From Boston to Berlin:
Locating the Digital Media Industries in the Celtic Tiger

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The former Táiniste (deputy prime minister) of the Republic of Ireland stated that Ireland was closer to Boston than to Berlin in terms of government and economic culture.[1] She was, of course, primarily referring to the low corporation and income tax policies that the government has been pursuing for the past decade. In the context of a rapidly growing economy, the government's discourse focuses on competitiveness, innovation and moving up the value chain. Conceptual fashions like 'national systems of innovation' and 'industrial clusters or districts' are commonplace in policy documents. The 'creative industries' concept, by comparison, has not yet been embraced by Irish policy-makers, either in rhetoric or practice. Instead, the focus is on the 'digital media' or the 'digital content' industry defined broadly, but excluding traditional arts and crafts.

This is not to state that Irish policy-making for the so-called 'digital media industries' is without its problems. Even this terminology, in practice, conflates digital media companies from very different sectors and at different stages of the value chain. A more worrying trend is that it tends to focus attention on the underlying technology and tends to ignore or underplay other types of innovation e.g. artistic, organisational, marketing or end-user. This tendency is also evident with regard to research and development programmes which tend to value technical innovations (hardware and software), and formal research and development, more highly than other types of innovation or practice-based research and development. This issue is also evident in the conceptualisation of digital media districts.

Part of the problem relates to the received understanding of innovation which is very narrow, very focused on technology, and most commonly measured by clearly identifiable inputs and outputs. The social context of innovation, labour conditions and 'soft' inputs to innovation are less easy to identify and thus less valued. Our understanding of innovation comes in the main from studies of manufacturing companies, or public and private research laboratories, and is largely removed from the experiences of digital media companies. It is relatively recently that academics have started to study innovation in service industries, and this work has generally focused on knowledge intensive business services. Little has been done on services like the media and cultural industries.

In my previous work, I have argued that while technology is a key enabler of innovation, it is not the only driver of innovation. Indeed, a technology led approach to innovation in the content stage of the digital media value chain is far

[1] See http://www.entemp.ie/press/2000/21070.htm for the full speech.

from sufficient for success.[2] The core argument of this paper is that policies for the digital content industries must begin to value non-technical forms of innovation and its social context if these sectors are to fully realise their potential in the contemporary knowledge economy. This paper will analyse policies for the digital media industries in Ireland and explore how these policies impact upon one specific sector, the digital games industry. It concludes that current policies for these sectors need to rethink what they define as 'innovation' and 'research and development' if these sectors are to succeed in the global economy.

Policies for the Digital Content Industry in Ireland

In many countries, it has become commonplace in policy circles to attempt to measure the economic value of the arts, media and cultural industries. Ireland is no exception, and it has experienced over a decade of policy reports attempting to redefine and measure the contribution of the cultural industries to the economy.[3] This must be seen in the context of over a decade of rapid economic growth, in macro economic terms, which has translated into full employment and for the first time in over 150 years, population growth and immigration. Recent policy documents for the arts and digital media focus on measuring employment and output, and place the software and digital media industries, in particular, within the remit of the same agency. It might seem churlish to criticise government policies in this area given the contribution of the software industry to this Irish success story, but herein lies the core of the conundrum. While Ireland grew to become the second largest exporter of software in the OECD over the past ten years, both traditional and digital content companies failed to match the packaged software companies either in terms of employment or in terms of output. While the software sector attracted a high level of mobile multinational software companies and spun off a relatively strong, if smaller, indigenous Irish software sector, the same could not be said of digital media companies.

Within this context, the situation of the arts and those media industries with a pre-digital history is complex and ambiguous. There is still a system of public patronage and support in place for the fine artist, the writer and the concert musician. In addition, tax policies are in place to help Ireland compete as a location for global footloose film productions. While these policies can be traced to the particular interests of past ministers, they point to more implicit values. Film, fine art, literature, music and broadcasting are valued for both their economic and cultural value, and are supported by a range of government agencies, councils and grants. New digital media score high on economic value, but low on cultural value and, therefore, are not deserving of any specific public support. Digital media companies, whether they produce content or technology, are treated like any other software company and must compete against all other

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[2] Aphra Kerr, *Ireland in the Global Information Economy: Innovation and Multimedia 'Content' Industries*, PhD Thesis, School of Communications, Dublin: Dublin City University, 1999.

[3] Ellen Hazelkorn and Colin Murphy, 'The Cultural Economy of Dublin', in Mary Corcoran and Michel Peillon (eds) *Ireland Unbound: A Turn of the Century Chronicle*, Dublin: Institute of Public Administration, 2002, pp. 119-132.

sectors of the economy for investment capital. They also come under the aegis of the Department of Industry and Commerce rather than the Department of Arts, Sport and Tourism.

Forfás, the body responsible for industrial policy development in Ireland, and policy for the digital content industry in particular, has not fully adopted the creative industries terminology, although it has recently acknowledged its international dominance.[4] The digital content industry, however, is defined broadly enough to include digital entertainment industries, e-learning companies, companies providing online services to consumers, and companies providing online services to businesses. A key difference from the creative industries concept lies in the exclusion of traditional arts and crafts from the latter. The digital content industry definition does, however, include companies at all stages of the value chain, from content or 'symbol creators' to publishers, data storage companies and telecommunications companies. In 2002, Forfás estimated that there were a total of 282 companies in the digital content sector in Ireland, employing between 4,000 and 4,500 employees. Software, by comparison employs almost 24,000.

Academic studies of the media industries in Ireland have noted that they tend to be clustered around Dublin, are very small to medium sizes companies, and went through a period of consolidation and shake out in the late 1990s.[5] Many traditional media companies were moving into the digital sector, and the largest and most visited websites in Ireland tended to be owned by large traditional media companies. When one examines employment by occupation within a sample of these companies, the importance of authoring and design as well as sales and marketing roles becomes apparent, and while technical jobs are important, they constitute a much smaller percentage. Interviews with 23 media companies (20 Irish firms and 3 UK firms) across a range of sectors in 2002 found that:

- Media content authoring and design occupations accounted for 34% of the total jobs in these firms (292 jobs out of a total of 866).
- Management, sales and marketing occupations accounted for 20% of the total employment.
- Software development, IT and system support accounted for 15% of the total jobs.

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[4] Forfás, *A Strategy for the Digital Content Industry in Ireland*, 2002, http://www.forfas.ie/publications/digicontent02/021105_digital_content_report_s.pdf; Forfás, *Future Skills Requirements of the International Digital Media Industry: Implications for Ireland*, 2006.

[5] Aphra Kerr, *Ireland in the Global Information Economy*, 1999; Anthony Cawley, *Innovation in the Irish Digital Media Industry Between 1999 and 2002: An Emergent New 'Content' Industry*, PhD Thesis, Dublin: Department of Communications, Dublin City University, 2003; Ellen Hazelkorn, 'New Digital Technologies, Work Practices and Cultural Production in Ireland', *The Economic and Social Review* 28.3 (1997): 235-259.

- Quality control and testing roles accounted for 19% of the total.[6]

These studies demonstrate that the general alignment of the digital media sector with the software industry in the Irish context is problematic. Firstly, the digital media sector is dwarfed by the software industry in terms of employment and output. Secondly, software attracts a high level of multinational corporate relocation to Ireland, and generates a lot of positive publicity as a result. Thirdly, the multinational element of the software sector relies, in the main, on research and development carried on outside Ireland. Fourthly, the multinational and indigenous software industry is able to avail of local, European research and commercialisation funds that target technology and software developments. Fifthly, the size of the sector and its profile has a shaping effect on educational policy, particularly at the tertiary level. In comparison to the high profile, globally linked and well capitalised software sector, the Irish digital media industries in general, and the content stage of the value chain in particular, has lower levels of employment and output, does not qualify for specific national research funds, and appears to have less capacity to interface with research laboratories and universities. They are also viewed as a more risky investment than technology projects by venture capitalists.[7]

Both the creative industries and the digital content industry/value chain approaches are problematic. The former groups a diverse range of industrial sectors together, and focuses on individual talent and intellectual property as output, which bears little relation to the creative or collaborative process of innovation which occurs in many digital media companies. It also underplays creativity in other sectors of the economy. In Ireland, so far, the digital content value chain approach is applied, and while this usefully highlights the links between digital content production and other segments of the economy, it tends to ignore the specific challenges faced by content producers as compared to technology producers in terms of labour, production and distribution. And this approach is followed through by industrial innovation funds and supports that appear, in the Irish context at least, to favour technology firms. The current policy framework in Ireland supports traditional arts and media on the one hand, and new software industries on the other, but new media producers specialising in content production have suffered. Of course, the national policy context is not the only factor at play here, but in the context of this paper, it is crucially important for this sector. Later, we will briefly explore the impact of these policies on the structure of the Irish digital games industry.[8]

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[6] Paschal Preston, Anthony Cawley and Aphra Kerr, 'Skills Requirements of the Digital Content Industry in Ireland', unpublished draft research report, Dublin, Ireland: FAS Skills Labour Market Research Unit, 2003.

[7] McNaboe, Joane. *Skills Requirements of the Digital Content Industry in Ireland: Phase 1*, Dublin: FAS, STeM, Dublin City University and the Expert Group on Future Skills Needs, 2005, http://www.skillsireland.ie/press/reports/pdf/egfsn0502_Digital_Content_Industry_Skills%20Report.pdf.

[8] Aphra Kerr and Anthony Cawley. 'Snakes and Ladders: A System of Innovation Analysis of Ireland's Games Industry', forthcoming in Jason Rutter and Jo Bryce (eds) *Digital Game Industries: Work, Knowledge and Consumption*, Jason Rutter and Jo Bryce, London: Ashgate.

Digital Hubs and Clusters

While Irish policy-makers have been slow to reorganise industrial policy and departments in line with the creative industry discourse, a related 'policy fashion has taken root around the idea that digital media industries can play an important role in terms of urban regeneration. European, national and regional industrial policy has increasingly adopted the language of 'creative clusters' in an attempt to regenerate old industrial centres. 'Creative clusters' are geographically proximate groups of digital media companies whose location in proximity to each other and local universities are believed to generate positive spillover effects or localised externalities. This policy approach draws upon Porter's 'The Competitive Advantage of Nations', as well as more recent work within innovation studies and institutional economics on regional systems of innovation. The *MyCreativity* conference held in Amsterdam in 2006 demonstrated just how widespread these policies have become in Europe with speakers from Madrid, Barcelona, Rotterdam, Basel, Helsinki, Berlin and London.[9] Yet for all the ambitions of these policy-driven top-down regeneration schemes, it was apparent from these conference presentations that they are deeply problematic. Many regeneration projects mean massive public investment in infrastructure and private redevelopment of property, leading to rising real estate costs and the relocation of existing occupants. Indeed, much more attention is needed to explore where the benefits from such redevelopments flow.

There have been three examples of such projects in Ireland to date: Temple Bar, the Digital Hub/Liberties projects in Dublin and the Digital Media Project (MIDAS) which runs in a corridor from Belfast in Northern Ireland to Dundalk in the Republic. None of these projects have been subject to independent academic analysis to date, but recent investigations by public spending committees point to a high level of waste of public funds in the Digital Hub/Liberties project in particular. Investigate journalism has noted the destruction of many historic buildings in the case of the Temple Bar project and the replacement of actual artistic practice by mega pubs, restaurants and galleries which present commodified cultural products generated elsewhere.

The Digital Hub/Liberties project is of interest because the aim is to create a digital media industrial cluster and regenerate an old industrial area of Dublin. This project has seen the purchase of old warehouses from the Guinness company (now owned by Diageo) in a very old industrial area of Dublin called the Liberties. Initially managed by the same consultancy company involved in the Temple Bar redevelopment, responsibility was later transferred to a government controlled development authority. The initial plan for the €250 million project was to involve a public private partnership to redevelop nine acres of land with approximately 50 percent reserved for digital media businesses, one quarter for accommodation, and the rest for retail and educational use served by a high speed telecommunications infrastructure. After much delay, the first digital media companies moved into the area in 2002. The focus was on companies involved in games, e-learning, e-music and digital TV.

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[9] See http://www.networkcultures.org/mycreativity/.

A coup for the plan was an agreement that the Massachusetts Institute of Technology (MIT) Boston would become the 'anchor' tenant in the digital media industrial area around which small Irish digital media companies would cluster and benefit from 'spillovers', 'externalities' and 'technology transfer'. Established in 2001, Media Lab Europe (MLE) at one point had 66 researchers and students involved in 'blue sky' research in areas like palpable machines and sensory interaction. While corporate funding was meant to fund 80 percent of the €130 million budget for the first ten years, this level of private funding never materialised. Newspaper reports around the time quoted various spokespeople speaking about the advantages of clustering based on the Silicon Valley model and noting "it is not just a property play, it's about people".[10] Given that the first companies did not move into the area until one year after MLE was established, and the lab was already in financial trouble, this local clustering effect failed to take hold.

In February 2005, MLE officially closed after numerous management shake-ups and disagreement between the Irish government and MIT over how to fund and run the lab. In particular, the Irish government was dismayed at the lack of private fundraising by MLE and its unwillingness to adjust its 'non-directed research' strategy towards a more 'commercially driven' research model after the dot-com slowdown. Further, a consultant's review of the project described the labs outputs as 'dismal'. These outputs included 12 patents and 24 publications in internationally peer reviewed journals over a period of four years.[11] MLE disputes these figures. Links were established with local universities, but only after the government launched a specific research programme for collaboration with MLE and made a further €1.25million available. Overall, the government invested €35.3 million in the failed project and made available a building worth €22.2 million for a nominal rent. By comparison, MLE raised €4.5 million approx. in funding from private sources. While the project generated a lot of positive publicity, and was used as a marketing tool to attract foreign direct investment to Ireland, the project largely failed in terms of its clustering and development of original intellectual property aims. It also failed to become embedded in the local context.

Meanwhile, the larger 'Digital Hub' project continued, but by 2005 the much-vaunted public private partnership model was reported to be under reconsideration.[12] While the district attracted both indigenous and foreign-owned digital media companies, the project failed to put in place a property development deal fast enough, and some companies were housed in prefabricated buildings as a result. The development of a state of the art digital learning centre for the local community has also been delayed. Today, the district has over 70 'digital media' companies, variously defined, but MLE has produced little to no demonstrable impact on the local companies or the local community, and seven

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[10] Jamie Smyth, 'Digital Hub Eventually Starts Rolling', *The Irish Times*, November 8, 2002.

[11] Committee of Public Accounts. *First Interim Report for 2004. (Hearings of the Committee for Oct. 2005 to July 2006) Media Lab Europe*, (2007) Dail Eireann.

[12] Jamie Smyth, 'Digital Hub Boss Says Project Still Coming to Town', *The Irish Times*, March 11, 2005.

of the nine acres are still not occupied.[13] A new development plan was launched in 2007, and will involve a 'community public private partnership' to develop a 'digital quarter' and 'centre of excellence' in digital media research and enterprise. The government also proposed to replace MLE with a national digital media research centre.

Interestingly, these clustering/hub projects were undertaken despite the conclusion by Irish academics that industrial clusters were not the most appropriate industrial policy to apply in a small open economy like Irelands.[14] This may be even more pertinent given that many media companies are sole-traders or micro-enterprises, and may encounter specific difficulties either investing in research and development themselves, or benefiting from ideas developed in research centres like MLE. As Rosalind Gill notes in her work on freelance new media workers, many face difficulties maintaining and updating their skills and knowledge of the latest technologies.[15] Paul Jeffcutt examined the creative industries in Northern Ireland and found that despite their designation as creative, the creative industries are not more or less (in principle) creative than other industries. He argues there is much variation and there is a need for empirical analysis of the industries in question.[16]

While there is evidence to suggest that particular companies in certain contexts may benefit from clustering, there is also evidence to suggest that top-down initiatives like the MLE project rarely work, and that more organic spin-offs from universities and companies are more likely to be embedded in local networks and become durable. The lessons from the Digital Hub project so far would suggest that both clustering and public private partnerships are far from straightforward or proven strategies for developing intellectual property and company growth in the digital media sector, let alone community regeneration. While clearly external factors played a role in the demise of MLE, the imbalance between public and private investment in the project was quite staggering, and the lack of linkages between MLE and geographically proximate companies was plainly evident. More detailed research is needed to explore the organic relationships and dependencies that may develop between the 70 companies who are still co-located in this area of Dublin and the wider community.

Overall, policy for the digital media/content industry in Ireland is driven by a focus on technology, either hardware or software, and a focus on direct foreign investment. Digital content is largely seen in the same terms as software, but the differences between software companies and digital media companies in terms of their production processes, innovation processes, organisational and reward

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[13] See http://www.thedigitalhub.com/

[14] Leo van Grunsven and Chris Van Egeraat, 'Achievements of the Industrial 'High-Road' and Clustering Strategies in Singapore and Their Relevance to European Peripheral Economies', *European Planning Studies* 7.2 (1999): 145-173.

[15] Rosalind Gill, 'Cool, Creative and Egalitarian? Exploring Gender in Project-Based New Media Work in Europe', *Information, Communication and Society* 5.1 (2002): 70-89.

[16] Paul Jeffcutt, 'Knowledge Relationships and Transactions in a Cultural Economy: Analysing the Creative Industries Ecosystem', *Media International Australia: Incorporating Culture and Policy*, 112 (2004): 67-82.

structures are largely ignored. This is before one considers the specifics of international production and distribution networks. Attempts to address the lack of capital available for digital media companies have so far failed, and the main policy initiative in this area remains the Digital Hub project. The overall focus on technology and on creating a 'digital district' is, I would argue, undermining other forms of innovation as we will see from a short examination of the Irish digital games industry.

Lessons from the Digital Games Industry

While technology is clearly an important driver of change in the digital games industry, both in terms of hardware and software, empirical analysis of the development of games, the key roles and skills involved in the development team, and their marketing and distribution, again highlights the importance of non-technical knowledge inputs and occupations to the process. These aspects are complicated even further by different regulatory, funding and consumption environments.

Elsewhere, I have described the various roles involved in the game production process, with the production team including producers, artists, designers, modellers, animators, scriptwriters, audio designers and programmers.[17] This team is often supplemented towards the end of production by a quality assurance and testing team. Generic design and programming skills must be adapted to particular platforms, and thus experience on previous titles and an ability to work in a team, rather than formal educational qualifications, are key to obtaining a publishing deal. Kline et al. point out that "game development… requires a synthesis of narrative, aesthetic, and technological skills".[18] The design and development process is collaborative, takes place in a studio and can take one-two years for a high end title.

The digital games industry can be divided into four content segments: console, standard personal computer, massively multiplayer online games and casual games. Each segment is structured differently, and companies within each segment have different production cultures and routes to market. These four segments produce content and are supported in the games industry by a range of publishing, distribution, retail, middleware and hardware companies. In order to support innovation in this industry, policy-makers need to attend not only to the range of companies involved in the value chain, but also to differences between the content segment of the chain. A key distinction between the segments is the fact that the console sector is highly concentrated with a small number of global companies (e.g. Microsoft, Sony and Nintendo), essentially controlling access to the key distribution and retail channels. While this is the largest market segment in terms of sales, it also has the highest barriers to entry for content development companies.

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[17] Aphra Kerr, *The Business and Culture of Digital Games: Gamework/Gameplay*, London: Sage, 2006.

[18] Stephen Kline, Nick Dyer-Witheford and Greig de Peuter, *Digital Play: The Interaction of Technology, Culture, and Marketing*, Montreal: McGill-Queen's University Press, 2003, p. 199.

A study of the games industry in Ireland found that no indigenous Irish companies had successfully developed a game in the console and PC segments of the market.[19] While companies in many countries face difficulties entering this market segment, Irish companies would appear to face particular difficulties. Face to face interviews with Irish game companies found that while they have traditionally been strong technically, they tend to lack creative and business skills and operate in an environment which views content innovations as a risky investment. Thus, in the context of an environment which has seen ten years of rapid economic growth, particularly in the software industries, no Irish games company has succeeded in bringing a console or PC game to market, despite numerous attempts. At the same time, Ireland has successfully developed a number of middleware companies (i.e. who develop software that game development companies can use) and has grown a number of content developers targeting the mobile and casual games sectors where creativity, design expertise and entry barriers are lower.

When one examines the structure of the global games industry in general, one is presented with an industry where both hardware and software innovation is a key driver of change, particularly in the console segment where every four years or so a new generation of platforms require content developers to adapt, and in most cases radically change their production and design processes. Harnessing a new technology is, however, far from straightforward, and as Gallagher and Park point out, technological innovation has historically been a necessary, but not sufficient, factor for success in the digital games industry.[20] Overall, the key trends in the global games industry are towards greater concentration and conglomeration of publishing and distribution capabilities, increased licensing of intellectual property from real world and other media resources, and a decrease in the production of independent, indie and original game ideas. In other words, when one examines the top selling console games in the UK and US markets over the past ten years, there is an increasing trend towards sequels, multi-platform licenses and derivative game ideas.[21] There is a widespread fear that such trends will have a negative impact on the industry's overall long-term growth.

Radical content innovations tend to come from independent game developers, end users and modders rather from within the core industry. Thus the best selling PC game of all time, *The Sims*, designed by Will Wright and his then independent company Maxis, failed for quite some time to get a publishing deal because publishers felt that there would be no market for the game. Similarly, *Grand Theft Auto* was developed by an independent game studio in

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[19] Aphra Kerr, 'Loading. Please Wait. Ireland and the Global Games Industry', Dublin, STeM Working Paper No. 1, Dublin City University, 2002.

[20] Scott Gallagher and Seung Ho Park, 'Innovation and Competition in Standard-Based Industries: A Historical Analysis of the US Home Video Game Market', *IEEE Transactions on Engineering Management* 49.1 (2002): 67-82.

[21] Aphra Kerr and Roddy Flynn, 'Revisiting Globalisation through the Movie and Digital Games Industries', *Convergence: The International Journal of Research into New Media Technologies*, 9.1 (2003): 91-113.

Scotland. What these stories have in common is that the original game ideas went on to become multi-platform franchises, and the independent game companies themselves were bought out by multinational publishing houses. Interestingly, these game ideas all developed in the PC market, which is often the launching pad for new ideas that are later taken up by the more conglomerated and consolidated console segment. First Person Shooters as a genre, for example, developed in the early 1990s on PCs. One of the first successful titles, *Half Life*, was developed by an independent company, Valve, which was then further developed by a modder whose game was subsequently launched by Valve as the team play modification *Counterstrike*. These examples are more the exception than the rule, and demonstrate the importance of small independent companies and game players as producers of innovative ideas and the reliance of these sources on intellectual property deals with multinational publishing and distribution companies in order to reach key markets.

A further barrier to innovation would appear to be labour conditions within the industry. Studies of working conditions, production pipelines and careers in the games industry talk of 'passionate pay slaves' and 'free networked labour'.[22] They point to the lack of freedom development houses have to create original intellectual property and to get that property to market, particularly in the console segment. They highlight the exploitation of workers coming up to crunch time, the lack of credit given to workers on game packaging and in terms of acknowledging individual input. Overall, both freelance and contract developers in the games industry, particularly the console segment of the industry (the most lucrative and largest), are largely involved in underpaid creative work for which they are given little credit and from which they receive little to none of the royalties. The industry is dominated by young unmarried white males with little representation of women and minorities. Meanwhile, modders and fans are given tools to develop and improve games, but are carefully regulated and managed so that they do not exploit their creations.

Thus in the games industry, we see that technology is an important input into the innovation process, but that the development of new content crucially depends on the global structure of the industry (particularly the oligopoly in the console segment), on legal frameworks, (especially intellectual property laws) and on the creative input of independents and modders. Independent game companies, however, require significant capital to enable them to produce a game demo to pitch to publishers, and this would appear to be one of the key stumbling blocks in the Irish situation. Further, the focus by Irish games companies on technical, rather than creative and design skills, would also appear to be a significant issue. While technology driven innovations are important in many industrial sectors, in the digital media industry, the creative content idea and business skills are at least as significant.

This point is emphasised in a case study of product development and localisation in a multinational digital media company. In this company, product

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[22] Greg de Peuter and Nick Dyer-Witheford, 'A Playful Multitude? Mobilising and Counter-Mobilising Immaterial Game Labour', *Fibreculture Journal* 5 (2005), http://journal.fibreculture.org/issue5/depeuter_dyerwitheford.html.

innovation was technology driven rather than market driven.[23] Company strategy meant that new products had to exploit the latest technologies regardless of the market penetration of broadband or high-end computers. Further, content was highly culturally specific and not localised for particular markets. Cultural differences and taste differences between markets were largely ignored. Over the period of this study, the product had to be redesigned and relaunched three times, and in the end, the company developed a more decentralised user and market orientated content innovation strategy and scaled back its technological ambitions. This case study found that company strategy was technology driven, and it was only when they started to pay attention to design and market specificities that the application began to make money outside its home market.

Over the past two decades in Ireland, industrial development policy has favoured multinational companies, and companies involved in technical innovations to the detriment of projects focused on content innovations. The latter are often seen as too risky for both state and venture capital investors. Similarly, national industrial development priorities influence education, and while technical research projects flourish, creative and design projects struggle to survive. Despite widespread acknowledgment that digital content industries rely on a mixture of creative, technical and business skills, investment is heavily focused on technical skills and innovation. The same issues are currently emerging in Ireland in relation to the development of game development education, where courses are mainly emerging out of computer science departments, and are heavily focused on programming and infrastructure rather than design and market knowledge.

Final Thoughts

In the UK, where the concept of the creative industries was first delineated, the creative industries include the traditional media industries, computer software and craft activities like furniture making and jewellery design.[24] It is, as Paul Jeffcut points out, a rather arbitrary and unwieldy categorisation. Nevertheless, it has been taken on board at European policy level as recent documents demonstrate:

> Creative industries are knowledge and labour intensive and foster innovation: the sector is considered to have a huge potential for generation of employment and export expansion. However, according to UNCTAD, its potential is currently not realised.[25]

Why is this potential not being realised? This paper draws on case studies and interviews with Irish and British digital media companies in order to explore innovation in digital media companies and the impact of actual industrial and

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[23] Aphra Kerr, 'Media Diversity and Cultural Identities: The Development of Multimedia Content in Ireland', *New Media and Society* 2.3 (2000): 286-312.

[24] David Hesmondhalgh, *The Cultural Industries*, London: Sage, 2002.

[25] Carmen Marcus, *Future of Creative Industries: Implications for Research Policy*, Brussels: European Commission, 2005, http://cordis.europa.eu/foresight/working.htm.

research policies on digital media companies. The results would suggest that while digital technologies offer the potential for creative enterprises to operate on a global or regional scale, the structure of many digital media industries means that digital media companies are often very much focused on the local, and they depend on selling their intellectual property rights to a multinational publisher if they wish to move beyond this immediate context. Localising content for different markets is often well beyond the capacity of small digital media companies. For freelancers, the situation is even more precarious. A policy focus on individual skills and talent in the creative industries belies the imbalances in power in many industries and within certain segments of industries. A focus on creativity seems to remove the focus on actual labour and working conditions, and the falling numbers of women and minorities who are able to exploit the informal social and production networks within which the digital media sector operates.

While there has been a lot of public and private discussions on strengthening IPR laws to protect 'creativity', there has been less attention paid to supporting the process of creativity and innovation in the digital media industry. Certainly, in Ireland, traditional arts and crafts based around individual skill are increasingly separated in policy terms from the software and digital media sector. While the former is valued in cultural terms and receives state patronage, the latter two are valued in economic terms and receive a rather different form of state patronage. The evidence would suggest that policies which focus on traditional concepts of innovation, research and development, technology transfer, industrial districts and tangible product innovations, may fail to support companies involved in content and intangible service innovations. Current policies do not seem to support risky content innovations to the same extent as risky technology innovations, and one must start at some stage to ask why.

In digital media companies, the innovation process draws upon a diverse range of actors and knowledge domains both internal and external to the firm, and is seldom demarcated and confined to activities within a research and development division. There are clear differences between companies involved in enabling technologies like middleware and those at the content stage of the value chain. Companies who specialise in content innovation must balance technology skills with artistic and business skills if they are to produce product innovations that succeed outside the local market. Thus traditional definitions of what constitutes research and development may not apply in a digital media company specialising in content innovations. Industrial, innovation and educational policies do not appear, however, to have really embraced the interdisciplinary nature of content innovation, and the need for these small to medium sized companies (or in some cases individual freelancers) to interface with multinational distribution and publishing companies. Measuring outputs in terms of intellectual property rights ignores the fact that many companies and freelancers sell on their IPR to global firms, or may choose to operate under open source or Creative Commons licenses. Current policies for the digital media industries in Ireland fail to capture important differences between and within

industries, while a universal policy may encourage innovation in some sectors, it may actively discourage it in others.

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