The spatialisation of the digital games industry: Lessons from Ireland

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This article draws on the concept of spatialisation to better understand the development of a digital games industry on the periphery of mainland Europe, on the island of Ireland. Positioning digital games within the cultural and creative industries, we explore how global networks of production in this industry get territorialized, negotiated and shaped by local factors. Drawing upon an industry-wide survey in Ireland we found that employment has grown by 400% in the last decade but that this rate of employment growth and its concentration in large urban areas masks significant ruptures and shifts which more detailed spatial, occupational and social analysis reveals: in particular, how the state, multinational game companies, and physical and human capital interact to shape an industry which is strong in middleware, localisation and support but weak in content development. An understanding of global digital games production networks and of occupational patterns in this industry is, we believe, crucial for national and European cultural policies for the digital games industry and for the cultural and creative industries more generally.

Keywords: spatialisation; digital games; cultural and creative industries

Introduction

Digital games are a primary information product and service developed by cultural workers and aimed at final consumers. They usually enter people's homes via a range of proprietary hardware, especially since the mid-1990s with the success of the Sony PlayStation One. Since then the industry has diversified into massively multiplayer online games (MMOGs) and casual games, and most consoles have become internet-enabled. Their economic success has attracted attention from major ICT actors as well as governments looking to entice foreign direct investment. Even as the concentration in ownership of hardware manufacturers, publishers and new distribution intermediaries continues, the industry's content production networks have become increasingly distributed geographically.

In this article we attempt to engage with Pratt *et al.*'s call for a 'more spatially and socially sensitive account of the information society' (2008, p. 924). We focus on the particular factors which shape the spatialisation (Mosco 2009, p. 157, after Lefebvre 1979) of the games industry, and we explore how global informational networks of production get territorialized, negotiated and shaped by local factors, or how the 'space of flows' meets the 'space of places' (Castells 1996). We direct attention to how local and regional actors and networks interface with global actors and networks. The article explores the development of a small peripheral digital games[1] industry in Europe and asks what we can learn about shifts in the global games industry and informational production by focusing on the case of the Irish games industry during the period 2000-2009. Drawing upon an online survey and ongoing interaction with companies we found that employment has grown by 400% in the Irish games industry in the last decade despite a lack of state incentives for the industry and in the context of relatively high labour and living costs.

This rate of employment growth masks significant ruptures and shifts which more detailed spatial, occupational and social analysis reveals. We find in our research that a mix of global and local factors have shaped the spatialisation and structure of the games industry in Ireland. In this article, we focus on how the state, multinational game companies, and physical and human capital interact in particular ways to shape an industry which is strong in middleware, localisation and support but weak in content development. Small independent developers can and do exist, self-publishing in sub-sectors where the barriers to entry are lower, but their existence is precarious and often short-lived. Workers are well educated, but highly individualised, gendered and young. In short, Ireland's digital games industry has become a regional support centre for the European online games market and a specialist centre for middleware development aimed at North American producers. Both are highly dependent on mobile and immigrant labour. This case, we believe, has significant implications for national and European cultural policies for the digital games industry and for the cultural and creative industries more generally.

Digital games as a global cultural industry

The concept of the 'culture industry' has a lineage to the early twentieth century with the work of the Frankfurt School (Adorno and Horkheimer 1979). Through recent decades the concept has been broadened in scope and in application by a number of scholars (e.g., Miége 1989, Towse 2003, Hesmondhalgh 2007). Underpinning the concept has been a concern about the strengthening relationship between industrial processes and cultural production, and the social implications of this for the creation, circulation and consumption of symbolic texts. In the 1980s and 1990s the cultural industries became the subject of increasing attention from the state and policy-makers through the frame of the 'creative industries'. A key text in the transition of discourse from cultural to creative industries was the report of the UK 'Creative Industries Task Force', published in 1998 on the back of New Labour's election. Defining the creative industries as having 'their origin in individual creativity, skill, and talent and which have a potential for wealth and job creation through the generation and exploitation of intellectual property', the Task Force identified 13 sub-sectors that fitted their definition, one of which was digital games (Preston *et al.* 2009, p. 996).

The creative industries label, as Cunningham highlights, 'has had a remarkable take-up across many parts of the world', including the wider EU, the USA, Australia and, in Asia, Hong Kong, Singapore, Taiwan and South Korea (Cunningham 2009, p. 375). Despite its popularity at policy-level, the creative industries label has received scholarly critique for its vague conceptualisation of creativity, the seemingly arbitrary inclusion of industries, the privileging of technology-intensive sectors and knowledge, and for neglecting the structural and organisational constraints on individual 'creative' workers (Preston *et al.* 2009, Garnham 2005, 2000, Hesmondhalgh 2007, Cunningham 2009, Banks and O'Connor 2009). Cunningham, however, suggests that a more nuanced definition of what constitutes the creative industries may be emerging in policy-circles, in which emphasis is shifting from industry size and growth rates to the value of human capital and creative inputs amid a 'clearer differentiation of economic and cultural goals' (Cunningham 2009, p. 383). A recent European Commission green paper, for example, uses the acronym 'CCI' to encompass both

cultural and creative industries (EC 2010). Meanwhile, reports by Irish industrial policy agency Forfás echoed the creative industries discourse without formally adopting the terminology (Forfás 2002, 2006).

In Irish and European policy documents digital games have been identified as being among the creative industries with potential for significant wealth and employment creation. Arguably, creative industries policies were quicker to embrace digital games than was the cultural industries tradition. Initial definitions of the creative industries, which privileged commercial and profit driven production, were suited to the inclusion of digital games. By contrast, cultural industries policies have tended to be associated with studies of the arts and traditional media sectors, and digital games have yet to be accorded the legitimacy in certain academic and policy circles that literature, film and music enjoy as symbolic and cultural texts.

Elsewhere we have argued that digital games, particularly the content development, publishing and distribution functions, can be conceptualised as a cultural industry (Kerr 2006, p. 45). While the creative industries concept tends to focus attention on intellectual property generation, technology, individual creativity and regional regeneration, the cultural industries approach brings with it a focus on collaborative creation, the high costs and risk of content development, the relatively low costs but important role of publishing/distribution and of non-technical forms of knowledge (Preston 2001, Preston *et al.* 2009, Hesmondhalgh 2002, 2007). The coming together of these concepts and sectors within contemporary policy discussions (EC 2010), and the joining of the more artistic, non-commercial and collaborative dimensions with the intellectual property, commercial and technology focus better covers for us the range of activities that the digital games industry embraces. We believe that cultural and industrial policies for the digital games industry need to recognise its cultural as well as its economic dimensions.

No account of commercial cultural industries can ignore the international dimension of their activities and their flows across international borders. The broader discourses and myths of informational capitalism argue for the transformation of space and indeed often for its

'annihilation' through new communication and transport technologies. For example, Giddens (1981) argues that we can observe increasing time-space distanciation, or separation, where time and space have become independent of their local contexts, while Harvey argues for time-space compression based on increased control by capital over knowledge workers and states (1993, 1989). Castells notes that space has become less important in the context of a 'space of flows' and indeed that capital and labour exist in different spaces and times (1996, p. 475). For him, networks have no boundaries but are increasingly connecting major nodes or landing points of advanced services (Castells 2010). All appear to argue for the 'disembedding' of the global economy and the informational workplace from local contexts, even if they are aware that this process is uneven (Kerr and Ó'Riain 2009).

However, economic geographers such as Saxenian (1991) have pointed to the importance of the local context, and there is a history of work on national and regional systems of innovation (Lundvall 1992) and the importance of clusters (Porter 1998a, 1998b, Asheim *et al.* 2007). In studies of cultural and creative industries there has been a renewed interest in the increased 'sensitivity' to spatial and locational factors (Pratt *et al.* 2008, Pratt 2004, Lash and Urry 1994, Jeffcutt 2004) which have fed into state policy interventions and locational competition. Others have pointed to the development of geo-cultural and geo-linguistic markets (see Hesmondhalgh 2002 for discussion). Ó'Riain (2006) argues that we are seeing a paradox between those who argue that global capital leads to local fragmentation and loss of autonomy and those who argue that strong social relations and embeddedness are essential to capitalist exchange. Drawing upon a case-study of software workers in a branch plant of a multinational company in Ireland he argues that we are seeing the 'intensification', mobilisation and politicisation of time and space in individual and corporate action.

The regional and local aspects of global production are also examined by Miller et al. (2005) in terms of the 'new industrial division of cultural labour' (NICL). These scholars argue that there is an increasing differentiation and globalisation of cultural labour in film, television and animation but that Hollywood studios still largely control global cinema production and exhibition (particularly in European markets) and that they receive assistance from national

governments in order to achieve this. Hollywood's dominant position is achieved through relocating productions outside the US, through promotion and defence of strict copyright regimes and through national co-production schemes. Miller et al's critical focus on cultural labour, their questioning of the impact of cultural policies on local industry and their exploration of the influence of colonial linkages on the location of runaway and co-production is a welcome counterpoint to the often overly optimistic cultural/creative policies and industry discourses. However, their work has been critiqued for its US-centric focus and for its tendency to assume a lack of labour agency. Lobato, for example, argues that NICL, 'tells us less about forms of [film] production which are not routed through the United States' (2008: 217). Banks, in a similar vein, questions the tendency of NICL to position the geography of cultural production as a singular, integrated, neo-liberal and de-localised space (2007: 126). While we are sympathetic to these critiques many US based game publishers, who are in some cases also major film studios, are adapting some of the film industry's policies in relation to offshoring, outsourcing and copyright. Further, certain national governments are facilitating the movement of games production and labour through cultural, industrial and other policies.

In this article we attempt to build on the recent turn to the spatial in sociology and political economy of the media. For example, Mosco builds upon Henri Lefebvre's concept of spatialisation, meaning 'the process of overcoming constraints of space and time in social life' (2009, p. 157). For Mosco, the key aspects are the uneven spread and concentration of communication corporations and their networks across space and the role of the state in this process. However, Lefebvre was concerned with more than corporations and the state, stressing the need to attend to spatial practices, representations of space (i.e., maps) and spaces of representation (i.e., individual lived experiences). For Lefebvre, we must go beyond physical definitions of space and attend to the social, cultural and everyday lived experiences of people in space. While this paper cannot hope to attend to all aspects of spatialisation, such work points to the continued importance of local contingencies, the need to examine the perspectives of workers and the need to understand the social and cultural factors as well as

the political and economic factors influencing processes of spatialisation in the cultural and creative industries.

Regional and spatial studies of the global games industry

Most academic studies of the games industry have focussed on developments in North America and Asia, including studies by Nick Dyer-Witheford and colleagues on Canada (Kline *et al.* 2003), as well as work on the USA (Williams 2002, Tschang 2005), Latin America (Lugo *et al.* 2002), South Korea (Dal Yong and Chee 2008), Japan (Aoyama and Izushi 2003), and China (Yong and Downing 2008). Fewer academics have written about European countries, apart from the UK (Cornford *et al.* 2000, Dovey and Kennedy 2006, Johns 2006, Grantham and Kaplinsky 2005). A recent European-funded policy report explores the development of Quebec in Canada over the past ten years into the fifth largest development cluster and examines the state supports provided by the governments in Canada, South Korea and the Nordic countries, particularly Norway and Iceland, to their games industries (De Prato 2010, p. 1561).

An exception is Johns (2006) who explores how finance, uneven power relations between actors in the production network, and cultural embeddedness contribute to the creation of 'regional games software production networks'. She points out that games hardware has differential organisational forms and geographies compared to software, and with regard to the latter she argues that we can identify three bounded economic regions in the games industry, i.e., North America, Europe and Asia Pacific, whose boundaries are shaped by particular technological, economic and political factors but within which the console manufacturers play a major role. She notes that value or finance is 'spread unequally across the software production network, it is highly spatially uneven, with several key nations and cities dominating various stages of the production network' (2006, p. 21). At the time of writing the US, Japan and France dominated in terms of publishers and in development it was a similar distribution but with the UK and Canada entering the frame also. She notes that the 'causes of this concentration can be linked to the evolution of the industry, the unequal spatial

distribution of global capital and complex notions of cultural embeddedness'. For her there is a 'cultural proximity' between the US and the UK games industries as evidenced in the strong links between both games industries and the presence of American major publishers in the UK. She contrasts this with the Japanese industry, where the animation, consumer electronics and games hardware sectors facilitated the emergence of a very different video games industry.

While state supports are the most publicly discussed aspect related to the global distribution of the games industry, scholars have pointed to other aspects. Dyer-Witheford and Sharman also discuss multinational capital and labour in the Canadian industry and they argue that the 'apparent flourishing of video and computer game capital in Canada is precarious' (2005, p. 204). An earlier work on the UK noted the rise of external ownership by publishers of UK development companies during the 1990s (Cornford *et al.* 2000). They also noted the relatively widespread distribution of development between London and the South East, Liverpool/Manchester and the Edinburgh/Glasgow axis and the presence of development firms in 'outlying urban fringes' (2000, p. 101). Development companies seemed to lack an 'inclination to cluster' and the authors noted the origin of development clusters in spin-offs or in rationalisations and acquisitions. Publishers by contrast did tend to cluster in or around London and their clients, i.e., retail buyers. Cornford *et al.* conclude that while the

> globalisation of the computer and video games industry may appear to have introduced a degree of, at
> least, functional 'footlooseness' in the location of development activity, the articulation of these global
> linkages with local circumstances is a complex and contingent process. (2000, p. 106).

In the case of Britain, only Scotland has seen significant and explicit state support through the establishment of the Scottish Games Alliance, although certain regions have been active including Yorkshire and the greater Manchester/North West area.

An interesting and largely understudied aspect of the digital games industry, apart from Johns (2006) and Consalvo (2006), is the degree to which cultural and geo-linguistic barriers shape or contribute to the location of production and the circulation of both games hardware and

software between markets. It has long been acknowledged that certain genres and indeed many games produced in Japan are never localised or exported to foreign markets and that some games developed in the US and the UK do not sell well in Japan (Poole 2000, TerKeurst 2002, Edge 2004). Johns notes that Japanese games companies tend to partner with Western firms when they wish to compete internationally and that certain Japanese products are planned as Western/Japanese hybrids with significant input from Western companies, as Consalvo (2006) notes with regard to Square Enix's Final Fantasy series. Yong and Downing (2008) note that certain Western firms are attempting to glocalise their games for the Chinese market but that this requires extensive 'culturalising' of language, characters and content. However, this is not commonplace and recent research into the difficulties faced by localisation staff indicates that simultaneous shipping of games in different markets to reduce piracy is resulting in poorly localised products and significant cultural and linguistic mistakes (O'Hagan and Mangiron 2004). The complexity of producing global cultural products is made more difficult by the different regulatory structures and laws which may require the alteration of content. Finally, MMOGs and networked games introduce a range of cross-cultural communication and cultural issues that are still poorly understood both by developers and academics (Taylor 2006) and lead many games to establish different servers for different regions.

Finally, a number of studies have examined digital games from an industry and value chain perspective (Williams 2002, Kline *et al.* 2003, Grantham and Kaplinsky 2005, Kerr 2006, Bowen and Chase 2009) and it is clear that the industry produces different types of software products and services and that each poses different production challenges. One can, for example, categorise different production networks into console, personal computer, MMOGs, and mini/casual games (Kerr 2006). These production networks involve different actors, delivery platforms, retail channels and forms of content. While some companies operate across these networks, the production, financial and labour challenges faced by development companies attempting to develop a console game, or an MMOG, are quite different to the challenges one would face developing a game for a mobile phone or Facebook.

While the history and cultural embeddedness of the games industry has led to some countries and regions having particular strengths, it is clear that over the past decade other countries such as Canada, South Korea and China have introduced state interventions and emerged as significant new players, particularly in the online games industry. Further, technological innovations, particularly the development of new platforms and the availability of tools, middleware and source code, have enabled independent game companies in peripheral locations to develop projects and attempt to compete for attention and money with established players. However, it would be inaccurate to presume that there is a freely operating global market in digital games and that their development, distribution and circulation are frictionless. While development companies can take advantage of technological changes to locate in non-urban locations, other functions in the games industry such as publishing, distribution, localisation and community support need to be located in or near major urban markets. Increasingly, even development companies are locating in cities where other advantages are outweighing the locational costs (Deuze *et al.* 2007, Binark and Bayraktutan-Sütcü 2008) or where state subsidies have reduced their costs. Thus, the spatial distribution of the games industry is complex and is linked in part to the history of the games industry but more significantly to the regional structure of software production networks, as well as local and regional financial, cultural and labour markets.

The Irish games industry, 2001-2009

De Prato (2010) notes the lack of European hardware companies or publishers in Europe (apart from Ubisoft and Atari) and points to uneven strengths across Europe in middleware, mobile technologies and game development. Within Europe, the UK, France and the Nordic countries have significant development sectors. Little is known about Irish game companies at any stage of the value chain, although it is apparent from industry publications that many Irish people are employed in the UK and to a lesser extent in the North American games industry.

This article has its origins in face-to-face interviews conducted with 15 games industry and policy experts in Ireland in 2001 (Kerr 2002). More specifically it draws upon the findings of an

online survey of the Irish digital games industry conducted between June and August of 2009. The survey population was established through personal contacts and via snowballing techniques. The survey includes companies at all stages of the value chain, except retail. The survey achieved a two-thirds response rate and, in total, 21 companies on the island of Ireland participated. Ten companies failed to respond, while two companies failed to complete the survey.

According to our survey, the Irish digital games industry experienced a 400% growth in employment since 2001 when the first phase of this research and the most recent state statistics were compiled (Forfás 2002, 2004). This growth and development occurred in the context of an Irish economic boom from 2002 to 2008, and a sharp recession since then. This growth is largely due to the increased presence of multinational game companies in Ireland whose functions – online community support, technical support, and localisation – signal the growth in outsourcing, online games and the increased need for 'culturalisation' and 'support' of games for European markets over the past decade. These companies include Asian as well as American multinationals, and their functions are relatively labour intensive. However, indigenous companies, while significantly smaller employers, have also grown, most notably in middleware. Middleware companies are strongly linked into the US and Canadian development sectors where middleware is an important way to reduce production costs. The overall growth in employment in these functions masks a number of disruptions, acquisitions and company failures. We found that certain structural characteristics and constraints have persisted in the industry despite changing technological lifecycles and the altered global and local economic context.

Growth in employment and companies in the Irish games industry, 2001-2009

Ireland has been a site for foreign direct investment by games companies since the 1970s. For example, during the 1970s and up until the mid-1990s Atari[2] and later Namco manufactured game cabinets in Ireland, employing up to two hundred people and shipping into the European market. During the 1990s the Norwegian company Funcom developed PlayStation One games in Ireland. With the onset of the PlayStation2 and MMOGs Funcom closed its Irish operations and shifted its focus and resources to online developments. Most of

the staff emigrated, while some joined the burgeoning software industry. The foreign-owned companies that remained in Ireland were involved in localisation for the EMEA markets (including Microsoft and Vivendi Universal) or marketing (including Sony and Electronic Arts). Indigenous companies that had been involved in 8- and 16-bit game production developed some successful early games but none made the transition to newer platforms, and most of the staff emigrated to work in the games industry in the US or the UK.

Interviews in 2001 estimated that more than 300 people were employed in the games industry in Ireland across all sub-sectors and stages of the value chain, excluding retail. The bulk of these, 165, were employed in localisation, with another one hundred in middleware and animation services. The remainder was in content development. Forfás conducted a study on the industry in 2004 that estimated there were 400 people employed across 22 companies (2004, p. 5). At the time, the wider digital media industry in Ireland was estimated to consist of 280 companies, employing from 4,000 to 4,500 people.

According to our research, the digital games industry in Ireland expanded significantly between 2002 and 2009 in terms of employment. The 21 companies that responded to the survey employ a total of 1,277 full-time permanent employees, plus 170 contractors and 22 freelancers. This gave a total of 1,469 employees and represented growth of more than 400% in seven years. If we examine employment by occupation we find that some 900 people are employed in 'other' areas, while a further 198 are employed in quality assurance. When we examined the growth in employment in the 'other' function we found a shift in the principal areas of employment, from localisation to online community/player support. Of the balance, 104 are employed in management, 72 in programming, 59 in localisation, and a further 60 in art, design and audio. Twenty-six are employed in marketing. What is key in these figures is that most of the employment in the Irish games industry by those companies surveyed is not in programming, art or design, but rather in community support, management, quality assurance and localisation. These findings would appear to undermine the discourse of technicity which is often deployed by the industry. Notwithstanding the lack of core development in Ireland this finding points to much commonality in terms of occupations with digital content industries more generally (McNaboe 2005).

The area of most dramatic change is the growth in employment in online customer support. Online support was not even in evidence at the time of the 2001 research, and since has grown rapidly. Localisation, meanwhile, has declined by almost a half. Growth in programming, design and art jobs has increased steadily, as has employment in management and marketing, but proportionately they now represent fewer positions within the industry. Overall we are seeing a shift from localisation of 'boxed product' to support of online games, especially MMOGs, browser and mobile games.

While employment growth has increased dramatically the number of companies active in the industry has only gradually increased. While there are an increasing number of start-ups, and the survey indicates that the industry remains open to new entrants, comparing the data to the research conducted in 2001 suggests that companies have difficulty surviving beyond their start-up years. Fifteen of the 21 companies that answered the survey were founded within the last five years: three are still in their first year, while 12 are in their second to fifth year. Four companies are between six and ten years old. Only two companies are older than ten years.

Figure 1: Age of companies in the Irish digital games industry

Indigenous digital games development companies tend to be small, with fewer than 50 employees. Indeed, the majority of indigenous companies employ fewer than 15 (n=8). Foreign-owned multinationals tend to operate in different functional areas and employ greater numbers, i.e., from 30 to 50 employees, with one or two multinationals employing more than 150. A couple of newly established multinationals have fewer than ten employees. The two companies that have existed for more than ten years were foreign-owned multinationals. While the two oldest companies were foreign-owned, and operating primarily in support and localisation, the four companies in the six to ten year old category were Irish-owned and were active in middleware, content development and publishing for the mobile/web games space.

Outlining core functional areas, 13 companies (just over 60%) replied game development. A further six (30%) identified game publishing/aggregation. The remainder were involved in support and localisation (n=5), middleware (n=4), and two stated 'other' functions. Although the majority of companies are focused on game development, the presence of the multinationals and the high numbers they employ mean that most jobs in the industry are in online support and localisation. Since the conclusion of our survey, one of the foreign-owned multinationals has announced that it intends to create an additional 100 jobs in Dublin in online support and localisation, which means the proportion of employment within these functional areas of the industry is likely to increase further.

Many companies are working across multiple platforms, particularly those involved in support, localisation and middleware. Smaller, indigenous companies who are involved in game development tend to focus on PC, web and mobile platforms where there are lower barriers to entry. There are two indigenous game development companies working on console/handheld game development. PC and Mac are the most popular platforms, followed by mobile/iPhone, and then console and web-based games. Eight companies are involved in MMOGs.

Location and clustering of digital games companies in Ireland and linkages abroad

The most concentrated clustering of digital games companies is in the capital city, Dublin, with 13 companies. Of these, nine are located in Dublin city centre. Five companies are located in the south (with most in or near to Cork city), and three are in the North of Ireland (in or near to Belfast city). This pattern of distribution mirrors that of other creative and cultural industries in Ireland which are strongly clustered in the Dublin area (almost 60%), despite increasing efforts by state development agencies to encourage foreign direct investment to disperse regionally (Curran and van Egeraat 2010). The island of Ireland is divided historically into four provinces and has two states and two capitals. There are different industrial development agencies for the West of Ireland, the Irish speaking regions, for indigenous companies and

foreign direct investment, but such 'representations of space' and local boundaries have had little impact on the spatial dispersion of the Irish games industry.

Figure 2: Location of digital games companies in Ireland

The companies provide an interesting mix of responses to explain why they have located in Ireland. Availability of skilled labour is the most significant reason for almost half of the respondents and this is followed closely by an ability to attract talent, even if it is not available locally. Thus, access to a multi-lingual and an English speaking workforce is crucial given the functions which are located in Ireland. In addition, four companies cite grants and financial incentives, and one identifies links to universities. Interestingly, less than half of the companies have had financial supports from state agencies. The distribution of companies in Ireland by function and their need for skilled labour would indicate that most functions, apart from development, will locate near or in a large urban area. For some companies grants and financial incentives are important, while for only very specific types of games companies is it important to locate near to a university.

The Irish games industry is networked internationally, with offices and clients in Europe and the United States, and with a significant number of companies linking into Asia. Almost half of the companies have an office outside of Ireland, with a majority of these located in Europe, followed by the United States, and then Canada and Asia (except Japan). Two thirds of the companies have located their headquarters in Ireland. Of the third that did not, most of these (n=6) have headquarters located in the United States. Thus, the Irish games industry is strongly linked into the United States and Canada, following the pattern of the UK games industry (Johns 2006). At the same time, 86% of companies are selling into the European market (n=18), followed closely by the North American market with 67% (n=14). The Irish market, although small, is still considered an important outlet for 67% (n=14). A relatively large number of companies are selling into Asia (except Japan) at 43% (n=9), and Japan at 33% (n=7), as well as sales to Australia, Latin American and Africa.

Figure 3: Location of clients and markets of Irish digital games companies

Twelve companies signaled that they engage in outsourcing, with QA/localisation and content development the most likely areas to be outsourced. These functions tend to be outsourced to elsewhere in Europe, followed by Ireland and the UK.

The labour force

Attracting and accessing skilled labour are key influences on locating in Ireland. The average age of employees in the industry is young, with 1,328 (some 90%) being 35 years or younger. The largest age group is 26-35, with 854 employees (58%). The second largest group is 18-25, with 474 employees (32%). The group 36-45 has 109 employees (7%). Eleven employees are in the 46-55 age group. No employees are in the 56-65 age group.

Figure 4: Age profile of employees in the Irish digital games industry

Not only is the employment profile of the industry young, it is also highly gendered. Females are under-represented across the industry in general (43% of companies employ no females) and in content development functions in particular. If we look closer at the numbers of females employed we see that they constitute almost 13% of the total numbers employed. However, if we take out those involved in online community support they constitute less than 7%. Employment areas where women tend to be found are quality assurance, administration, management and localisation. Six females are employed in art, whereas only one female holds a position in programming. Without customer support, the overall percentage would be closer to the UK average for women employed in the computer games industry (4%) and much lower than the average for the broader media sector (27%), both of which have declined since the last census (Skillset 2009).

With online support and localisation functions accounting for most employment in the industry, the importance of a foreign language emerges strongly. By nationality, the largest number of employees are German (n=333), followed by Irish (n=297) and other European (n=248), i.e., not French, German, Spanish or Italian. The fourth largest nationality group is British (n=233). Other nationalities include French (n=174), Spanish (n=72), and Italian (n=64). The nationality of the workforce signals that the industry is able to take advantage of, or is to some degree a factor in, the rapid rise in emigration to Ireland over the past decade. Many people have relocated from abroad to work in different industrial sectors in Ireland and the games industry has been able to take advantage of the relative ease with which labour can move in Europe to access the multilingual skills necessary for community support and localisation jobs. However, informal interviews with companies and newspaper reports have found that highly skilled programming and technical specialists are also being hired from abroad and that even during the boom and the more recent recession companies are having problems filling certain specialised positions. Analysis of the workforce by education would indicate that a third-level qualification at degree, diploma or certificate level is the most common qualification in the Irish games industry, with masters and PhD level qualifications held by a small minority of staff. However, the industry also accommodates people without a third-level qualification.

Finally, in common with the software industry and other new media sectors, membership of international and national professional associations is low. A small number of employees are members of the International Game Development Association (IGDA). One company is a member of a local employers' interest group (the Irish Business and Employers Confederation) and one of the international Mobile Entertainment Forum. While there are local associations in digital media, internet and software, and UK-based organisations such as TIGA for independent developers, the surveyed companies did not engage with them.

Spatialisation and the Irish games industry

Our survey has indicated how technological change in the industry, particularly the shift to online and mini games, or 'the space of flows', and the growth of internationalisation and

'culturalisation' of these games by multinational game companies, has impacted upon the structure of the Irish games industry with a growth of particular functions locating in Irish urban areas to service the European, American and Asian markets, or the 'space of places'. In this section we will briefly explore the meso (regional) and micro (local) factors which have influenced this spatialisation and functional distribution.

Location

Despite local policy efforts to move up the value chain towards higher value-added forms of information labour, most of the growth in employment in the Irish games industry is based in support functions which tend to relocate to regional centres around the world to service regional markets, and are not grounded in research and development, or content/intellectual property development. This would largely follow the international spatial division of labour that Castells (1996, p. 418) has outlined and the globalisation and differentiation of cultural labour that Miller *et al.* (2005) identify. However, an interesting exception to this pattern is the success of local middleware companies. This exception points to the different market challenges faced by middleware and content companies and underlines the different national supports available.

A persistent characteristic of the Irish games industry over the past decade has been the weakness/precarity of the local content and intellectual property development companies.[3] The existence of foreign-owned game companies in Ireland, focused on online support and localisation, and the presence of a strong development industry in Britain, have not had spill-over effects in stimulating a strong indigenous digital game development industry. Where we have seen local company establishment and attempts to develop content IP in the past eight years has been in the mobile, social and casual games space. Here, companies have been attracted by the perceived lower barriers to entry and lower capital and labour requirements, although new technical, economic and social barriers have emerged as intermediaries develop. Clearly, the development and diffusion of the internet has added to this dynamic and has enabled small companies located in Ireland to self-publish and to sell internationally. However, the majority of such companies that responded to our survey were less than five

years old and only one had survived from our earlier research. Challenges remain in terms of accessing finance and distribution, and in earning sufficient revenues to survive.

Where there has been original intellectual property (IP) development in the past eight years it has been by middleware companies. Middleware companies develop products and services aimed at game development studios rather than final customers. This area of software has been able to leverage high-end technical skills and industrial and university research supports developed for the wider software industry. Three Irish companies in the past ten years have become successful in the global games industry and all have been acquired by multinationals within five years of formation: Havok, Demonware, and more recently Kore. To date all remain located in Ireland although most of their clients are in the US. These companies require highly educated (usually to postgraduate level) staff who are willing to travel to client companies, usually in the US, to integrate their software into local production processes.

While human capital is clearly highlighted by our survey findings this is not to underestimate the importance of physical capital. In the 1980s Ireland could boast a world-class telecommunications network, but the last two decades saw the privatisation of the Irish public telecommunications operator and through a lack of investment the Irish broadband network now significantly lags behind the rest of Europe. Outside of large urban areas companies and freelancers face significant issues in accessing broadband at comparable speeds to the rest of Europe. This is particularly important for online community support companies to facilitate their flows and clearly impacts the locational pattern of game companies.

Support for the cultural industries since 2001 has seen the state invest €250 million to redevelop the old Guinness brewery buildings in Dublin city into a 'Digital Hub' of digital media companies, training facilities and 'blue sky' research. Following the policy fashion for top-down cluster development to foster agglomeration effects it is interesting to note that of the 90 companies which are located in this cluster there are only three game companies: one in middleware and two offering community support services into the European market. All are owned by multinationals. It would appear that digital game companies are not in the main

attracted to co-locating in this cluster and that other factors are at play in determining their location in Dublin.

While digital game development work can theoretically be located anywhere, to get a publishing deal with a major publisher one must travel to the publishers. Most digital game development companies depend on an international publisher and/or international clients and while many have offices in the UK the increasingly concentration of publishers means that for many companies face-to-face meetings may be in the US or France. In the Irish digital games industry, suppliers, competitors, client companies (e.g., publishers, distributors, aggregators) and final users are in the main located in the US and UK markets and to a lesser extent elsewhere in Europe and Asia. It is therefore crucial for Irish digital games companies to attend trade shows such as the Game Developers Conference in the US, Game Developers Conference Europe (GDCE) in London, and Lyon Connection in France. This need to network 'face-to-face' internationally is an important aspect of the digital games industry that is particularly acute in the Irish context and is a significant cost faced by start-up companies.

However, this need for 'face-to-face' work only occurs at certain points of the production process and once a relationship has been established much development work does not need to be located near clients. Today much customer support work is done 'virtually' and increasingly outsourced. Evidence from the Irish case would suggest that 'clustering' with other games companies or media companies is not a key locational driver, although ability to attract and access talent (not necessarily locally) is. As online games become more prevalent and popular there is theoretically less need for companies to be located near their customers or publishers but increasingly what we are seeing is state-sponsored locational competition for companies driven by financial incentives and supports, e.g., Canada. Indeed, just as the internet might appear to have overcome geographical and economic barriers to entry into game content development, labour and state competition have intensified. Thus, while the industry has been identified by local and European policy-makers as being among the 'creative industries' that have the potential to drive economic growth and employment creation, our research on the spatialisation politics of the global industry would suggest that

technology alone will not be sufficient to overcome the barriers faced by small- to medium-sized companies in peripheral locations.

State supports

Within Europe, the Nordic countries, France and certain regions in the UK have introduced state supports for the games industry, especially content development. Ireland has a long history of engagement with foreign direct investment stretching back to the late 1950s. Indeed, O'Riain (2006, p. 513) has argued that Ireland was 'globalised before globalisation'. While there have been a number of reports on the games and digital content industries in Ireland the Irish state offers no specific state incentives for the games industry. Of those content companies which did exist in 2001/2002 all but one had disappeared by 2009 despite Ireland's low corporation tax of 12.5%, the state investment in a digital media cluster in Dublin, increased investment in research by the state, and the establishment of game technology courses in third level colleges (Kerr 2006).

The difficulties that Irish game companies, particularly those involved in content development, have had in securing adequate finance have been acknowledged by state agencies. A Forfás report in 2004 acknowledged the funding barriers faced by digital games development companies attempting to enter the console and PC segments of the international industry. The report noted that no progress had been made in the establishment of a digital content investment fund either by a private venture capitalist fund or public agencies. Rather than attempt to address this gap, the document concluded: 'The emerging platforms, especially mobile, present more favourable opportunities for an embryonic games industry as the barriers to entry are lower.' The document also stated: 'Middleware/enabling technology is seen as a high opportunity for Ireland' (Forfás 2004, p. 6). The message was that public agencies would not step in to address the specific challenges faced by development companies.

While the low corporation tax rate is cited by foreign multinationals as a key attraction for locating in Ireland companies need to be making a profit to take advantage of this. Similarly, there is a tax exemption for artists in Ireland but game development does not qualify. In addition, content development programmes run by the Film board and the Arts Council thus far are not open to games companies. Thus none of these state cultural or industrial policies are supporting original content development by indigenous games companies in Ireland.

Labour

Despite the blossoming of digital games courses in Ireland (there are now 30 at third level), and some companies identifying availability of talent in Ireland as an attraction, both Irish and foreign-owned development companies have found recruitment of specialised and experienced staff in the country or from elsewhere to be a significant challenge. A case in point is the decision in 2010 of middleware company Havok to locate 26 jobs in San Francisco rather than in Dublin because of a lack of locally available specialist software skills (Collins 2010).

Increasingly, foreign-owned multinational companies are becoming involved in sponsoring competitions, equipment and giving talks at third-level colleges in an attempt to attract more students and to make these courses industry relevant. However, the focus of the courses and the needs of the local industry are not always the same given that most of the courses focus on technology and generalist programming skills (e.g., Java) while industry job advertisements often specify specific programming skills (e.g., C++) and multi-lingual skills. The location of community support branch companies in the largest population centres of Dublin and Cork are clearly related to this need to attract talent and multi-lingual skills. Other types of companies rely on word of mouth, informal networks including friendships and outsourcing to address their skills needs.

An added challenge in the games industry is the need constantly to up-skill to deal with console transitions and other technological changes. Historically, companies in Ireland have had difficulty making this transition. Before a new generation console is released many larger companies receive development kits and devote full-time staff to working with the new technologies to develop both technological and content innovations. Smaller and start-up companies, however, find it much more difficult to obtain access to these development kits and to allocate human and financial capital to investigate how best to exploit the new technologies in future content innovations. Successfully securing funding to develop a digital games title or two in one console cycle is a challenge, as is surviving into the next console cycle. As in other industries, technology absorption can be problematic.

While development faces significant challenges and remains on a small scale in the Irish context, the industry shares a number of similarities with other media and cultural industries in content production and scope to offer career stability. As Murdoch argues:

> The moves towards outsourcing production, relying more on freelance labour, and assembling teams on a project-by-project basis, have combined to make careers in the cultural industries less secure and predictable…Recent evidence for the television industry suggests that there appears to be a substantial outflow [of cultural workers] in mid-career, people in their thirties and forties. (2003, p. 31).

In our survey 12 companies stated that they outsource one or more of their functions. Of these, six companies identified 'content development' as a function they outsource, while three companies outsource 'design'. (Eight companies outsource quality assurance and localisation.) Some 22 people are employed in the industry as 'freelances' in content development (and a further 170 as contractors). This is a small proportion of the overall employment level of more than 1,400, but it is a significant proportion of those employed in content development. Combined with the overall youth of the industry, the low numbers of women employed, and the lack of collective representation locally or internationally (Kerr 2011, Haines 2004), the Irish games industry reflects to a large degree the 'individualisation' and 'specialisation' of cultural work which McGuigan (2010) discusses in relation to the UK's

television industry, Gill (2002) examines in relation to new media workers and Miller *et al.* (2005) discuss in relation to film.

Concluding comments

Despite the focus on 'creative and cultural industries' in European and national policy circles the data does not exist to monitor growth or decline in employment, particularly for the newer areas of employment such as digital games[4]. Available statistics are based on incompatible surveys often conducted by consultancies rather than data collection by national statistical bodies. Our research is a contribution to discussions but is not comparable with surveys in other countries and this gap in knowledge needs to be addressed.

Our survey found that employment in the Irish games industry has grown over the past decade., Exploring the spatialisation of Ireland's digital games industry provides significant insights into the interplay of global changes in technology and industry structure with locally contingent capabilities and barriers to the space of flows. The digital games industry is relocating certain functions to regional centres around the world but is highly spatially concentrated in the Irish context. To understand this locational pattern one needs to explore the functions, occupations and profile of the work force in tandem with understanding technological and structural changes in the global games industry. Different functions cluster for different reasons in the games industry, as others have pointed out (Cornford *et al.* 2000, Johns 2006). Further, one needs to attend to Ireland's location in the EU and the Euro as well as the country's cultural and linguistic ties to North America.

State financial and infrastructural supports are clearly attractive for multinational companies and supportive of middleware game companies in Ireland but are less relevant, to date, to local game development companies. The Irish games industry has, in our opinion, suffered from a lack of understanding in policy circles of the content generation stage of the value chain and the asymmetrical power relationship between developers and publishers. Currently

both educational programmes and state industrial supports emphasise software and 'technology' driven projects while the local venture capital and non-state funding sources view games as a very risky investment. In this context it is hard to see how strong content development companies can develop in the Irish context.

Lessons can be learnt from Japan, France and the Nordic countries in terms of how the state supports content development in the games industry. The authors suggest that rather than focussing on tax credits for game companies, and further fuelling spatial competition, state agencies and educational institutions need to take seriously the interdisciplinary links between technology, art and business (Tschang 2005) in their industrial development programmes for the cultural industries. In relation to games, they need to foster inter-sectoral linkages with sectors that already have strong capabilities in the Irish context, particularly animation and software. Here we should look to the Japanese case rather than the American or British industries for lessons (Aoyama and Izushi 2003). These programmes should attend to supporting idea and prototype generation, distribution, both formal and informal targeted inter-sectoral networking, ongoing training needs, and the demographic structure of the industry.

Programmes could also build upon the multi-lingual workforce and ease of labour movement in the EU to develop a more inter-regional and cross-border set of networking supports (e.g., to certain areas in the UK, France, the Nordic countries and Iceland) to supplement the existing strong links to the US. Allied with significant broadband infrastructural investment we might be able to work towards a more sustainable, less precarious and less gendered industry. Further research into the everyday lives of workers in the Irish games industry would provide useful insights into the individual impact of the intensification of time and space in digital games companies combined with the clear lack of formal associations in this industry across different functional areas. Cultural policies might then be better able to develop supports for workers, not just companies, in this peripheral economy of Europe.

Notes

1. We will use the term digital games to include console, PC, MMOGs, and casual/mini games.

2. See Atari and Ireland at http://www.gamedevelopers.ie/features/viewfeature.php?article=45

3. While many companies stated that they were involved in content development an analysis of these companies found that they carried out most of this work in their branches outside of Ireland.

4. A recent Eurostat report on 'Cultural Statistics' points to the definitional and logistical problems. See http://ec.europa.eu/culture/key-documents/doc975_en.htm accessed 20th November 2010.

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