Abstract

This is a detailed case history of one of London's iconic new media companies, AMX Studios. Some of the changes in this firm, we assume, are not untypical for other firms in this sector. Particularly we want to draw attention to two transformations. The first change in AMX and in London's new media industry more generally refers to the field of industrial relations. What can be observed is a shift from a rather heterarchical towards a more hierarchical organized new media industry, a shift from short-term project networks to long-term client dependency. The second change refers to new media products and services. We want to argue for a shift from cool content production towards consultancy and interactive communications solutions.

Shifting New Media: From Content to Consultancy, from Heterarchy to Hierarchy

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Introduction

This article offers preliminary observations on the rise of the new media industry in London. It will focus on the speed and the rapid changes of direction within this industry. It will describe its non-linear development and at the same it will bring linearity into play by suggesting some directions of the movements within this industry. Our approach is largely descriptive, the analysis tentative at best. However we hope to open a practical research window onto this edgy, much-hyped new economy arena that so dominates global stock markets, organisational structures, and everyday life alike. Our discussion is based on a recently completed two-year study (1998/2000) of new media firms, with a primary focus on London and some fieldwork in New York. The research used ethnographic methods and extended interviews, video and audio recordings, stills photography, and assorted archival sources, necessarily including the Internet itself. This essay however will considerably narrow the use of research data. It will focus in particular on one of the major new media firms in London, AMX Studios, though it will draw on information from other leading players in London and global new media.

New media firms are, to say the least, very risky businesses, highly leveraged, and operating at the leading edges of the economy. They barely existed seven years ago. Now they have already been going through a first but serious stage of crisis and consolidation. However the fall of the technology shares and the subsequent thinning out of the new media industry will not be extensively covered in this article. Indeed we mainly focus on the transformations in this industry before the crash of the ICT (information and communication technology) stock markets in March 2000. One of the most important characteristics of the new media industry is its flexibility as well as its adaptability towards a rapid changing environment. The ability to cope with uncertainty has been one of the fundamental requirements in this business. Certainly ‘change’ was one of the leading buzzwords during the emergence of this industry. Employees frequently changed their work places, their employers, their status of employment (from full time to part time; from freelancers to employees), and their work tasks. Firms frequently changed in terms of size, location, clients, projects, tasks, and organisational structures. Further, the new media industry in general has gone through significant changes. Since March 2000 the notion of change surely lost its trendy hype. Nether the less the necessity for change and adaptability remained as important as ever.

In this article we will describe some of these changes in terms of people, firms, and the industry in general. Our main focus however is to describe the short history of one firm, AMX Studios, and the biography of its founders. By doing so we hope to contribute to a discussion of more general transformations in the new media industry between 1995 and 2001. During this period the development of the new media industry showed clearly more signs of chaos than of structure and order, and more signs of contingency than signs of rules. However we do think that there are some patterns emerging. At least some of the transformations in the new media industry seem to have a certain direction. In particular we want to point out to two processes we see as crucial studying the AMX history. We assume that they are not untypical for other firms in this sector.

1. The first observation refers to the field of *industrial relations*. We assume there has been a shift from a rather *heterarchical towards a more hierarchical* organized new media industry; a shift from a focus on *project networks to long-term relations with clients*, from interdependence to client dependency.
2. The second observation refers to a change of new media *products and services*. We want to argue for a shift from cool content production towards grown-up new media consultancy.

Project Networks, Heterarchy, Connectivity, Non-Linearity

Some of our findings resonate with the notions of project networks and heterarchy, which are more extensively discussed in other articles of this volume. In the introduction of this special issue Grabher emphasises the growing importance of projects and interfirm networks. One of the key features of these project networks are interdependence and intense forms of collaboration. The idea of the heterarchic organisation, as developed by Powell (1996) and Grabher and Stark (1997), has its roots in complexity theory and notions of non-linearity. The heterarchic organisation is a non-linear system - 'heterachies are complex adaptive systems' - in the same sense that the more traditional hierarchy is linear (Girard and Stark, 2001: 9). Linear hierarchies have single equilibrium points, heterarchies have multiple equilibrium points. Hierarchies are closed systems governed from above, heterarchies are open, autopoietic systems. Heterarchies are also reflexive in a sense hierarchies are not. Heterarchies are characterised by an 'underdetermination' of organisational structure. In heterarchical organisations there is continual self-monitoring, interpretation and evaluation of the organisation by the organisation. A particular hierarchy may result from a 'search for the one best solution'. Heterachies are not a result of this search; they are a result 'that is better at search' (Grabher 2001: 358). Heterarchies are continually involved in search: as part of their reflexivity, they are continually scanning the environment, continually coping with ‘unpredictable strategy horizons' (Girard and Stark 2001: 9). Heterarchies are about 'distributed intelligence'.

With the previous dominance of a logic of structure (Castells, 1989), linear systems could adequately respond to environments. Now, with a dominance of the logic of flows, non-linear systems are more able to be adaptive. Complex, non-linear systems are better at coping with an environment increasingly characterised by unpredictable flows. They work through the connectivity between ‘interdependent’ (Stark 1999) agents, through the flatness of distributed intelligence. Unpredictability is channelled best through the flows and stoppages that constitute such complex systems. Heterarchy and thus connectivity are particularly prevalent in the new sectors or creative sectors – so, for example, Powell et al (2001) has described them in biotechnology, Grabher in advertising (2001), and Girard and Stark in new media (2001). And while the idea of heterarchy is taken originally from natural science, its prevalence in creative and new economic industries is a consequence of the ways in which such sectors – for reasons of both appearance and substance – are required to innovate more intensely than others.

Normally, and linearly, (old) media work on a model of producer-message-consumer, or sender-message-receiver. The message itself may be mediated through, say, a television set or computer. But the movement of digital objects from place to place, from producer to marketer to distribution in a variety of countries, through a set of different technologies and markets defies this linearity. The linearity of producer-text-reader is being succeeded by the non-linear connectivity of real networks and virtual objects in discontinuous time and space. Indeed, this transformation in media has been shown in an earlier study of global culture industries (Lury and Lash, forthcoming).

Connectivity is not concerned with meaning and interpretation, but with operationality and functionality. When a microprocessor is put in, say, a TV box, you can do something with it, that is, it is no longer just a question of meaning but of functionality, or operationality. This is much more than a question of an ‘active audience’ interpreting the various meanings of lean-back broadcasts. Indeed it is not a matter of meaning at all, but of doing, of performing. As one of our interviewees succinctly puts it, ‘When people get to a site they want not only to see something. They want to do something’. The audience or reader becomes a user.

As already mentioned, our empirical findings correspond to a certain extent with the notion of heterarchy and project networks. The new media industry is built on the ground of social relationships. This industry is characterised by production through connectivity. Social relations are also work relations and industrial relations. A network sociality (Wittel 2001) has been emerging. Surely these social relations resonate well with the idea of heterarchy. However we also see a movement in the opposite direction: a movement towards a more hierarchical organization of this industry, and towards continuous and long-lasting ties with customers. The loose networks and short-term projects became replaced by efforts to build long-term and sustained work relations with clients. Interdependency became replaced by a rather strong dependency on clients. We cannot make a watertight argument to prove this claim, the empirical indications are strong enough to be taken seriously though.

From Multimedia to New Media

New media had a predecessor – multimedia. Multimedia – classically, the convergence of information technology, creative content and telecommunications (in the broadest sense) – has fascinated business commentators, frightened trade unions, and attracted academic attention for the best part of a decade (ILO 1998). In Europe the sector has attracted academic attention from industrial sociologists (Leisink 1998), and from media and cultural studies (McRobbie 1999). In the US it has been the focus of economic geography (Scott 2000) and urban sociology (Molotch 1996). In Europe (Sweden, Holland, Austria, and Germany) the emergence of multimedia has been perceived as a threat by trade unions and by industrial sociologists closely linked to unions. Here the unions and sociologists concerned have tended to focus on the print and typography industries. They have focused on the introduction of digital technologies, and especially of multimedia tools like Photoshop, Director and the like. The sociologists and the unions have noted a certain resistance among traditionally skilled artisans in the sector to adapt to the new technologies. They have noted the entry into print and typography of young people with technical college or higher education qualifications hungry to take on all the latest available software. This has led to culture clashes between the new entrants who were reluctant to join trade unions and their more traditionalist colleagues. These studies have dovetailed with more recent work from the sociology of art and cultural studies that focus on the combination of innovation-related excitement, on the one hand, and insecurity, on the other, of creative workers in the culture sectors more generally (Menger 1994).

The aforementioned industrial sociologists then shifted their attention to multimedia as a whole. This tended to be broadly defined. It led to a series of general surveys of multimedia firms in their various European countries. The surveys tended to focus on the needs of the firms, foremost among which, right up to 1997, were 1) educating clients in order to use the services of multimedia firms and 2) the shortage of skilled labour (see, e.g. Benkert and Michel 1999). All this time there was considerable debate as to what multimedia indeed was. This is classically described by a Venn Diagram, in which multimedia is at the heart or the intersection of the classical culture industries, information technology and telecommunications. Sometimes the diagrams were more complicated, with the culture industries broken down into television, film, music and publishing. In these diagrams multimedia were represented as closer to these culture industries than to either information technology or telecommunications. Indeed the term ‘multimedia convergence’ was often used, assuming a certain convergence of the acoustic, text, informational and image media of the older culture industries. At a January 1997 colloquium of academics and European multimedia firms in Vienna there was considerable agreement as to the products that such firms produced. These were seen as CD-ROMs, digital games and web sites (Warnken 1998). We should note here that these are all *interactive* media. They are interactive in the sense that consumers or audiences modify their content in some way. If we limited multimedia to this, though, then where would we locate, say, digital special effects, which comprises such a large category of multimedia workers in Allen Scott's (2000) work. These firms do not create interactive products, but can be considered multimedia due to the digital input into their products.

In Europe this was paralleled by an enormous interest in multimedia by the European Commission, especially in Framework Programmes IV and V. This is not without contradiction. The Commission DG (Directorate General) X (Culture) gave priority to defending artists' intellectual property rights. In opposition, DG III (Industry) and DG XIII (Telecommunications) saw intellectual property rights as largely an obstacle and wanted to get on with sectoral growth (see, e.g. European Commission, DGXIII/E-4 1998). Needless to say, DGs III and XIII dominated in Framework Programme V. DG X was literally excluded. This domination of industry and telecommunications was at the same time the victory of free market ideology. Note the term ideology. Although in theory paying tribute to American-like free markets, the Commission's practice was to provide (European) state-supplied free research and development to the sector. The assumption was that the United States has a technological lead in all IT-connected sectors. But there was a chance to achieve parity in multimedia. In the new sector 'content' would be 'king' (ISPO). Hence European creatives could match technological Americans in vying for international markets. Thus we see a shift in at least the perception of the new economy from technology to content. The American advantage in technology is now seen to have been something of a myth. Or there has been a lot of European and Japanese catch-up. The common perception towards the end of 2000 is of a much more cross-platform multimedia world. Whereas the US is far ahead in Internet-PC technology, Japan has the lead in computer games, Europe in interactive and digital TV, while Europe and Japan are both far ahead of the US in mobile phones (*The Economist* 2000A and 2000B).

This shift from technology to content we see also in academic work more closely associated with regional and urban studies. In the 1980s there were the original and classic technological studies of the IT sector in California by *inter alia* Soja, Morales and Wolff (1983) and Manuel Castells (1989) in his *Informational City*. Then two parallel processes took place. The studies became very directly influenced by the *problematique* of post-fordism and flexible specialization. This was apparent, for example, in the work on Silicon Valley and Boston's Route 128 by Anna Lee Saxenian (1996). The second process was a shift from straight IT or 'high technology' to look at the 'content industries', to look at the culture industries. This was the context of Storper and Christopherson's (1987) benchmark work on vertical disintegration in southern California's film industry. It was the context of research on the same process in London's culture industries more generally (Shapiro et al 1992; Lash and Urry 1994). Allen Scott (1988) first developed the vertical disintegration argument. And indeed it was he who was first to focus on multimedia from the early 1990s.

Allen Scott (2000) looks at the multimedia industry in California. His data from 1994/1996 shows the biggest agglomerations of multimedia firms in the US and arguably in the world to be in clusters around the Bay Area and Los Angeles. Cooke and Wells (1991) forecast this new concentration of IT around client firms in the major cities in earlier work. Indeed this is the context of the excitement and focus around the development of, no longer Silicon Valley but Silicon *Alley* in downtown New York City. Yet the focus was on the shift from technology to content. It was on a media world in which content was king. One of the issues we want to address below is what seems to be the consolidation of a new media sector 3-4 years later than the Scott study. In another article we indicate a shift from *content to connectivity* (Wittel, Lury and Lash 2002). Here we want to expand this argument. We want to discuss it in terms of a shift from cool digital content to consultancy and to the production of interactive *communications solutions*. Again, this is based not on a survey but on one detailed case history, supported by some material from trade publications and Internet sites.

Introducing AMX

AMX Studios are more of a *media* firm than today's other major new media agencies. Also they are a bit more of an ad agency. AMX grew out of Malcolm Garrett's long-time work in graphic design. Garrett was trained as a *graphic* designer at Reading University and then Manchester Polytechnic in the late 1970s. At age 44, he is decidedly one of London's new media most senior citizens. As a 21-year old student Malcolm had already designed the record sleeve for the Buzzcocks' 'Orgasm Addict' album under the pseudonym Arbitrary Images. This was 'clean-set sharp design' as distinctive as the Sex Pistols' 'pink-yellow nastiness'. From early on he thus was involved in branding bands. In branding, Garret observes, there must be recognisability. Finishing college, Malcolm took a post as assistant art director at London's Radar Records. When Kaspar de Graaf founded *New Sounds, New Styles*, a magazine that paralleled *The Face* in style, Malcolm came on board as art director. The title collapsed after a year and Malcolm and de Graaf jointly set up Garrett's first business, Assorted Images. This was one of Shoreditch's original culture industries' firms, set up in 1983. Here Malcolm did design work for Duran Duran, Bow Wow Wow, Heaven 17, Simple Minds and Culture Club. Working with, for example, trend-setting fashion stylist Judy Blame. By 1985 Assorted Images had expanded to sixteen employees (Walters 2000).

AMX Studios co-director and co-founder Alasdair Scott's background was advertising. His training for the industry started almost as a child. Born in 1968 to a well-off Home Counties family, Scott had a computer and could programme before he was twelve. He won BBC Television young filmmaker of the year award as a high school student. He gained a place at Cambridge, but decided to enter the work world, using the caché from his BBC prize to walk into a position as market analyst for DDB, a leading London ad agency. The experience was useful, but Scott wanted to work among creatives. He wanted to direct commercials and use digital production techniques. Nonetheless his next post, from 1989, was in MSW, a direct-marketing division of the Maxwell Corporation. Here his computer skills came into play: he compiled magazine subscription list databases onto CD-ROM. At MSW Al learnt search engine and authoring technology. He learnt how to master CDs. Now technologies formerly used for the likes of Boeing and British Airways were moving into consumer spaces (NMC 1999). These were early days though: Al and his colleagues had to write data on 9 track tapes and bike the tapes over to Wales where a specialist company would do the master: 'Would stamp it out on one disc', so Al Scott. A far cry from today when 'for £100 any kid can pick up a CD-writer on Tottenham Court Road'. In 1986, at age 18, Scott's father bought him an Apple Mac, whose graphic interface was something of a revelation to him. During a trip to the US in 1989, he first heard the word ‘multimedia’. On his return he *was* a multimedia designer for Maxwell. He designed and coded the *Guinness Disc of Records*, the first large-scale consumer multimedia title in England. He worked alongside Mirrorsoft, Maxwell’s gaming division. Previously he’d worked with linear moving images. Now he encountered mosaics of ‘lots of data’, with the ‘cute user-friendly TV interface’ characteristic of games. From an early date, both Garrett and Scott have had their eyes on interactive television. The point was that ‘when video went digital, it would inevitably go non-linear’ and this would need an interface.

Al Scott had been doing work for Garrett’s and de Graaf’s Assorted Images. When the Maxwell interactive division folded in 1991, Al, now age 23, along with two friends, – one with a background in 3-D content, the other in TV commercials – started Zapfactor, one of London’s first creative digital content producers. They started this firm in a bit of space in Malcolm’s Shoreditch studio (NMC 1999). Malcolm had been introduced to Apple Macs by Heaven 17, one of his client bands in 1986. Thus armed he began to produce graphic titles for television production companies, for shows like Network 7 and Jonathan Ross’s *Last Resort*. In 1989 Assorted Images was the first London design studio to abandon print for computer monitors. Malcolm and Alasdair first met during this year: through girlfriends who were each other’s colleagues. In 1993 Malcolm produced and designed the book *Understanding Hypermedia*, by friend and colleague Bob Cotton. Assorted Images itself had experienced gradual decline from its mid eighties heyday. The writing, so to speak, was on the wall and Malcolm left Assorted Images to join Alasdair and found AMX Digital in 1994. They began with five people. Their first paying clients were Kodak, EMI and News International. In 1994 and 1995 they did interactive music titles, digital image libraries and shot considerable digital video footage. They were first to market with much of this material. But it was a very small market. They needed clients. They were joined thus in 1995 by Simon Scott, former figure at ComputaCenter, who do corporate IT and by Gary Fairfull, a ‘visionary digital marketer’, who had worked on projects previously with AMX. Gary was to be the company’s ‘suit’ (NMC 1999). Malcolm, Al, Gary and Simon became directors, and now started to open up a few income streams. The CD-ROMS and other content-related products were making money, but all the Internet work (broadcasting, etc.) was losing money. Yet expansion to twenty staff took place within eighteen months. And the start-up moved their newly purchased digital video and audio suites to a larger Shoreditch studio in St. Paul’s Road. By the end of 1996, BT had put in 155Mb fibre so AMX could throw MPEG video live around London; there was development of interactive TV trials; and business-to-business TV programming.

New Media Agencies

Let us give us an account of recent changes in this fast-developing sector. In the very late 1980s a new term emerged – new media. In the mid 1990s a number of firms have been founded who recognise themselves as new media firms. In the years between 1995 and 2000 both terms, multimedia and new media have been around. The term multimedia however seemed to have begun to go out of usage largely in 1997 and 1998. Yet the fashionable design monthly *Creative Review*, in a July 2000 profile of AMX Studios' co-founder Malcolm Garrett speak of Garrett as giving up print media to 'commit himself totally to *multimedia*'s brave new world' (Walters 2000). *KLW Communications*, an Internet sector online publication, speaks of AMX's wide ranging experience with 'multimedia products' (Watson 1999). This is not surprising, as AMX has started as a multimedia firm. In 1998 one still read of 'multimedia titles' – mainly CD-ROMs but also computer games – being reviewed in various publications. But the majority of the work in the firms was no longer a question of producing 'titles'. So much of the work became 'Net', or at least online work: Internet and Intranet work. And the firms that did this sort of work were not so much known as multimedia firms, but *new* media firms, or increasingly *agencies*.

The Internet related industry could be classified in four categories. The first category comprises companies that provide the *Internet infrastructure* and the Internet infrastructure *applications*. This is a huge field and it is this field that clearly generates most of the income. This is the category of telecommunications, of Internet service providers, Internet backbone carriers, manufacturers of end user equipment, and all kinds of software providers. Among the companies in this layer are Compaq, Quest, Cisco, Oracle, Microsoft, Adobe, AOL (before the merger with Time Warner), and Netscape (By the way, some of the companies listed here and in the next categories might not exist any more; they are listed here because they were very much in the public debate). In economic terms it is the most important category of the Internet related industry and it would make sense to draw further distinctions within this field. However this is not necessary for our argument. It is important to note that this field clearly refers to technology.

The second category includes the *dot.coms*. These are companies that conduct web-based economic transactions. This is e-commerce. These are dealers, sellers, and retailers. They are techno-merchants. Examples of firms in this category are Amazon, Lastminute, E-toys, Travelocity, and Priceline. For a few months/years the financial survival of dot.coms was based on a combination of venture capital money and IPO (Initial Public Offering). By now however it clear that this category of Internet related firms has to struggle most for survival. None of them has managed to make a profit. Many of the e-commerce firms created between 1998/2000 do not exist any more. And it is still not clear if success models like Amazon and Lastminute will eventually be able to avoid bankruptcy.

The third category consists of *content providers*. Some of these firms (e.g. Inside Media, About.com, E-Hollywood) provide digital content only. The most famous example is Napster, or better: was Napster. Most of the content providers however are so called old media firms like Bertelsmann, EMI, Time Warner (now AOL/Time Warner), The Guardian, BBC. Most of these firms generate revenues from advertising and/or subscription fees. Their online names might be a little bit different than their 'real' names (e.g. The Guardian's online name is Guardian Unlimited), but this is not that relevant. What is important is that they are able to transform and translate traditional non-digital content with little effort in online content: music, news, still images etc. In both categories, the e-commerce firms and the content providers, we can currently observe a competition between old and new, between old media and new media content providers, and between traditional merchants and techno-merchants. There are a more and more signs that the traditional companies will win this competition. (The AOL/Time Warner merger could be one of the few exceptions.)

The fourth category of Internet related firms are *new media agencies*. Like the first category (Internet infrastructure and Internet applications), new media agencies do not really have ‘old economy’ competitors. However there was some competition from traditional consultancies. New media agencies played a crucial role between 1995 and 2000. They were the catalysts of economic change. They facilitated the Internet revolution by teaching clients how to use the Internet for commerce. They made it possible that all industries got hooked up on the Internet. Most new media agencies started as firms doing web design. Soon they realised that doing web design was not enough. They had to teach their customers how to take advantage of the Internet. They had to inform them about different options of Internet and Intranet usage. They had to tell their clients that a web site is more than PR and advertising; that it is about connectivity. Thus new media agencies had to create the best possible interface for their customers. However they could only do an efficient job by accumulating intimate knowledge on their customers’ organisational structure and production procedures. New media agencies became techno consultancies. They moved beyond simple web design. They developed for the whole industry a new media strategy. This is why the agencies are or least were at the heart of new media. New media agencies or consultancies are firms like Razorfish, Iconmedialab, Agency, Scient, Sapient, ConcreteMedia, and Modem Media. These firms receive income streams for delivering services, for generating interactive communications solutions for clients.

No doubt these categories are a bit artificial. Many new media companies do not only fit in one category. Often the boundaries are not that clear. In particular the boundaries between Internet infrastructure and software firms, content providers, and new media agencies are blurring. AMX have always been both content producers and an agency. However the priorities shifted in time. Historically, one could say they started as a multimedia firm, later they had their focus on interactive content, and finally moved towards technological consultancy and towards the production of interactive communications solutions. This is a development not untypical for many other new media agencies.

There has also been a rapprochement of new media with advertising, with *brand* building. The publication *New Media Age*, is thus subtitled, *The Business Weekly for Online Advertising Marketing and Publishing*. There has been massive growth in this sector. It has happened in different ways for different companies. The sector as a whole has moved from doing ‘cool design shop’ work to ‘grown up’, ‘corporate’ work. (www.iconmedialab.co.uk) And there has been enormous growth. Two of the top firms – in terms of number of employees – are Iconmedialab and Razorfish. Iconmedialab began in Stockholm with five employees and four friends from banking, the media and IT. Before 1996 was out they opened Madrid and San Francisco offices. In 1999 both Razorfish and Iconmedialab had more than 1.000 employees and around 15 offices in ten different countries. Both had offices in

London with more than 100 employees. What happened in the industry was major client led growth. This seems to have emerged in a major way in the US in 1996 and 1997. The big years in the UK seem to have been 1998 and 1999. AMX Studios was founded as AMX Digital in 1994. It is a year or two older than its global player counterparts, Razorfish and Icon Media Lab, founded respectively in 1995 and 1996.

In any event there was a wildly expanding market for net services. Typical rates of revenue growth of firms mentioned in this essay are 100 per cent per year from 1996 onwards. Once the corporate sector as a whole was convinced of the importance of new media services, there has indeed been too much business. Yet most sector firms have felt the need to expand faster than they could by means of retained profits. Between 1996 and 2000 firms like Iconmedialab, IXL, Agency, and Razorfish have felt the need to open up overseas branches at the rate on average of one every 3-4 months! This seems partly because their corporate clients have operations and/or distribution in these American, European and Asian locations. In some cases this expansion, at least into the UK, has come from acquisitions of British firms by US interactive media firms. This has given them a place in London, not only intended as a local service however. They were aiming at a nation-wide, even European-wide base of customers. Thus Razorfish has acquired CHBi; Agency.com has bought Online Magic and US Web has acquired Xplora. The agencies must service these clients as a whole, not just their corporate headquarters. And they need to do this, as it were, yesterday. All these agencies have had IPOs. Let us note here that the agencies never had quite the over-inflated market capitalisation of the dot.coms at the outset of 2000. They also have not tumbled as far during the course of the year.

Now, at the end of 2001 things changed considerably. Many agencies had to reduce staff and offices. In summer 2001 Razorfish, for example, has shut its Finland office and laid off 60 people. A few months later the two founders left their executive positions in the company. Also in summer 2001 Agency.com was bought by Seneca Investments (Silicon Alley Reporter, 9.July 2001). In spring 2000 Iconmedialab’s London office had about 150 employees. Now there are only 15 people left. It is no secret any more that many of the agencies are struggling for survival. This is not only due to the Nasdaq crash and thus to a reluctance to invest in new media technology. Perhaps more important is another issue. New media consultancy might not be needed any more to the same extent as it was needed between 1995 and 2000. During these years all non ICT-firms needed education on the possibilities of Internet related technologies. This education could only be delivered from outside. Now most large companies throughout all industrial sectors have their own new media division, and most of the SMEs have at least one or two new media specialists. Now new media is more than just an industrial sector. It is integral to all industries. It became a business service. Now new media agencies have to compete with their clients’ new media divisions. In this respect they are similar to PR companies.

One of us (Scott Lash) first approached AMX, at that point in time called AMX Digital, towards the beginning of 1996. We first encountered Alasdair Scott, one of AMX’s directors and co-founder, in a promo video that was attached to a LINK (Economic and Social Research Council/Department of Trade and

Industry) grant application that had to be refereed. This was towards the end of 1995. The video was put together by the National Film and Television School (NFTS). The grant proposal addressed the need for training in digital skills for NFTS students. A few months later one of us approached AMX as a potential client (in the role as co-editor of an academic journal and book series). We were considering establishing a company to take digital content to students and build a network of sociology and cultural studies academics. The business in the end came to nothing. But the point is that we were taken seriously as a client. We did not have an established operation. But we were still taken seriously. This was not rare at all in those days when new media firms were not recognisably business service firms. The business services make money by billing companies who make products. They may be paid by the hour as consultancies are. At the beginning of 1996 it was not like this. We did not even have a product. The question for AMX and for us was how we could generate an income stream. If we somehow digitised and made interactive our book series, how could this generate a revenue stream? Though selling CDs? Through a membership fee charged annually? Through adverts? Through pay per hit? Somehow AMX would help us with a business model and through intellectual property problems. At issue was nothing like a classical business services model.

The second time we visited the AMX office the entire crew was out making a Web broadcast of the Phoenix Festival. This was the first web broadcast of a pop festival. At the time AMX was doing Web work for *Dazed & Confused,* a very trendy and leading fashion and photography magazine. They were digitising adverts to create a massive database for BT (British Telecom). They were working on digital imaging for Image Bank. But the Phoenix Festival lost money. *Dazed & Confused* was in the red. It was not agreed that AMX would bill BT. Another work was done for London's Institute of Contemporary Arts in conjunction with the ICA's Sun Microsystems partnership. Again revenues were minimal. At that point in time there were about 25 people working in their Shoreditch premises in St Pauls' Road.

These examples reflect a more general pattern. In the first few years the new media industry shows many signs of a heterarchic organization. Clients did not know what they were exactly looking for. All they knew was that they did not want to be left behind by the so called Internet revolution. They needed new media firms not only to do things, but also to tell them about the possibilities and developments. Clients lacked knowledge about these issues, they clearly depended on new media firms. At that point in time many of the project networks have been characterized by interdependency and by intense forms of collaboration between new media companies and their clients.

Back Ends and Front Ends

Some of the most frequently used language in new media is 'front end' and 'back end'. What does this mean? Front end seems to refer to design and back end to technology. The first major large investor in new media as business service was John Wren, CEO of Omnicom (St. John 2000). Omnicom is an investment group and an advertising/communications group. In 1995/96 Wren saw that there would be a need for a particular business or professional service, a particular service that he understood as ‘digital design’ (St. John 2000: 144). Digital design is understood as ‘front-end’ work. It is putting the design on the screen. It was in the first instance the ‘cool web site’. The image, indeed the *content* is the front end. Putting the production values up there on the screen. In this context the ‘back end’ refers to technology. To ‘functionality’. What makes a site interactive *per se* is the back end. ‘When people get to a site they want not only to see something. They want to do something’, says Alasdair Scott. It is the back end that makes this ‘doing something’ possible.

Interactivity is fundamentally different to content production. Now AMX, like most other new media firms, provide ‘interactive communications solutions’ for companies. In this sense they differ from both the older multimedia firms and the dot.coms. Multimedia firms make content. Dot.coms make sales. In order to make these sales happen dot.coms need IT firms and new media firms. They need interactive communications. They hire advertising firms for their (non-) interactive communications problems. Both the new media firms and the advertising firms provide solutions. Dot.coms require expensive solutions. They are thus incredibly hard pressed to turn a profit.

New media firms, or digital design firms entered a professional services field, in Bourdieu’s (1993) sense, the field of professional services, in which the front end was very much occupied by advertising. The front end is the interface of user, viewer, of consumer experience. Compared to advertising the digital design firms were back-end, always to a certain extent providing interactivity. The other players occupying this professional service space were indeed information technology consultants. These are firms like IBM and Oracle, which set up IT systems in firms. In Europe one of the largest of these is Cap Gemini, now titled Cap Gemini Ernst & Young. In June 2000, Cap Gemini acquired Ernst & Young Consulting. They now call themselves a ‘management consulting and IT services firm’. They have traded on the Paris Bourse since 1985. The public owns eighty-one per cent of their shares. Their turnover was a massive 4.3 billion Euro in 1999, their global headcount, 57,0000 people (www.capgemini.com). These original back-end firms provided IT business systems integration for firms. From about 1995 client firms came increasingly to be Intranet (or IP – Internet protocol) based. This provided some space for new media firms to take over work from first generation IT consulting competitors. First generation (‘silicon valley’) IT had four sub-sectors: computer manufacture, software, semiconductors and IT consulting or systems integration. From the mid-nineties there was space in the field for the new media, i.e. the second-generation Silicon *Alley* type firms to compete on back-end systems integration through Intranet construction.

Thus AMX Studios, whose origins as we saw were in content – pop music, broadcasting, magazine design and the like – has just finished creating an Intranet for Barclays Bank. This is indeed back-end work. AMX, as mentioned, say they provide ‘interactive communications solutions’. By this they mean a number of things. But included in this, to be sure, is the provision of communications solutions for inside the firm – Intranet – as well as outside. By this they also mean that they do back-end as well as front-end work. The implication is that back-end and front-end work should not be separated from one another. It is that the technology, the functionality is better conceived simultaneously with the design. AMX mean they would prefer not to have a back end partner like IBM or Oracle. There would seem to be a growing fear among new media firms that they will be seen as one-sided digital design firms. Wall Street analysts have been critical of such ‘cool’ design firms and this has hurt their market capitalisation.

Among the large American firms, Razorfish seems to have suffered most from such labelling. To avoid such labelling they have re-titled their money losing content site as RSUB (Razorfish Subnetwork) and purchased a technology company, the Boston-based I-Cube for $1.2 billion in autumn 1999 (St. John 2000: 146). Another company that has always been linked to cool design is Deepend, established in 1994 and for many years London’s largest fully British-owned new media firm. In 2000 they have, like many others, vastly transformed their site. Until then it was a content site. Then it foregrounded more sober Internet solutions. This shift however came too late. For the year 2000 Deepend reported revenues of nearly £10 million. In September 2001 the company was put into liquidation with a loss of 180 jobs.

In the first instance a cool, creative site can attract clients. But once a firm is established, sobriety and functionality are central in being seen to be ‘serious’ by clients. This is important for market capitalisation for firms that have had IPOs. The phenomenon is not dissimilar to the advertising sector in Britain. Early in their history, London ad firms typically come to the attention of clients through winning competitions for cool advertising content. As a firm matures, however, efficiency and not the creative but the business side of advertising becomes the salient in winning and keeping accounts (Vermehren 2000).

It is in this context that we can understand, for example, the merger of US Web in March 2000 with Whittman-Hart to become marchFIRST. In the last few years US Web has been one of the worlds largest new media firm, identifying themselves as an ‘internet professional services company’ (Lord 1998). Their assumption is that Web media are available on not just desktop computers, but interactive TV, mobile phones and Personal Digital Assistants (PDA). Whittman-Hart, for their part, have specialised in business system integrations, beginning in 1984 as a service for IBM mid-range computers, and specialising increasingly in e-business applications up until the merger. MarchFIRST have 9400 employees dwarfing other firms in the sector. Three former executives from Novell founded US Web/CKS in 1995. Novell had been the world’s leading software developer for corporate networks, its NetWare operating system, possessing a 70 per cent market share. The Chicago based US Web has a major focus on ‘business to consumer marketing’ and ‘brand building’. Its 1999 revenues were $1.13 billion. Their expectations are that the ‘e-commerce services market’ in North America alone should be worth $80 billion by 2003 (www.usweb.com). The new media industry has thus had a rapid backwards march towards the back end, towards communications solutions.

Interactive Communications Solutions

All this said, the sector still divides between firms which emphasise the front end and those that emphasise back end services: between firms that are closer to technology, Intranets, B2B (business-to-business) and e-commerce solutions and those somehow closer to advertising, design and brand-building. Razorfish is clearly one of the latter. Even more so is AMX Studios. Razorfish's mission (statement) is to 'create user experience'. This foregrounds brand experience though neither of the company's founders comes from an advertising background. Yet they are somehow as much a new media company as an 'Internet professional services company'. They have a content site. They have an extraordinarily large number of media sector clients. Their roster of media clients is longer than their industry and financial sector clients taken together. Like so many sector firms, the Razorfish focus is branding and e-commerce: the idea is to give client's potential consumers a cross-platform brand experience – including especially an *interactive* experience - and then offer simple e-commerce solutions to purchase the product. The same is true for AMX now. They offer 'interactive communications solutions'. In future they intend to focus on the iTV (interactive TV) market. Not by producing interactive content but by developing technological solutions for the transmission of interactive content. Thus they will position themselves between producers of iTV content and potential end users like BBC or Sky Digital.

If US *multi*media are located primarily in Los Angeles, in a strategic position in regard to old media clients, then the new media – the branding-oriented new media – can be found in all large cities, in New York's Silicon Alley, in Berlin Mitte, in London's Soho and Shoreditch, in San Francisco's 'south of market' or SOMA district and in many other cities with a strong financial sector and some corporation head offices. Hence Agency.com and Razorfish, both iconic Silicon Alley firms, engage not only in Intranet and e-commerce solutions, but heavily in branding; in interactive branding strategies. This is why firms like Agency, Iconmedialab, and Razorfish have offices in many cities. The largest of these agencies are US Web with 9600 employees and IXL with 2500. These firms don't even call themselves 'agencies'. They avoid being connected too closely to advertising, branding and old media. US Web and IXL are making an enormous effort to brand themselves not as new media firms. They are located respectively in Chicago and Atlanta. They have many offices, but they are very largely American based. They deal with a relatively homogeneous market. And they are involved less in interactive branding than e-commerce and Intranet solutions. These firms do not need to be in the sort of intense day-to-day contact with head offices as the branding-intensive agencies. Compare IXL for example with Razorfish. IXL offers a 'Partial Client List' for visitors to their site. Clearly neither these, nor Razorfish's aforementioned list tells the visitor what proportion of their billing comes from which clients. The listing of clients on web sites is partly an exercise in self-branding. Of 80 firms in IXL's list only five – The Financial Times, Sony, Warner Brothers, Turner Broadcasting and Corporation for Public Broadcasting – are readily identifiable as media firms (ixl.com/success).

British firms, on the whole, have a closer relation with advertising than their American counterparts. Often take-overs will come from ad agencies. The role that Omnicom played in bankrolling the American firms in the sector is paralleled by the by advertising firms in London. Thus a major share was acquired in NoHo - a Shoreditch company recently moved into Whitechapel -

by Ogilvie and Mather. Ogilvie and Mather are themselves a subsidiary of the British based and worldwide largest advertising firm, WPP. Since this 1998 acquisition NoHo has increased its staffing by double. This is not paralleled in the US, partly because US ad agencies have internal divisions for interactive communications. NoHo are at the moment probably the most art and design led of the larger London new media firms. They are basically still a content site. They are perceived in the field as ‘cool design house’. AMX’s site was once similar to theirs, in the early days of their work for the likes of *Dazed & Confused*. This sort of work calls them to the attention of industry professionals. It brands them as ‘cool’. NoHo’s site is an interactive feast of content. It says next to nothing about their provision of ‘interactive professional services’. NoHo is completely at the opposite end of the spectrum from IXL and US Web. These firms foreground client lists, their size, and their advanced business services status. Razorfish once attracted employees and clients through the bells and whistles of their content site. They now try to hide it. A cursory search of the site does not immediately reveal what they are actually doing.

This refocuses attention on the technology/content divide that Allen J. Scott (2000: 159) noted in his comparison of multimedia sectors in the San Francisco Bay Area and Los Angeles. Here the technology-driven Bay Area is counter posed to content-driven Los Angeles. A cursory glance at the web sites of the leading US and European firms shows that the technology-driven firms do not refer to themselves as media firms. They are clearly ‘internet professional services providers’. They focus on integrated business systems, which increasingly become Intranets, and on Internet e-commerce solutions. Allen Scott is surely right in saying that the future of the IT sector in general is mostly in location closer to clients – than to other IT sector firms. Cooke and Wells already observed this in 1991 (Cooke and Wells 1991). The point though is that the client base has changed. The main clients are no longer the media firms – hence the idea of ‘multimedia convergence’ is increasingly a misnomer. Indeed the media are often some of the most backwards among clients. Take for example the film business and the music industries. There is fear and resistance. This became particularly obvious in the court case of the main record distributors launched against Napster in 2000. The film and record industries have been happy to include digital effects in linear products. They have been less inclined to develop interactive products. In most cases they have been opposed to electronic means of distribution. The reason for this fear is simple. Digital content is hard to sell as it often can be obtained for free. So far there is only one exception: pornography, although available for free, still is the only form of digital content capable of achieving huge income streams.

In stark contrast to media firms, banking, insurance and other sectors are very attracted to interactivity. This is also for obvious reasons: their interactive communications solutions will transfer and redirect good deal of the labour towards the users/customers and towards technology itself. What has driven the success of the new media sector from 1996 until 2000 has not been established by working with old media clients but instead by the anxiety of *all* corporate head offices to develop e-strategies. These anxious corporate headquarters have developed an e-strategy of Intranet, e-commerce (including b2b) and e-branding. Intranets and e-commerce are not strictly speaking part of the world of media in the sense that branding is. Thus a good deal of the interactive communications that the sector's companies handle are neither with media clients nor do they involve media processes.

Let us return to the story of AMX Studios. By 1996 AMX had expanded to forty employees. There were major investments in equipment and in personnel. But is proved to be difficult to generate revenues from content production. The founders developed a bit of a panic about getting the business plan right. And the company spent fortunes on all sorts of consultants. The company was well into the red. AMX was ripe for a take-over. The consultants thought that AMX was trying to do too much at once: interactive television and digital video content, DVD products and back-end systems architecture. In the new media field they were positioned as a content house. One problem was that AMX has always aimed at markets of the future – e.g. iTV, broadband mobile communications, web broadcasting. This has entailed considerable investment in technology. And only part of such resource expenditure can lead to immediate revenue streams, despite increasing demand. The consultants adjudged Gary Fairfull and Simon Scott (who were seen as 'prophets' in the industry) to be moving the company into a process of diversification that is too rapid and too extensive. They left the company.

But even with a new focussed product range, AMX needed a partner, for both technological investment and to develop products whose markets were a year or two in the future. Venture capitalists came along. The directors were uninterested. A serious bid came from the advertising agency Saatchi & Saatchi. AMX had been involved with them in building a branding and e-commerce site for Tesco, one of Britain's big four supermarket chains. They agreed to design a site worth of £1m, and AMX to receive half of these billings. The new media firm were Saatchi's 'below-the-line' partner in this project. Tesco and Saatchi were very slow in bringing the project to fruition. AMX, tired of the foot-dragging, and deprived of a £0.5m income stream to which they had committed considerable resources (at this point firm revenues were at £2m/annum), got fed up and pulled out. Saatchi & Saatchi were less concerned with the below-the-line commerce site than the tens of million pounds involved in doing television and other above-the-line work for Tesco. AMX asked for compensation. Saatchi suggested instead that they purchase the smaller company. AMX could see that purchase meant also control and demurred.

The crisis however remained and a partner was still needed. Such a partner came to them, as it were, 'out of the blue'. It was a combination of the creative studios, Real Time Studios, headed by Phil Jones and Evans Scott Hunter, a direct marketing agency whose finance director was Andrew Harris (Murphy 1999). They moved AMX into the Havas group. Havas is in the world's top three advertising agencies, with annual billings of approximately $8bn. They had a majority stake in Real Time and Evans Scott Hunter. AMX Digital changed its name to AMX Studios.

In 1999 AMX moved out of Shoreditch, where Garrett had operated for sixteen years, to share premises with Real Time and Evans Scott at 7 Soho

Square. Now they were in walking distance of clients at post-production houses and near media industry watering holes such as the Groucho Club. Their re-invention as a firm focussed on entertainment-based initiatives was confirmed by the June 1999 appointments of Jack Horner, formerly of Warner Music to head their Music and Entertainment Division, and Patrick Owen Brown from Sky Digital for interactive TV projects (NMC 1999). Growing quickly again, AMX moved out of their shared offices in 2000 and into 62-65 Carnaby Street, where they will stay until the massive London Havas building is completed. Havas is a much looser group than Saatchi & Saatchi and give their constituent considerable freedom. They are cash-flow rich enough to finance experimentation. However they prefer that the smaller firm has its revenue stream guaranteed by a client. AMX may be their new media champion, potentially with access to their global network. Thus AMX is now 76 percent owned by Havas. In turn Vivendi owns 30-40 per cent of Havas' equity.

Conclusion: Content, Code and Communications

We seem to have come full circle. We have begun with the shift from Silicon Valley 'technology' to 'Silicon Alley' content. We noted Allen Scott's studies of multimedia and multimedia convergence. We have traced a shift in the late nineties to what has become an *interactive communications solutions* sector in which new media firms are now clearly business services, selling Internet communications solutions to other companies. We have outlined demarcations between content providers, IT firms, dot.coms and new media agencies. We have done this drawing on a case study of one firm in particular in the context of some evidence of change in other leading firms in the sector. We have then noted a bifurcation in the new media sector between firms that are very 'back end' and almost exclusively web consultancies and others which are more 'front end' and design oriented. An increasing proportion of work spent in new media agencies is now devoted to 'straight corporate work'. It is devoted to professional consultancy rather than to the creation of trendy web design.

In a second line of argument we have made a case for a consolidation of the industry and for a reorientation towards more traditional social and industrial relations. We observe a development within the new media field that is characterized by a movement away from a heterarchic (non-linear, flexible, open, autopoietic, disorganized) systems. In fact, AMX and many other firms started primarily on the grounds of project networks, i.e. intense but short-term and highly fluctuating collaborations. This was predominant in a period when clients heavily depended on new media firms. Recently however, the awareness of clients about Internet and new media technologies increased significantly. Furthermore, many big players in all industrial sectors have now their own new media divisions. To some extent project networks have been superseded by a growing dependency on clients and by a focus on long-term relationships with clients.

One final remark to the changing notion of 'code'. Al Scott of AMX Studios, in framing what new media are, speaks in terms of 'content', 'code' and 'communications'. Here content stands in a relationship to broadcasting similar to the way that communications relates to telecomms and code to computing. Yet *content* is at the same time the entire front-end, not just broadcasting, but advertising and design. It is 'what you see up there on the screen'. Content is front end, code is back end and communications is what brings that combination of back end and front end, of technology and culture to us as users, consumers, readers, viewers or receivers. It brings this material to us from a distance. Code is not about meaning and representation any more. 'Code' is what makes the content interactive. It is what gives it 'functionality'. Content is 'lean back'. It is emotional. The computer is primarily functional, the television mainly emotional. 'You put a computer in the equation', Alasdair Scott says, 'it gives you some functionality. TV…unless you have a processor inside your box, what you're watching is stupid'. It is functionality that makes it 'smart'.

The theme of multimedia was convergence. It was the convergence of different media or different media technologies. Multimedia was about the convergence of sound, text, graphics, still photographs, video, and hyperlinks in particular objects (e.g. CD-Roms). It opened up a whole range of possibilities to create, access, store, deliver, and consume content. New media is about a very different form of convergence. It is about the *convergence of information and communication*, of content and interactivity, of representation and of practice. In the long history of media communication and information have always been separate. Information refers to books, magazines, radio, and television. Communication refers to snail mail, telephones, mobiles (before WAP) and fax machines. New media technologies have terminated this historical split between information and communication technologies/media. New media can be understood as a *collapse of content and interactivity*. Currently the future of the new media industry is very much in the dark. Unquestionably however, the impacts of this technology will remain.

References

Benkert, W. and Michel, L (1999) ' Neue Selbständige in der Medienbranche. Ein Modellfall für den Dienstleistungssektor?', Akademie für Technikfolgenabschätzung in Baden-Württemberg, Arbeitsbericht nr. 138.

Bourdieu, P. (1993) *The Field of Cultural Production*. Cambridge: Polity Press.

Castells, M. (1989) *The Informational City*. Oxford: Blackwell.

Cooke, P. and Wells, P. (1991) 'Uneasy alliance: the spatial development of computing in communications markets', *Regional Studies*, 25, 345-54.

Creative Review (1999). November.

The Economist (2000A) 'Survey: E-Entertainment', October 7th, pp. 1-32, p.27.

The Economist (2000B) 'Special: Nokia, Finland's mobile-phone giant', October 14th, pp. 131-38.

European Commission, DGXIII (1998) ‘Multimedia Publishing and Distribution’, in Information Engineering, Projects and Perspectives 1994-1998, pp. 10-29, January.

Girard, M. and Stark, D. (2001) ‘Distributed Intelligence and Organization of Diversity in New Media Projects’, Workshop, Socio-Economics of Space, University of Bonn, April 2001.

Grabher, G. (2001) ‘Ecologies of creativity: the Village, the Group and the heterarchic organisation of the British advertising industry’, *Environment and Planning A*, vol. 33, pp. 351-74.

Grabher, G. and Stark, D. (1997) ‘Organizing diversity: evolutionary theory, network analysis and post-socialism’, in *Restructuring Networks in Post-socialism: Legacies, Linkages and Localities*. Eds. G. Grabher and D. Stark (Oxford: Oxford University Press), pp. 1-32.

International Labour Office (1998) *Multimedia convergence: Breaking the silence*. Geneva: ILO.

ISPO, Information Society web site, http://europa.eu.int/ISPO/Welcome.html

Lash, S. and Urry, J. (1994) *Economies of Signs and Space*. London: Sage.

Leisink, Peter (1998) ‘Convergence and flexibility in the media industries call for a new organizational logic of business and social actors’, pp. 24-29 of *Multimedia convergence.*

Lord, R. (1998) *Campaign*, 30 October.

Lury, C. and Lash, S. (forthcoming*) Global Culture Industry: The Mediation of Things*. Cambridge: Polity.

McRobbie, A. (1999) *In the Culture Society*. London: Routledge.

Menger, P-M. (1994) ‘ Appariement risque et capital humain: l’emploi et la carrière dans les professions artistiques’, pp. 219-238 in P.-M. Menger and J.-C. Passeron (eds.) *L’Art de la Recherche*. Paris: La Documentation francaise.

Molotch, H. (1996) ‘L.A. as Design Product: How Art Works in a Regional Economy’, pp.225-275 in Allen J. Scott Edward Soja (eds.) *The City: Los Angeles and Urban Theory at the End of the Twentieth Century*. Berkeley, CA: University of California Press.

Murphy, P. (1999) *Design Weekly*. 28 November.

NMC (1999) ‘AMX History’, July-Sep.

New Media Age (1998) Business Weekly for OnLine Advertising, Marketing and Publishing, 29 October.

Powell, W. (1996) ‘Interorganizational collaboration in the biotechnology industry’, *Journal of Institutional and Theoretical economics*, 120: 197-215.

Powell, W., Koput, K., Bowie, J. and L. Smith-Doerr (2001) ‘The spatial clustering of science and capital’, International Workshop, Socio-Economics of Space, University of Bonn, April.

Silicon Alley Reporter (9.7.2001), siliconalleydaily.com

Stark, D. (1999) ‘Heterarchy: distributed authority and organizing of diversity’, in *The Biology of Business* (ed.) J.H. Clippinger. San Francisco: Josey-Bass)., pp. 153-181

St. John, W. (2000) ‘Brattitude Adjustment’, *Wired, 8.09*, pp. 132-155, Sptember..

Saxenian, A. (1996) *Regional Advantage: Culture and Competition in Silicon Valley and Route 128*. Cambridge, Mass.: Harvard University Press.

Scott, A. (1988) *Metropolis: From the Division of Labor to Urban Form*. Berkeley: University of California Press.

Scott, A. (2000) *The Cultural Economy of Cities*. London: Sage, 2000.

Shapiro, D. et al (1992) ‘Flexible specialisation in the culture industries’, pp. 179-194 in H. Ernste and V. Meier (eds.) *Regional Development and Contemporary Industrial Response*. London: Belhaven.

Soja, E., Morales, R. and Wolff, G. (1983) ‘Urban restructuring: an analysis of social and spatial change in Los Angels’, *Economic Geography*, 59, 195-230.

Storper, M. and Christopherson, S. (1987) ‘The city as studio; the world as back lot: the impact of vertical disintegration on the location of the motion picture industry’, *Environment and Planning D: Society and Space*, 4: 305-20.

Vermehren, C. (2000) The Field of Advertising. A study in sociology. Ph.D. Thesis Cambridge University, Faculty of Social and Political Sciences.

Walters, H. (2000) ‘Profile: Heroes of the Creative Industries. Malcolm Garrett’, *Creative Review*, July, pp. 64-66.

Watson, K. (1999) *KLW Communications*.

Warnken, Jürgen (1998) ‘Information Society 2000. The German experience of multimedia convergence’, pp. 16-23 in *Multimedia convergence: Breaking the silence*. Geneva: ILO

Wittel, A. (2001) ‘Towards a Network Sociality’. *Theory, Culture, and Society*, 18(6): 51-76.

Wittel, A., Lury, C., and Lash, S. (2002) ‘Real and Virtual Connectivity: New Media in London’, in Woolgar, S. (ed.) *Virtual Society? Get Real!* Oxford: Oxford University Press.

Company Web Sites

www.agency.com

www.amxstudios.com

www.capgemini.com

www.deepend.com

www.iconmedialab.com

www.ixl.com

www.marchFIRST.com

www.noho.co.uk

www.omnicomgroup.com

www.razorfish.com

www.sapient.com

www.scient.com

www.usweb.com