large freelance market. However, only some freelancers were 'numerically flexible'; many not, in effect they were 'permatemps', highly skilled and critical to task. In effect, firms were dependent upon a labour pool to retain their flexibility. We found that social networking, and local buzz, was important in maintaining a circulation of market knowledge in the industry, and to 'oiling' the freelance market. Again, subtle knowledge is critical in relation to the correct 'hire' for a 'mission critical' job. We also found that in the industries that we examined that most workers came into an office to work (and worked long hours); moreover, even when they were not formally at work they were often 'networking' for other work. This seemed to offer evidence of the tensions in immaterial labour – the self-exploitation and over-commitment (Jarvis and Pratt, 2006).

Finally, whilst technologies underpinned activities and changes, they were not sufficient motors of change in and of themselves, nor were they independent of usage, content or application. They were always experienced and embedded in labour markets and localities, networks of information and learning, and markets and organisations. Much of the work of new development is to explore the potential of new technologies (not known before hand) and to articulate that to a potential market (yet to be created). This final point offers further re-enforcement of why social embeddeness in markets is so important for new media companies and workers.

Again, our research is illustrative but points to the need to expand such analyses across other industries.

We hope that the evidence presented in this paper will give pause for writers contemplating the future forms of social and economic life and the role of new technologies in them. In particular we hope that the case for detailed and situated accounts has been underlined, and that as such it will encourage other researchers to examine these processes in further depth. In particular, we have pointed to a weakness in mainstream accounts of the information society that have paid insufficient attention to the situated nature of activities. In our research we have sought to attend to specificity as well as more general processes. In so doing we have highlighted a greater variety of forms and practices in the sphere of the digital content industries in terms of employment, organisation and location. We hope that this can contribute to the evidence base and conceptual frameworks that policy makers engage with; not so that we may dictate policy, simply that it is based upon sound social scientific reasoning.

Figures

Sector	Total employed
TELEVISION	
Terrestrial TV	20,800
Cable & Satellite Television	13,700
Independent Production (TV)	20,950
Community TV	250
TV Distribution	150
RADIO	
Broadcast Radio	22,400
Independent Production (Radio)	400
ANIMATION	
Animation	4,700
INTERACTIVE MEDIA	
Web & Internet	29,000
Computer Games	8,850
Offline Multimedia	9,700
Interactive TV	650
Mobile Content	400
OTHER CONTENT CREATION	
Commercials Production	3,500
Corporate Production	6,350
Pop Promos	900
FACILITIES	
Post Production	7,800
Special Physical Effects	1,450
Studio & Equipment Hire	7,000
Outside Broadcast	600
Processing Laboratories	300
Transmission	1,750
Manufacture of AV Equipment	3,600
Other Services for Film and Television	22,550
FILM	
Cinema Exhibition	16,600
Film Distribution	1,200
TOTAL	**205,550**

Figure 1: Total number of employees (and freelancers) by industry in the audiovisual sector, UK. Source: Skillset (2006)

Image 1: Location Framestore CFC, located in Soho central London, linked by WAN.

http://www.framestore-cfc.com/contact/media/map_anim.gif

Source: http://www.creativecow.net/leaders/wiggins_peter/editing.jpg

Image 2: A typical film Editing Suite

Source: http://www.battlemccarthy.com/projects/landscape/rare.html

Image 3: Rare computer games HQ, Rural location, Tywcross, Leicestershire

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[1] As we have noted elsewhere new media is a problematic general term that includes a diverse range of activities (Gill, 2002)

[2] 'E clusters in the e-society? The case of the digital content industries.' A project funded within the ESRC E-society programme, Award No: RES-341-25-005. Findings reported here draw upon the project findings.

[3]

[4] Here again we can signal work by a number of geographers Graham, S. and S. Marvin (2001) *Splintering urbanism*. Routledge, London, Amin, A. and N. Thrift (2002) *Cities : reimagining the urban*. Polity, Cambridge, Graham, S. (2004) *Cybercities reader*. Routledge, London..

[5] See Dutton Dutton, W. (2000) The e-Society: Understanding the Restructuring of Practices and. Institutions in the Digital Age, an unpublished proposal for a new research proposal for a new research programme
for the UK's Economic and Social Research Council. Mimeo, Annenberg, CA..

[6] It is difficult to over-estimate the impact and popularity of Florida's work with the policy community, and with in popular business discourse. Justifiably or not, any policy intervention today has to engage with Florida's point of view if it is to be taken seriously.

[7] For a more extensive discussion see Murdoch Murdoch, J. (1997) Towards a geography of heterogeneous associations. *Progress in Human Geography* 21, 321-37..

[8] There is the echo of Shannon's information theory here Fuller, S. (2005) Another sense of the information age. *Information, communication and society* 8, 459-63., it also resonates with our constructivist sympathies.

[9] A significant oversight of such generalisation has been the experience of women, ethnic minorities and the aged as workers in new media Gill, R. (2002) Cool creative and egalitarian? Exploring gender in project-based new media work in Europe. *Information, communication and society* 5, 70-89, Perrons, D. (2002) The new economy, labour market inequalities and the work life balance. In R. Martin and P. Morrison (eds.), *Geographies of labour market inequality*, Routledge, London, Perrons, D. (2003) The new economy and the work life balance. A case study of the new media sector in Brighton and Hove. *Gender work and organisation* 10, 65-93, Gill, R. (2007) Technobohemians or the new cybertariat? New media work in Amsterdam a decade after the web. *Network Notebooks*, Institute of Network Cultures, Amsterdam..

[10] Most notably the 'DeepGroup' companies, the best known of which was DeepEnd. See also New_Media_Knowledge (1999) Interactive London 1999: mapping the capital's new media industry. available from www.nmk.co.uk. for an early survey of London's new media districts.

[11] Census data collection taxonomies do not differentiate new media activities; to all intents and purposes they are 'invisible'.

[12] Details of financial accounts of companies, accessed via the Bureau van Dijk FAME data base (last accessed July 2nd 2007 http://www.bvdep.com/en/FAME.html)

[13] Linked (last accessed July 2nd 2007 http://www.linkedin.com/home)

[14] We regard this as a significant methodological development, and one that could be very useful for future research both as a technique, but also as a research object in its own right.

[15] This was an exceptionally good 'hit rate' as well as an unprecedented volume or interviewees given the timescale of the research and the general difficulty of access.

[16] See report at http://www.skillset.org/research/census/article_1331_1.asp (accessed July 2nd 2007)

[17] See Pratt Pratt, A.C. (2000) New media, the new economy and new spaces. *Geoforum* 31, 425-36. for discussion of this method.

[18] The history of the Brighton cluster is associated by a 'London by the sea' group linked to the music and cultural scene who re-located in Brighton, a 50 minute rail commute from London. See also Perrons Perrons, D. (2003) The new economy and the work life balance. A case study of the new media sector in Brighton and Hove. *Gender work and organisation* 10, 65-93. and Pratt Pratt, A., C (1999) Digital clusters. Global new media districts: six case studies. Scottish Enterprise, Glasgow. on new media in Brighton.

[19] For example, Lord of the Rings has CGI effects in 80% of its frames.

[20] The location of Aardman Animations, a very successful 'stop-animation' company with successful Hollywood films. E.g. Chicken Run, Curse of the were-rabbit.

[21] The production hub of the Hollywood film industry

[22]

[23] Due to the recent development of the industry, this is a cohort problem that is symptomatic of an 'aging' industry.