

**Innovation in the Irish digital media industry
between 1999 and 2002: an emergent new
'content' industry**

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**Innovation in the Irish digital media industry
between 1999 and 2002: an emergent new
'content' industry**

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**A thesis submitted to Dublin City University in
candidacy for the degree of Doctor of
Philosophy**

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Declaration: I hereby declare that this thesis, which I submit for the degree of Doctor of Philosophy, is my work and has not been taken from the work of others, save and to the extent that such work has been cited and acknowledged within the text.

Signed:  ID: 94070881

Date: 25th September 2003

Dedicated to my family, for their support, encouragement and love

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Abstract:

During the period of this study, digital media comprised an increasingly pervasive but still emergent medium in society. Most formal academic, industrial and governmental research into the emergence of digital media industries and innovations focused on technological and software artefacts, to the neglect of content. Such studies subscribed to a distinctly determinist conception of emergence and innovation, regarding them as essentially linear, closed processes, with digital media emerging under an autonomous momentum and causing dramatic changes to society and people's lives. The studies were, in the main, conducted at macro and meso-level, based largely on statistical analysis, and they measured the value of scientific and technical knowledge to innovation.

This thesis argues that such approaches are unsuited to the study of the content industry, which remains a distinct domain within the overall digital media sector. Content innovation is marked by important qualitative differences compared to technological innovation, e.g. it is dependent on competencies less tangible than scientific and technical knowledge. A conceptual framework sensitive to such differences is required to form a deeper understanding of the emergence of the digital content industry and the development dynamics of the innovation processes shaping its development.

In response to conceptions of closed, linear emergence of both industries and innovations, this thesis argues that emergence and innovation have been multi-dimensional, multi-directional processes, influenced by many factors (social, economic, organisational, technical) at many levels.

The conceptual framework for this study draws on theories and concepts from a number of disciplinary fields. It draws on those traditionally applied to the study of technological innovation within mature industries, and adapted them to the study of content innovation within an early emerging industry. The study seeks to draw on and integrate insights drawn from: a) recent systems of innovation literature, b) science/technology and society studies field (e.g., debates over social shaping and technological determinist theories), as well as c) those drawn from the more familiar communication and media studies field.

The empirical aspects of the research have aimed to monitor, describe and analyse rapidly changing developments in this emergent industry since the late 1990s. The study addresses the key trends in the emerging industry at macro, meso and micro-levels. Part of the study involves an industrial-level analysis in an attempt to better map and understand the unfolding strategies and trends with particular attention to the Irish context. This research project also comprised detailed case studies of the dynamics of innovation within a number of individual digital media companies.

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Chapter 1: Introduction

Chapter 1: Introduction

1.0: Introduction

The aim of this thesis is to examine the emergence of Ireland's innovative new digital media content industry. The empirical research into the emergent industry was undertaken at three levels: macro-level (national system of innovation), meso-level (industrial system of innovation), and micro-level (individual digital media content companies)¹. This multi-level approach allows me to map and measure the dynamics of innovation at the various levels, and assess the influences on the emergence of the industry and the development of digital media content. The thesis adopts a holistic approach to its conceptual framework: that the emergence of the industry and innovations within it are essentially open processes, subject to many influences at many levels. The approach allows the research to be sensitive to how the dynamics of innovation at the micro-level (within companies) influence trends at the meso and macro-levels. It also examines how trends at the meso and macro-levels influence innovation at the micro-level.

This thesis regards innovation and the emergence of the digital media content industry as multi-dimensional, multi-directional processes. This contrasts to the dominant, technology-centred theories of innovative development, which regard innovation as a closed, linear process (Toffler, 1970, 1990a; McLuhan, 1962, 1967, 1987; Negroponte, 1995; Kelly, 1999). The literature review chapters will contain an elaborated description of how the conceptual framework differs from technology-centred accounts of innovation.

¹ The concepts of national and industrial system of innovations will be examined in greater detail in the literature review chapters.

1.1: Justification for research

When I began my research in late 1999, digital media was an emerging medium which was becoming increasingly pervasive in Irish society². A lot of hype has surrounded the emergence of digital media, with a number of commentators pronouncing its potential to transform society for the better (Negroponte, 1995; Kelly, 1999). Most of these pronouncements are made from a technological determinist perspective, and are subjected to little critical analysis, especially in the mainstream media. They argue that digital media technologies (or information communications technologies (ICTs), as they are conceptualised in such works) are emerging under an autonomous momentum and having significant impacts on society. However, little attention has been directed to how the content of digital media is emerging and what are the influences on it.

This thesis moves towards an understanding of how the digital media content industry, in an Irish context, is emerging, what are the influences on it, and the brakes and accelerators to its emergence. It also examines how digital media content is developed, and what influences or shapes what is delivered to end-users as content. The research is focused primarily on the production of content, but it does acknowledge the importance of the social context of consumption.

Digital media, as both an industry and a content form, is at an early stage of its emergence. Future development is uncertain, and unlike in more mature industries, digital media has yet to lock into the mass of conventions, practices or legal and industrial standards that can close off development paths or innovative options. Although, as my empirical research will demonstrate, there are early, tentative traces that this is beginning to happen, such as the propensity of certain forms of content to emerge from the Irish industry. (My research also offers a valuable insight into the early, unresolved conflicts of the industry's emergence.) Industrial structure, business models, institutional support, content production infrastructures and competencies were all emerging and changing during the course of the research, between 1999 and 2002. Often, as will be outlined in the literature review, the industry displays similar patterns of emergence to technological and traditional media industries, but also

² As an example of the increasing use of digital media in Ireland, the Central Statistics Office estimated in 2000 that 262,700 (or 20.4 percent of) Irish households had a computer connected to the Internet. Two years earlier, the figure was 5 percent.

displays differences. The thesis will argue that innovation and the emergence of a new innovative industry is a risk-laden and uncertain process. Even within the three years of the research, the industry did not emerge along a progressive, linear path: my quantitative research indicates that the industry contracted between 2001 and 2002, that unsuccessful innovators were eliminated, business models were changed, and unsuccessful forms of content innovations or artefacts were revised or withdrawn from the market. This project offers a valuable, real-time opportunity to study the early emergent industry at an economic and innovative level, and to gauge the frictional dynamics at play as actors vie with each other to influence the innovation process.

1.2: Delimitations of scope

The thesis focuses on digital media as an emergent industry and a content form, and not as a technology. If I were to draw an analogy with television, the thesis is less concerned with the development of the technological innovations of television – such as satellite and digital broadcasting, and widescreen television – than with the development of content for the medium. This includes the rules, codes and grammars that are emerging for good programming production: editing techniques, optimum camera angles, and script writing. However, the thesis does not ignore the technological innovations of digital media, because they have the ability to give content creators the freedom to experiment with more ambitious forms of content. Also, the technologies of production, as well as delivery infrastructures, place certain restrictions on the development of digital media content, as will be outlined in the empirical case-studies.

From an early stage of my work, I believed it was important to keep a sharp focus on my areas of research interest. I didn't want to stretch my theoretical or empirical scope too wide, lest I produced a loose thesis that had little of value to say about a number of subjects. Digital media content is a broad area, and I believed it was best to find a core research interest within it. In trying to keep a focus on my research interests, I excluded concerns that, in another context, would be closely related to the area of digital media content.

For instance, an area related to digital media content, but which falls outside my scope, is consumption – how users pattern their consumption of content, how they interpret the content, how they appropriate digital media technologies, and are influenced by social factors such as age, gender, education and occupation.

I focus on the production of digital media content, not its consumption. That said, consumption is a wide and important area, and it is the subject of valuable doctoral work being carried out in the STEM research centre, in Dublin City University (Hynes, 2002).

1.3: Key questions

Most formal research into the Irish digital media industry has been undertaken by government and industry, often together if one looks at the boards of many published reports (Forfas, 1996; McGovern/Enterprise Ireland, 1997; Forfas and IBEC, 1998; Forfas and IBEC, 1999; Enterprise Ireland/Digital Dividends Conference, 2001). In the main, the reports marry a progressive, radical vision of the industry's emergence to a conservative set of business and investment models, and are focused on supply side economics – that production will create markets. Their concern is mainly of digital media as a material, technological artefact, and so they do not address many of the concerns of this thesis. Therefore, I try to answer the following two key questions. Each key question has a number of subsidiary questions emanating from it. The first key question is applied to the meso-level empirical research. The second is applied to the micro-level research, although there is overlap between the two.

Key question:

1: How did Irish digital media content develop as an emergent new innovative industry between 1999 and 2002?

Subsidiary questions:

A: What is the optimum conceptual framework for examining the emergence of the industry and accounting for innovation within it?

B: What are the main influences on the emergence of the industry (at macro, meso, and micro levels)?

C: What are the main characteristics of the industry, such as company size, innovative activities, and the styles of innovation that emerge from it?

D: What was the level of innovative activity within the industry between 1999 and 2002, and did the innovative activities of companies rise, fall or change in those years?

Key question:

2: How do individual digital media content companies operate as actors within a system of innovation, and what are the dynamics and processes of innovation within those companies?

Subsidiary questions:

A: What are the influences (macro, meso, micro) on content produced within digital media companies?

B: What are the emerging organisational structures of the companies, how do the structures influence content production, and how do the origins of the companies influence their structures?

C: What are the emerging production competencies and infrastructures for digital media content? How do companies accumulate the requisite competencies and infrastructures?

D: What are the emerging business models for generating revenues from digital media content?

The first key question, and its four subsidiary questions, focuses on the meso-level of the research, the purpose of which is to gauge in general terms the emergence of the industry. I conducted the meso-level research using quantitative methodologies. A flaw common to many quantitative research studies is their tendency to make specific claims from general information. The general trends of an emerging or mature industry are not always reflected in individual companies, or the research can

be so generalised – or distant from its object of study – that important processes are missed at lower, micro-levels of the industry. Therefore, it is important to balance the general research with more focused, qualitative research.

The second key question, and its four subsidiaries, are addressed through three qualitative case-studies, all of which are companies that produce or had produced content within the industry, but have markedly different origins: one is a start-up, one has emerged from a traditional media company, and one has emerged from a telecommunications company. The key question, and its subsidiaries, are designed to tease out the particular processes of innovation within the companies, and the influences on content production and innovation within them. The traditional focus of the literature on systems of innovation and social shaping theory has been on the emergence of material, technological artefacts in mature industries. The purpose of my case-studies is to give a grounded understanding of the processes of innovation surrounding the emergence of symbolic content artefacts in an emerging industry.

1.4: Methodology and research techniques for years 1, 2 and 3

Because much of my thesis is based on empirical work, the research methodology is crucial to the quality of the results. Here, I give only a brief outline of my methodology, because it will be discussed in greater depth in chapter four. My methodology chapter will assess the strengths and weaknesses of the two main traditions in academic research: quantitative and qualitative analysis. The chapter will argue that, for my research purposes, a methodology that combines both traditions will produce the most accurate results. This will allow my work to benefit from the strengths of both approaches, and using them in combination will counter-balance many of their weaknesses.

Breakdown of research over the three years:

Year 1. October 1999 to October 2000: Literature review of social shaping theory, technological determinism and systems of innovation. Also some readings on the Information Society, the history of the emergence of traditional media, and numerous government and industry reports on the digital media industry. I began to develop the core of my conceptual framework from this early reading. I also reviewed some

literature on quantitative research methodologies before I conducted the first section of the quantitative study of the Irish digital media content industry.

Year 2, October 2000 to October 2001: I deepened my understanding of core concepts, such as systems of innovation. I refined my conceptual framework and key questions. I began my empirical work on the case-studies. I updated my quantitative study of the Irish digital media content industry, to accommodate any changes in the year since the original study was conducted. Towards the end of the year, I conducted my empirical research on the first of my qualitative case-studies, *Ireland.com*

Year 3, October 2001 to October 2002: I began the year by completing the case-study chapter on *Ireland.com*. I also completed my qualitative case-studies of *Enter* and *Rondomondo*. I updated my quantitative study of the Irish digital media content industry, for the third and final time. I wrote up my final draft of the thesis, redrafting chapters as my understanding deepened of the processes of innovation within the industry. I gained a better sense of how the traditional literature could account for such processes, what were the limitations of the literature, and how the conceptual framework of this thesis had to adapt accordingly.

1.5: Definition of key terms

A number of terms recur throughout the thesis. Some of them have precise meanings that might be misinterpreted by an ‘understood’ meaning. Therefore, to avoid confusion, it is necessary to define some of them in this section. Some terms, such as systems of innovation, are defined within the body of the thesis as they become relevant to the text. Other terms are not explicitly defined within the body of the thesis, or may need to be understood before reading it, and so will be outlined here:

1: Digital media: The term multimedia emerged to describe interactive content that combined text, audio and video. However, in academic, governmental and industrial research, the conceptualisation of multimedia has become increasingly technology-based (Pavlik, 1999), and focuses more on hardware and software capabilities than on the form of content. This thesis, attending to content production, moves beyond such a

technology-based conception of multimedia. Also, the term ‘multimedia’ retains certain connotations from the time it emerged into popular use, in the early 1990s, of being associated with early (often pre-Internet) personal computers and CD-ROMs. In modern times, interactive content that combines text, audio and video is delivered across a wide variety of platforms: Internet, CD-ROM, television, mobile phones, PDAs and games consoles. The content is delivered in digital form, an advance from, for example, the analogue delivery of traditional television content. To move beyond technology-based conceptions, and to recognise the wide variety of platforms to which content is delivered, this thesis employs the term ‘digital media’ instead of ‘multimedia’. It is taken as a given that digital media can combine ‘multi’ forms of text, video and audio, so defining this form of media by its ability to combine different forms of content is too restrictive for this thesis.

Instances where I use the general term ‘digital media’ encompasses both the technology (hardware, software, delivery infrastructures) and content. The term ‘digital media content’ applies to the content of the medium; ‘digital media technology’ applies to the technology. Only in instances where an original author, book or report refers to multimedia will the term be used.

2: Content form: This is a broad term that stresses how digital media is a new and distinct (but emerging) medium, in the sense that newspapers, television and radio are each distinct forms of media. (Distinct from each other, although in the early stages of their emergence they may borrow techniques, codes and grammars from older media, but adapt them to suit the particular needs of the format.) Such a term is necessary because of my interest in examining digital media not only as an emerging industry but also as an emerging content form.

3: Content innovation: Whereas content form is a general term to refer to digital media as a medium, content innovation is more specific. For example, if a newspaper is a content form, then tabloid or broadsheet newspapers are content innovations. They are variations on the theme, specialised adaptations of the general medium. Digital media, in general, is a content form, but more specialised adaptations, such as interactive games or interactive encyclopaedias on CD-ROM, are content innovations.

4: Digital media artefact: I could use the term digital media product here, considering the prevalence of market forces in the emerging industry. But that might give the impression that everything produced as digital media content should have commercial intent. Rather, I prefer the term artefact to describe an individual piece of digital media work. For instance, the general concept of *Enter* as an interactive magazine is a content innovation. An individual edition of *Enter*, which is sold in newsagents, is a digital media artefact.

5: Innovation: A fuller definition of innovation will be given in the literature review on systems of innovation, in chapter three. However, I believe the reader needs some sense of the term before beginning to read the main body of the thesis. Broadly speaking, innovation refers to something new – either the development of a new technology, or a new content innovation, or a new way of structuring an organisation (organisational innovation). In this thesis, there are two main degrees of innovation: radical innovation or incremental (process or product) innovation. Radical innovation refers to a significant advancement of an innovation. Incremental innovation, as the term suggests, involves improvements to an innovation in increments, small improvements, small steps forward. The thesis argues that, in the Irish digital media content industry, incremental innovations are the norm.

6: Traditional media – Often, the thesis compares digital media with more mature, established media forms, to highlight commonalities or differences between them, or shared patterns in their emergence. Therefore, a term is needed to distinguish the older media from digital media. I decided on the term traditional media. Tradition refers to a practice of long standing. This contrasts nicely with digital media, which I regard as an emerging practice of relatively short standing.

1.6: Outline of the thesis and chapter breakdown

Chapter 1: Introduction: The chapter sets out the what, why and how of my thesis. It explains that I intend to examine the emergent, innovative Irish digital media content industry, why I believe it is a topic worthy of study, and how I intend to study it.

Chapter 2: Literature review 1: social shaping theory and technological determinism.

This is the first literature review chapter. It sets out and critiques two broad schools of thought that inform the conceptual framework of the research, and sets out the reasons why I selected these theories as the main informants.

Chapter 3: Literature review 2: systems of innovation and the digital media sector.

This is the second literature review chapter. It deals with systems of innovation theory, which demonstrates how innovation is a social and cumulative process by highlighting the linkages between various social actors. It examines the co-operative and frictional dynamics at work in the innovation process. For example, research undertaken in a university could provide the information necessary for a company to develop an innovation; therefore, the work of both organisations is linked. But the university could not have undertaken the work without funding, perhaps from government. So another actor is involved in the process. The end of chapter three will contain a summary of my conceptual framework.

Chapter 4: Methodology. I gave a brief outline of my methodological approach in a previous section of this chapter, so I shall not repeat it here.

Chapter 5: Case-study: the Irish digital media content industry. This is the first of the empirical research chapters and is a quantitative analysis of the emerging Irish digital media content industry. The aim is to map the landscape of the industry, to illustrate trends in and characteristics of its emergence, and to place into context the workings of individual digital media content companies. It examines the factors that are influencing the emergence of the industry and the interplay of various actors within it. Later, in the qualitative case-studies, I assess how general characteristics of and trends in the industry influence individual companies on a micro-level.

Chapter 6: Case-study: *Ireland.com*. *Ireland.com* is a digital media content venture that emerged out of a traditional media organisation, The Irish Times Group. I examine the main influences on the emergence of *Ireland.com*, such as how its emergence from a larger, non-digital media organisation influences its organisational structure and content production practices. I examine the mix of competencies within

the organisation (content, technical, production, managerial), and how it interacts with other actors within the system of innovation.

Chapter 7: Case-study: *Enter* CD-ROM magazine. This is a retrospective case-study of an interactive entertainment CD-ROM magazine that used to be published by a company called Pure Communications. The magazine, *Enter*, contained many of the traditional elements of a print entertainment magazine – celebrity interviews, features, film and music reviews – but the content was presented in an interactive form more suited to the PC platform to which it was delivered. For instance, interviews incorporated significant amounts of audio, video and text, arranged around the central concept of a virtual city. The case-study examines how Pure Communications's origin as a start-up influenced the organisation of the company and the content produced for *Enter*. I assess the competencies that were brought into the company or developed within it to produce content.

Chapter 8: Case-study: Rondonondo. When the research for this project began in October 1999, a number of companies with backgrounds in technology were trying to break into digital media content. The majority of them had, by 2002, proved unsuccessful. An early hypothesis of this thesis was that companies with technology backgrounds would encounter more difficulties trying to establish themselves in the digital media content industry than companies with backgrounds in content, such as traditional media companies. The hypothesis further supposed that content competencies were more crucial to content production than technical competencies, and also were harder to become proficient in. In general, this hypothesis held true, with the majority of technology companies that were trying to establish themselves in the content industry in 1999 having left it by 2002.

Rondonondo was one such digital media content venture. It was the digital media publishing division of Eircom, Ireland's largest telecommunications company. The case-study examines how Rondonondo's origins within a telecommunications company influenced its organisational structure and the content it produced. I assess the mix of competencies that were developed within the Rondonondo organisation, how it interacted with outside actors within the system of innovation, the vision it had for its content production and whether this 'vision' was content or technology-led. The stated ambition of the organisation on its launch was to become a major player in

the digital media content industry. It failed to do so. Failures are inherent in systems of innovation, and it is important to document them when studying an emerging industry, especially if it is at an early stage of its emergence. There is much to be learned from unsuccessful innovation as well as successful innovation.

Chapter 9: Summary of main findings and conclusions. As well as summarising the main findings, I intend to assess whether the results of my research justify my theoretical framework, and outline the contribution of my research

1.7: Conclusion

Digital media is emerging as both an industry and a content form, and is becoming increasingly pervasive in society. Most accounts of the emergence of digital media are dominated by technology-centred theories. This thesis argues that such theories provide an inadequate explanation of the emergence of digital media, both as an industry and a content form. A new conceptual framework, which recognises the crucial influence of social actors and cultural factors, is necessary. The thesis forms such a conceptual framework and applies it to quantitative and qualitative case-studies.

Chapter 2: Literature review 1: social shaping theory and technological determinism

Chapter 2: Literature review 1: social shaping theory and technological determinism

2.0: Overview

This thesis is concerned with the emergence of the digital media content industry in Ireland. The empirical research is undertaken at two levels. The first is a meso-level quantitative study, to document general trends and patterns in the emerging industry, and to assess the value of employing an adapted systems of innovation model to account for its emergence. The second level employs qualitative research methodologies to conduct an in-depth examination of three individual companies in the industry. It examines how individual companies contribute to and act within an industrial system of innovation, and how other actors within the system interact with and influence them. A facet of the qualitative studies is to examine the processes of innovation within the companies, and how they develop and produce digital media content innovations: within a particular organisation, what are the factors that shape and influence the final form of an innovation? Like the quantitative study, the research at this level incorporates elements of a systems of innovation approach (discussed in chapter three). It is also heavily informed by a social shaping model, to examine the social factors that influence the development of digital media content.

Much of the industrial, governmental and academic research into the emergence of digital media focuses on it as a cluster of inter-related technological innovations. Little attention is paid to the emergence of digital media content innovations; also, little in the way of coherent analysis is presented to account for the emergence of the digital media content industry in this country. The three main schools of thought on the emergence of innovations – technological determinism, social shaping theory and systems of innovation – concentrate their research efforts on examining the development of material (technological) artefacts. This thesis adopts a broader conception of innovation – it includes organisational and content innovations – and so has to adapt many of the main concepts presented in the literature. The purpose of this chapter is to gain a broad theoretical understanding of how new innovations – whether technological, organisational or content – emerge, and to build a greater awareness of

the factors that influence or shape them. The chapter outlines the main features of technological determinism and social shaping theory, and argues that the dominant theory, technological determinism, is fundamentally flawed in its conception of technological development (and, by extension in this thesis, the development of content innovations). It argues that the crucial factors in shaping the development and emergence of digital media content innovations are social, not technological.

2.1: Technological determinism

Technological determinism is a wide-ranging theory, with a number of different intellectual traditions sheltering under the label. It is difficult to offer a concise definition that accurately sums up the position. But a simplified explanation of its basic principle would state that technology is an autonomous force driving change in society – new technologies emerge and initiate profound changes in social structure, and in the social practices, routines and patterns of people's lives. Proponents of the theory often describe these changes as revolutions, such as the modern vogue to claim that the new information and communication technologies (ICTs) are heralding a 'digital revolution' (Negroponte, 1995; Kelly, 1999). Others, such as the futurist Alvin Toffler (1990), conceptualise the changes in terms of waves. He argues that the advanced societies of the world have passed the first and second waves of development (agricultural and industrial, respectively) and have now entered the third wave, which is the information age.

Theories that advocate the power of technology to change society are regarded as transformative. Some of the most influential transformative theorists include Toffler himself (*Future shock*, 1970; *The third wave*, 1990), Marshall McLuhan (*Understanding media: the extensions of man*: 1964; *The medium is the message*, 1967), Daniel Bell (*The coming of the post-industrial society*, 1973), Nicholas Negroponte (*Being digital*, 1995) and Kevin Kelly (*New rules for the new economy*, 1999). In keeping with the trend among technological determinist writers, they focus on technology as a material artefact, although they have a greater awareness than systems of innovation theorists of the social implications of technology, and a greater emphasis than social shaping theorists on the macro-level social changes associated with the emergence of new technologies.

Although the work of determinist theorists shares much common ground, there are also marked differences in their analyses of the impacts and origins of new technologies. (For example, the degree of autonomy accorded to technology varies from theorist to theorist. Nicholas Negroponte regards technology as fully autonomous. Daniel Bell acknowledges the influence of social factors, and in so doing lessens the degree of autonomy.) Collectively, however, their work provides the most cohesive and complete body of writing on technological determinism. Therefore, I believe it is worthwhile to analyse their work individually in sections later in the chapter.

Technological determinism is based on a number of assumptions that close off the innovation process from examination. Hard technological determinists try to create a mystic around the origins, emergence and impacts of technologies, which make the innovation process esoteric and, essentially, unknowable. The principle assumptions are that technological development is autonomous, outside of society; technology develops along a linear, rational, goal-orientated path, and it works according to a principle of efficiency (the best, most efficient technologies are developed). Determinism also assumes that society changes or adapts to incorporate the emerging new technologies; in this conception, technology is regarded as active (the driver) and society as passive (the passenger). The assumption that technology develops along a linear, predictable, efficient path is heavily criticised by social shaping theory, which highlights, for example, how the most efficient technology is not always the successful one. Social shaping theory regards the innovation process as multi-faceted, with many possible paths to development. Also, it shows how many actors, often with opposing goals, are involved in the innovation process. There is seldom a single, harmonious, rational philosophy underlying the development of a technology.

Of course, technological determinism is not a monolithic theory – there are a number of schools of thought within it. What I have presented so far could be termed as hard-determinism, which is characteristic of theorists such as Alvin Toffler and Nicholas Negroponte. Another variant is soft-determinism, which acknowledges that social factors exert some influence on the emergence of a technology. As stated earlier, certain elements of soft-determinism will be incorporated into the conceptual framework of this thesis. However, even soft determinists (such as Daniel Bell) regard technology as an autonomous driver of change, which this thesis argues against,

believing that technological and social change is a complex process of negotiation between many actors at many levels.

2.2: Alvin Toffler: a seminal technological determinist theorist

Technological determinism, more so than most schools of thought, is associated with personalities who enjoy high levels of public recognition and, from certain quarters, acclaim. Such people include Marshall McLuhan and Alvin Toffler, and in more recent years, Kevin Kelly and Nicholas Negroponte. In technological determinism, ideas and theories – or visionary insights, as they are often proclaimed – become closely identified with individuals, even though they may be common to the work of many writers. This trait of technological determinism, to personalise ideas, filters through to its analysis of innovation and technological development. It personalises them, often reducing a complex process involving the actions of numerous social actors to the efforts of just one person. An example of this is crediting Thomas Edison with the invention of the electric light. Thomas P. Hughes (1985) demonstrates that, although Edison was an important actor in the development of the electric light, he wasn't solely responsible – he depended on the competencies and knowledge of the staff in his laboratory, and on previous innovations in electricity. Hughes shows how much of Edison's progress, or invention, involved incremental modifications to previously existing technologies. It simplifies and distorts the process of innovation to attribute the emergence of the electric light solely to Edison. But such personalisation of both theory and technological development is a recurring theme in technological determinism.

Alvin Toffler came to prominence in the 1970s, with the publication of *Future Shock*. He has written voluminously since then, often co-authoring works with his wife, Heidi Toffler (Toffler, 1985, 1990a, 1990b; Toffler and Toffler, 1994). *Future Shock* is concerned with the rapid emergence of new technologies, which he regards as initiating profound changes in society. He believes that many people are experiencing great difficulties in trying to adapt their lives to the new set of socio-economic and political relations. These difficulties, he argues, are caused by the transition from an old form of society to a new one, or as the inevitable friction caused by society's "break with the past" (Toffler, 1970: 21). He uses the term future shock to describe the condition. In his own words, future shock is caused by "the

shattering stress and disorientation that we induce in individuals by subjecting them to too much change in too short a time” (1970: 12). He warns that future shock is not to be regarded as an abstract condition, or simply a pithy literary device to label the friction caused by the transition to a new set of socio-economic and political relations. Rather, he claims that future shock is very real and has actual psycho-biological effects on its sufferers. He labels it the “disease of change” (1970: 12).

However, this disease of change is not caused by the new technologies themselves, but by people’s inability to adapt their lives to them. The principal sufferers are those who clung onto the old ways and refuse to embrace the new. This is a pillar of Toffler’s theory: that technology is the driver of change, and it is the role of society to adapt to the new technologies. It is a classic determinist belief, and one that, in the opinion of the author, has been discredited by social shaping critiques. Social shaping models – especially domestication models that examine the consumption of technologies – suggest that people incorporate technologies into the patterns of their lives, or form social practice around them, through a complex series of negotiations which are influenced by a number of factors, including age, gender, occupation and cultural capital (Silverstone, 1989). It shows how the social context of consumption can re-shape a technology. For this thesis, however, the broader term ‘innovation’ is preferable to technology, because it can be applied to both a material artefact (technology) and a symbolic artefact (content innovation). Technological determinism has a weak conception of the social context of consumption, because it regards technology as being uninfluenced by society; rather, it is technology that changes society, and therefore the context of consumption.

The practices or uses of the technologies that emerge from these negotiations are not inscribed in the technology at the determinist ‘moment of invention’. The technological artefact does not arrive as a closed black-box, which can only be interpreted in the manner inscribed by the producers. One of the flaws that runs through the majority of technological determinist theory is that it continually fails to recognise that a technology can be open to different interpretations and appropriations.

Early in *Future shock*, Toffler states that he is a futurist. But he claims that he errs on the side of caution when making predictions about the future. He advises his readers to be concerned with the “general theme rather than the detail” of the future development of technology and society (1970: 14). This becomes very important in

his later works, especially *The third wave*, which was published in 1980. Whereas *Future shock* is deeply rooted in the present, *The third wave* is more concerned with the past and the future. Unlike many of the more recent technological determinist writers, such as Negroponte and Kelly, Toffler in *The third wave* tries to place technological and social change into an historical context. This is commendable, but the value of his work is diminished by his adoption of the simplistic model of autonomous new technologies changing society.

In the book, he argues that the social changes being wrought by the new information technologies are as fundamental and profound as those induced by the agricultural revolution 10,000 years ago and the industrial revolution 250 years ago. He claims that society is entering a third wave of technological and social development, driven by the new emerging information technologies and resulting in the formation of a new set of socio-economic and political relations. In *Future shock*, his main concern is people's inability to adapt to the new set of relations. In *The third wave*, he is less concerned with people's inability to adapt to changes than with the nature and direction of the changes themselves.

In *Future shock*, he describes the changes as a "break with the past" (1970: 14). Yet, in *The third wave*, he contradicts that statement. He divides social and technological development into three waves. He then analyses the first and second waves to account for the nature and origins of the third. By sinking the foundation of his theory in the past, he unwittingly acknowledges the continuities with the past – a trait of social shaping theory, which *emphasises* the continuities with the past.

In Toffler's model, the first wave began with the agricultural revolution, between 8,000BC and 1650/1750. During this period, the majority of the people worked and lived on the land, and this was the basis of the dominant set of socio-economic and political relations. He claims that the power of this wave has been spent, apart from a few small pockets of the world that remained unindustrialised (Toffler, 1990a).

The second wave came with the industrial revolution, and was at its peak between 1650 and 1955. Manufacturing was the dominant mode of employment, and this was the crux around which socio-economic and political relations formed.

The third wave is the current one. It is characterised by a move away from manufacturing to the provision of services and information. The third wave is still in its early phase and there is an overlap of socio-economic and political relations from the previous, industrial wave. Toffler claims that most frictions in the modern world

are caused by a clash of these two sets of relations, between those who want to modernise and those who wish to cling onto the old industrialised ways. Class and imperial conquest are diminishing as roots of conflict in the third wave, because they are characteristics of the second wave. He predicts that the power of the second wave will diminish relatively quickly, and third wave socio-economic and political relations will dominate.

Apart from the previously highlighted flaws of technological determinism, Toffler's main weakness as a theorist is that he is too caught up in the "general theme" – his division of the main periods of technological and social development are too wide, too general. (Social shaping is more concerned with the particular, and it is a weakness of the school that in extreme cases it becomes too focused on the particular, ignoring general trends.) Also, he offers little to explain why different regions or countries industrialise faster than others, or what are the factors that stimulate the emergence of a new wave. He suggests that a static set of socio-economic relations were in place for the duration of the first wave – over 9,500 years in the case of the agricultural revolution. This takes little account of development and change in technology and society during that period, in which better methods for growing crops and breeding animals were developed. His writings suggest that the only times of change are at the end of a wave, when a new wave is washing over an old one.

Toffler was an early proponent of many of the ideas that have become almost the clichés of technological determinism. (As most of the ideas will be dealt with in greater depth elsewhere in the thesis, they shall be outlined only briefly here.) Cairncross, in 1998, published his writings on the "death of distance", but in 1970, Toffler was already writing about the "demise of geography" (1970: 90).

In *The third wave*, Toffler espouses the idea that the third wave would require demassified production, customisation and specialisation, an idea echoed by Negroponte in 1995 when he wrote about the "daily me" of information consumption through the new ICTs.

Toffler, too, was an early exponent of globalisation – the belief that national borders, cultures and identities are being eroded as new technologies create one "global village", to borrow a phrase from Marshall McLuhan (1989). This thesis will argue that, in many instances, national borders, cultures and identities offer strong

resistance to the adoption of technologies, innovations and content, or greatly influence the manner in which they were adopted.

Toffler argues that the old relations of industrial capitalism no longer apply in the information driven economy of the third wave, and new rules and relations are required. Kevin Kelly echoed the sentiment in his 1999 book *New rules for the new economy: 10 ways the network is changing everything*.

It is important to note, even briefly, such ideas espoused by Toffler, because they reappear in much of the later writings on technological determinism. It is ironic that a theory that advocates a “break with the past” should have so many intellectual continuities with it.

2.3: Marshall McLuhan: the medium is the message?

Marshall McLuhan has a sharper focus than Toffler on media and its transformative effects on society. He regards media (and technologies) as an extension of man, introducing into society new possibilities and social practices. He sums up his position in the famous phrase: the medium is the message. By this he means a new medium or technology introduces a new pattern into human life. The electric light, for instance, allows sports events to be held at night. The sports event and the social practices formed around it are the content or the message of the medium of electric light, because without it the new patterns could not take place in society. Therefore, argues McLuhan, the medium “shapes and controls the scale and form of human association and action” (McLuhan, 1987: 9). He regards technology or media as the drivers of social change, leading him at one point to claim that “print created individualism and nationalism in the sixteenth century” (1987: 20), an argument he first aired in *The gutenberg galaxy* (1962).

Contrary to his claims, communal reading of texts was common in the sixteenth century, because books were expensive and literacy rates were low. Similar to the story-telling of the oral tradition, literate people read aloud to groups, and there was a cross-over from the communal oral tradition to the individual reading of later years. Reading is not necessarily an individual activity, but in later centuries was appropriated in a way that encouraged individual reading. Also, print did not create nationalistic ideas, but allowed people to spread them to a wider audience. It was the surrounding social and cultural influences that shaped what was printed, not the

printing presses themselves. However, McLuhan dismisses the content of a medium – the words, programmes, images – as “ineffectual in shaping human form and association”(1987: 9). It is the medium itself that achieves this. In McLuhan’s conception, the creation of individualism and nationalism is how the media shapes and controls human association and action, and is, in effect, the message of the print medium.

Moving to the twentieth century, McLuhan distinguishes between ‘hot’ and ‘cold’ media. He divides them depending on their definition, which refers to the amount of information they contain, and the level of participation they allow the user, so there is an element of the sensory in the medium. Hot media contain a lot of information but allow little participation; people consume the medium passively. Cool media contain little information but allow greater participation, such as a telephone, which requires people to speak for information to be transmitted. Hot media include radio, cinema and the photograph; cool media include the telephone and cartoons. He extends his conception to hot and cold countries, with well-developed first-world nations being hot (having access to greater levels of information, which is consumed passively), and poorer, under-developed nations being cool (less information, but people are more active in generating it because mass media structures are under-developed). Again, he applies his idea of the transformative effect of media, claiming that the introduction of a hot medium to a cool society has “a violent effect” (McLuhan, 1987: 30-31), as had the introduction of print to the cool sixteenth century society.

Digital media seems to pose a contradiction to McLuhan’s division – he doesn’t countenance an intermediate between hot and cool media. Digital media has a high definition – it contains a lot of information – which is a characteristic of hot media, but through interactivity it promotes high sensory participation of users, a characteristic of cool media. Also, it is most deeply embedded in the richer, hot nations, which seems to lower its transformative effects. This, however, is not consistent with later determinist writings of Kelly and Negroponte, who strongly espouse the transformative abilities of digital media technologies.

2.4: Kevin Kelly: the obsession with the new

More recent technological determinist writers included Nicholas Negroponte and Kevin Kelly. Although they have not achieved the same levels of public recognition

as McLuhan and Toffler, they enjoy a higher status than social shaping theorists with government and corporate elites, who are powerful actors in the innovation process. Their thinking often informs the policy and investment directions of government and industry. Negroponte, especially, has close links to government and industry.

Kevin Kelly is associate editor of the influential high-tech magazine *Wired*, as well as author of a book called *New rules for the new economy: 10 ways the network is changing everything*. The sleeve of his book describes him as the “chief guru of the information age”, and that is how he and Nicholas Negroponte – a professor at MIT¹ - are popularly perceived.

The majority of Kelly’s work is underpinned by the classic determinist philosophy of technology as a driver of change. *New rules* are needed for the *new* network economy that is being created by the *new* technologies, which are changing everything. In *New rules for the new economy*, he writes:

“Technology creates an opportunity for a demand and then fills it...Supply and demand are no longer driven by resource scarcity and human desire. Now both are driven by one, single exploding force: technology” (Kelly, 1999: 55).

“Human desire” is blown away in the blast radius of the “one, single exploding force: technology”. The passive role assigned to human beings is incredible. In the course of one paragraph, Kelly manages to infuse life into technology and snatch it away from humans. Technology, with the life-like qualities of a rational, cognitive being, decides what we want, and people, like mechanical automatons, simply accept what technology offers. It is a preposterous premise on which to base a theory of social and technological change, but that is what Kelly and Negroponte and many others do, with great success. Although technological determinism is sharply criticised by academic commentators, it still informs most industrial, governmental and media accounts of technological change.

One of Kelly’s key beliefs is that technology is everywhere, changing everything. He believes that technology is becoming so pervasive in our lives – so natural to us – that we will soon begin not to notice it. He preaches:

¹ Massachusetts Institute of Technology, which was based in the United States of America, was a highly prestigious college with strong interests in the research and development of new technologies.

“Move technology to invisibility. As technology becomes ubiquitous it also becomes invisible. The more chips proliferate, the less we will notice them. The more networking succeeds, the less we’ll be aware of it.” (1999: 19)

I have already outlined Toffler’s work, and although it is flawed, I commend him for trying to offer a historically grounded account of technological and social change. He looks at what has gone before, and tries to trace through history a pattern of social and technological change on which he can base his theory. One of his biggest failings is historicism – he believes he can predict the development of technology in the future based on its pattern of development in the past. Such an endeavour is consistent with the determinist idea that technology develops along a linear, rational and predictable path. But, in trying to do so, he recognises the social and cumulative characteristics of the innovation process. His historical analysis demonstrates that the efforts and discoveries of the past feed into the innovation processes of the present, so the new technologies can not be seen as a break with the past. Rather, they build upon and, often, are a continuation of work that has gone before. Social shaping theory is similarly historically grounded. It rejects much of the talk about the ‘new’; it draws upon the past to analyse the present, but stops short of making pronouncements on future development. With so many social actors interacting, no one can confidently predict the emergence or nature of future technologies or societies.

Kelly, in contrast, makes no attempt to historically ground his work. He is too narrowly focused on the ‘new’ to divert his attention to the ‘old’. His blinkered vision of the present means he makes the mistake of continually referring to the ‘new’ network economy. He writes: “Since the network economy is so new, we as a society have paid little attention to how standards are created and how they grow” (1999: 70). Paschal Preston (2001) argues that to speak of a ‘new’ network economy is a misnomer. He writes that the idea of a network economy goes back as far as Adam Smith’s writings in the 18th century, when Smith was emphasising the importance of networks for economic growth. In Smith’s understanding, a marketplace is a network – to work efficiently, it requires relationships and links between various actors, organisations and institutions. Similarly, an economy encompasses the links between the various bodies and groups operating within it. Otherwise, everyone would be working in isolation, and there would be no economy. Kelly seems fixated with the notion of a ‘network’ involving computers linked by telephone lines and modems.

One could argue that his ‘new’ network economy is just a large computer network (the Internet). Although the Internet is new, the concept of a ‘network’ is not. The Internet, as a series of links enabling trade and communication, is comparable to the networks that have been in place in economies and societies for centuries.

2.5: Nicholas Negroponte: a virtual digital being

Nicholas Negroponte is regarded as the other great guru of the information age. He is the founder of MIT’s prestigious Media Lab, author of the best selling book *Being digital*, and a regular columnist for *Wired* magazine. His contribution to *Wired* is revealing, because it highlights his association with Kevin Kelly. Negroponte and Kelly are peers, not only professionally but also intellectually. Technological determinism underpins both their work, although Negroponte demonstrates in *Being digital* that he is more aware than Kelly of the historical dimension to innovation. However, he is not as historically grounded as Alvin Toffler.

Being digital is based on a series of columns Negroponte wrote for *Wired*, in which he traces the history of media technology development. He describes the emergence of CD-ROMs, digital media and hypermedia, among others. While this historical analysis could be interpreted as a leaning towards social shaping theory, Negroponte betrays his determinist inclinations when he claims that the emergence of technologies can be explained through “purely technological imperatives” (Negroponte, 1995: 81). In classic determinist tradition, he argues that technology emerges out of scientific and technological endeavour, and then diffuses out to society, which adapts to accommodate it. Thus it is the technology that initiates a new set of socio-economic and political relations.

In the book, he offers his vision of what ‘being digital’ means. For him, it means a life lived immersed in the new technologies, especially ICTs. He claims of himself that he lives “a 100 percent electronic life” and that the “physical presence [of a person] is not important” in the electronic age (*Irish Times*, 10 December 1999). Here he touches on the determinist idea of the “death of distance” (Cairncross, 1998) – that spatiality as a factor in communication and trade is becoming irrelevant, a position which holds little regard to the resistance posed by national and regional cultural variances.

Also, studies show that proximity is still important for personal interaction, even in instances of trade where no material artefacts require movement. Shauna G. Brail and Meric S. Gertler write that locality is often the crucial factor when deciding to commission a firm to develop a digital media artefact (Brail and Gertler, 1999). Although it is technically possible to arrange and co-ordinate a project over great distances via the Internet, they claim the perception remains that it is easier and cheaper to work with a locally-based firm. They use the example of a Toronto based company called 2D Art Systems, which was looking for a distributor for a children's CD-ROM it had developed. The company was in negotiation with an international company and a local one, and in the end chose the local. The president of the company, Harold Feist, outlined his reasons as follows:

“So far, physical geography has been the main thing. Proximity. Despite how easy it would be, theoretically, to collaborate long distance, I find there's a need to meet face-to-face throughout the process.” (Brail and Gertler, 1999: 114)

The findings of my own research also dispute Negroponte's claim that physical presence is not important. In my qualitative case-studies, the majority of external linkages are to firms also within the Irish national system of innovation.

In addition, a study by Aphra Kerr (1999) highlights the resistance posed by cultural factors to the introduction of an unsuitable innovation to a society. The study is outlined in more detail elsewhere in the thesis, and here it is important to note only that culture continues to ensure that distance 'lives'. A successful form of innovation 'here' won't necessarily be successful or acceptable 'there'. Much depends on the cultural values and traditions of the society into which the innovation is being introduced.

In a way, Negroponte contradicts his own statement that his physical presence is not important when his physique was very much present at the launch of MIT Lab Europe (MLE) in Dublin in December 1999. First, if physical presence is not important, why bother to have a lab in Europe at all? Second, why did he come in person to the opening? At the opening, he stated that he travelled widely and was pledged to be somewhere “between 30 and 50 percent of [the] time” (*Irish Times*, 10 December 1999). For a man who believes physical presence is not important, he devotes a lot of his time to being present, physically.

That might seem a trivial point, but its importance is lodged in its triviality. Technological determinists such as Negroponte are renowned for making rash, sweeping pronouncements without fully considering the implications of what they have said. The danger of such ill-considered and flawed pronouncements is that they are often made by people who have access to and influence over powerful businesspeople and politicians.

When negotiating the establishment of MLE, Negroponte had close contact with former Esat Telecom chairman Denis O'Brien and the Taoiseach Bertie Ahern. At the press conference to announce the establishment of MLE, he spoke of his relationship with both men. He said: "When a prime minister encourages you and you have entrepreneurs like Denis encouraging you, it becomes very attractive [to establish MLE in Ireland]" (*The Irish Times*, 10 December 1999). It was implied at the conference that O'Brien and Ahern had done much to woo MIT and Negroponte to Ireland. Ahern went as far as to announce that MIT and Negroponte were "bringing the future to Ireland" (*The Irish Times*, 4 December 1999). A little over a year later, it emerged through media reports that senior civil servants and advisors to the Irish government had expressed doubts about the MLE project and had questioned the wisdom of committing substantial amounts of public money to it. However, such dissent was not aired at the press conference, which received a high degree of publicity in the national media. A united front was presented by Negroponte, MIT representatives, government and industry spokespeople. The documents containing the dissenting views came into the public sphere only after a journalist was granted access to them under the Freedom of Information Act (*The Irish Times*, 4 January 2001).

It was also revealed at the conference that Negroponte and MIT had held top-level negotiations with five other countries, including Sweden and Germany, before settling on Ireland. In *Being Digital*, Negroponte boasts of time he spent in the company of political leaders such as François Mitterand in France, Kiichi Miyazawa in Japan, and Margaret Thatcher in Britain. Such relationships suggest heavily that Negroponte represents an institution that has gained a premium status in the esteem of industrial and political elites, who are willing to vie with each other to be associated with it. MIT and Negroponte represent a certain ideology of technology, and clearly it is one that appeals to governments and industry. In this way, Negroponte, like Kelly, is an

influential opinion former. What he claims is the way forward will be given serious consideration by the policy forming institutions of state and industry.

MLE will cost £130 million to establish and run for the first 10 years. Of this, £28 million will come from the Irish government, and the rest will be raised from industry. MLE's parent institution, MIT, receives over 90 percent of its funding from over 170 industry 'sponsors', as Negroponte is inclined to call them. This is another indication of the closeness of Negroponte's philosophy to industry.

2.6: Daniel Bell: the coming of the post-industrial society

In the 1970s, Daniel Bell ranked with Alvin Toffler and Marshall McLuhan as one of the most influential theorists on social and technological change. In *The coming of the post-industrial society*, Bell argues that the advanced societies of the world are entering a phase of post-industrialism, in which the emphasis is no longer on the production of material goods, but on the provision of services and processing of information (Bell, 1999). From his perspective, advances in technology are allowing greater volumes of material production from fewer workers. Thus, many workers are being displaced from manufacturing jobs and are shifting to employment in the provision of services. This, in turn, is leading to a rise in the prominence of information and knowledge in society. The post-industrial society (PIS), in Bell's own words, represents "new principles of innovation, new modes of social organisation, and new classes in society" (Bell, 1999: xi).

The PIS, however, won't be limited to simply a wider application of previously existing forms of knowledge. The new social system, the new services and new technologies will give rise to new forms of knowledge. This part of Bell's theory allowed him to claim that the later term 'Information Society' and his own PIS amounted to the same thing. In his writings in the 1980s, he treats the terms as interchangeable. Bell's evidence for the change to a post-industrial society is based largely on a quantitative analysis of American economic statistics compiled in previous works by Fritz Machlup in the 1960s and Marc Porat in the 1970s. He uses their work to argue that production of information is growing rapidly as a percentage of US GNP, and that employment in services is expanding while employment in manufacturing is contracting. A flaw in his approach is that the broad quantitative statistics give little indication of the nature or quality of the move to information

production, although he does argue that the result of this transition will be an increase in the level of bureaucracy to run the post-industrial society (later information society) and increasing specialisation in the intellectual work conducted within it.

Bell outlines the main features of the PIS as follows (1999: xv-xviii):

- 1:** A move away from manufacturing to service industries.
- 2:** A corresponding move from manufacturing to service employment.
- 3:** Education will become the main means of social mobility and of gaining wealth; in an industrialised society, the main means of gaining status and wealth was through the inheritance of property, business or occupation, such as the legal profession. Bell suggests that the PIS will be more meritocratic.
- 4:** A growth in the value of human capital, with knowledge becoming the new source of power and wealth in society. The training and education invested in workers will become more of an asset to companies. Bell predicts a relative decline in low and semi-skilled workers.
- 5:** A growth in what he calls “intellectual technology”. His explanation of this is somewhat vague, but he claims that intellectual technology will use “algorithms, programming, models and simulations in the running of the new ‘high technology’” (1999: xvii).
- 6:** A change in infrastructure: in the old industrialised economy, the backbone of the infrastructure was ports, railways and airports, which were needed for the transportation of material artefacts. In the PIS, the infrastructure will carry information and will be built of cable, broadband and satellite.
- 7:** The PIS will rest on an information theory of value. Bell writes: “Knowledge is the source of invention and innovation” (1999: xviii).

Although he claims that the PIS is not an inevitable outcome of history, he relies on past trends in social and economic change to justify his theory. In doing so, he is open to accusations of historicism, which is a common failing among technological determinist writers. Bell’s map of social and technological development is as follows: pre-industrial – industrial – post-industrial.

In each type of society, the defining characteristic is the dominant mode of employment. In pre-industrial, agriculture is the dominant mode; in industrial, it is manufacturing; and in post-industrial, it will be the service and information industries.

The emergence of new technologies is the catalyst for a new industrial phase. As technology advances, fewer workers are required in traditional industries; displaced

workers move to new industries, such as service industries. These new industries eventually become the dominant mode of employment, and a new industrial phase begins. For example, advances in animal breeding and crop growing techniques meant fewer workers were required on the land. This freed workers to move to manufacturing jobs, which eventually became the dominant mode of employment.

However, Bell argues against holistic theories of social change. He claims that: “Historical change is not unified” (1999: xix). He sees society as being divided into three realms, each of which has relative autonomy from the others. The realms are techno-economic, political and cultural, and a change in one realm does not necessarily initiate a change in the others.

This is at odds with his overall theory of a PIS, which seems to suggest a unified whole. It would seem naïve to proclaim the arrival of a new type of society if all the parts of that society had not reached the same, or a similar, level.

However, according to Bell, each realm of society is governed by a different axial principle. His model is as follows:

1: The techno-economic realm, which comprises the economic, technological and occupational systems. The axial principle here is economising, which strives to allocate resources according to principles of least cost and greatest efficiency.

2: The polity, which comprises the political and power structures of a society. The axial principle is participation, which aims to reduce conflicts within society.

3: The culture, which comprises the norms, values, beliefs and practices in a society. The axial principle is fulfilment and enhancement of the self (Preston, 2001: 65-66).

Bell predicts that the PIS will reduce worker alienation, because in an information economy, people will work with other people instead of with things (material artefacts).

Bell’s theory is essentially a linear account of technological and social development. Frank Webster accuses him of teleological thinking, which is the notion that society is changing towards some ultimate goal (Webster, 1995: 32). For these, and other reasons, Webster accuses Bell of being a technological determinist. However, Bell denies this. In the 1974 edition of his text, he argues that, along an axis of technology, social and economic change can be observed on a progressive scale from pre-industrial to industrial and finally post-industry. That general pattern of progression is common to all nations regardless of their individual histories, societies or environment (Bell: 1974). By the time an updated version of his text was published

in 1999, he had softened his position. Although he admits he still regards technology as a “lever of social change”, he adds:

“I am not a technological determinist, for all technology operates in a context not always of its making (such as politics and culture); yet technology is the major instrument of change.” (1999: xviii)

Bell is best described as a soft-determinist. Unlike Negroponte, he doesn’t believe technological and social change can be explained through “purely technological imperatives”, but he regards technology as the main imperative.

His work is underpinned by many of the assumptions that are common to technological determinist work, such as the assumption that technological and social change proceeds along a linear and predictable path. His division of the development of society is too wide, and he assumes that innovation occurs along principles of efficiency. (These assumptions of technological determinism will be critiqued in greater depth in the sections on social shaping theory.) He also bases his theory on economic information for the US economy, yet argues that the progression and patterns discernible in the US are applicable to other nations, without making his overall theory sensitive to the particular conditions or cultures in other nations. Like many determinists, he believes in the benign effect of progress. In a later work, *The cultural contradictions of capitalism* (1976), he focuses on how the norms required in the economic realm and social structure are not always consistent with the norms of self-fulfilment in the cultural realm, and how this can lead to tension and alienation between social actors. However, he offers a more cohesive and cogent theory of social and technological change than the majority of technological determinist writers. Toffler, for example, offers a third wave model, which contains phases of social and technological development that are similar to those contained in Bell’s work. However, Bell is more grounded in his explanation of what constitutes each phase, and why one phase eventually gives way to the next one. He offers empirical information where Toffler offers speculation and opinion.

2.7: Social Shaping theory

Although social shaping theory avoids the transformative pronouncements of technological determinism, it is fundamentally concerned with change, both

technological and social. Social shaping of technology challenges the assumptions put forward by technological determinism about the nature and direction of technological change and its impacts on society. As with many schools of thought, the origins of social shaping theory are ambiguous. Elements of the theory can be traced back as far as Lewis Mumford in the 1930s, who noted the role of socio-cultural conditions in the development of technologies (Preston, 2001: 113), through to Raymond Williams's work in the 1970s, when he outlined the social influences on the development of television as a technological artefact and a cultural content medium. Social shaping of technology was first articulated as a unified and cogent concept for research in 1985, with the publication of Donald MacKenzie's and Judy Wajcman's book *The social shaping of technology* (1985; 2nd edition, 1999). Previous to this volume, which outlined a basic concept of social shaping theory and applied it to a number of case-studies to test its worth, the majority of writings by social scientists about technology were concerned with its impact on society. MacKenzie and Wajcman wanted to shift the focus, to open an arena of research that would consider the 'effects' of society on technology. However, by their conception, 'effects' had too many deterministic connotations (especially as their work was an attempt to shift away from the deterministic thinking that was dominating analyses of technological development). Therefore, they put forward the concept of technology as being socially shaped. A body of literature began to emerge, which refined and tightened the original definitions of the concept (Williams and Edge, 1996). As the model developed and matured, various approaches emerged towards studying technological development through a social shaping perspective. The Social Construction of Technology (SCOT) approach was taken by writers such as Bijker, Hughes and Pinch (1987). The social factors shaping the consumption of technology was the concern of writers such as Silverstone (1989, 1992, 1994), Sørensen (1996) and Livingstone (2002).

However, in practice, the various approaches within social shaping theory are not mutually exclusive, and there can be a high degree of cross-over between them in research projects. Knut H. Sørensen argues that "the social shaping of technology should be used to imply a generic approach to the study of technology that is anti-deterministic and anti-linear" (1996: 4). Social factors influence and shape technology during both the production and the consumption phases of its life, so the work of SCOT and the consumptions theorists are complimentary rather contradictory, or can be viewed as studying two ends of the same process. This thesis argues that there is

not one specific arena in which a technology is socially shaped, and once it has left that arena can be considered to be finished and no further social shaping takes place. That would lead to the 'black-box' problems of technological determinism – that at some stage the technology becomes a closed artefact, no longer open to social influence or interpretation. Even in the domestic setting, after a technology has become domesticated and entrenched, its role is still open to further re-negotiation, as new technologies enter the domestic sphere or social conditions in the home change.

More recent social shaping research has examined the consumption or appropriation of new technologies on a much wider scale than the domestic setting. This thesis examines how the Irish national system of innovation influences the emerging digital media content industry. As will be argued in later chapters, the particular characteristics of the Irish national system – the social and cultural attributes of a small, open economy located on the periphery of Europe – influence how the industry is developing and the content that it produces. My interest is the influence of the national context or environment on production. Earlier work by the SLIM (Social Learning in Multimedia) project drew on the social shaping of technology perspective to examine how national contexts and cultures influence the appropriation of multimedia (Williams and Slack, 1999; Williams, Slack and Stewart, 2000). The project argues that, largely through processes of inno-fusion and domestication, the end-use of multimedia often differs from the producers' original intention. And although multimedia technologies are standardised from country to country, the content carried across the technologies are open to influence by national cultures. Therefore, the SLIM project argues, the social learning involved in appropriating multimedia is crucial to understanding the difference between original intention and end-use, and the differences in how countries appropriate multimedia.

SLIM examines the link between a country's perception or dominant image of multimedia, the strategies key players in a country adopt to promote multimedia, and how multimedia is eventually appropriated on a national scale. The study argues that, although countries share common visions of multimedia, there are also differences in how they perceive it. This, for example, could be shaped by the presence of strong media actors, such as in Germany where Deutsche Telecom, Kirch-Group and Bertelsmann pushed digital television to the centre of the country's perception of multimedia. Norway, which had no media groups of comparable stature, held the Internet as its dominant image of multimedia.

The study, in highlighting the social processes involved in the appropriation of multimedia, also reaffirms the importance of the local. Much debate about new emerging ICTs and digital media technologies has assessed them in terms of their global impacts. SLIM argues for a balance between the global and the local, writing: “Multimedia technologies emerge as complex assemblages of global and local elements as generic ICT capabilities are appropriated and incorporated to particular purposes within particular social settings” (Williams, Slack and Stewart, 1999: 4). SLIM argues that its findings “underline the shortcomings of accounts which see technology supply as a universalising force which cuts across and harmonises different social settings” (Williams and Slack, 1999: 16). My thesis offers a broadly similar argument, but with the emphasis on production. Although there are global elements to the Irish digital media content industry, the national setting is influential and cannot be disregarded.

SLIM suggests that, nationally, there is interpretative flexibility of technologies. Social shaping research on interpretative flexibility has traditionally been conducted on an individual level or with small groups of people. Studies show that users who share common social characteristics (gender, class, occupation) are more likely to interpret technologies (or content) in similar ways than users who have dissimilar social characteristics (Haddon, 1992; Morley, 1986; Bijker, 1995; Kelly and O’Connor, 1997; Berg, 1999). Examining and comparing national appropriation is, of course, on a much grander scale. This is an appealing aspect of the SLIM project. As will be detailed, much social shaping research is narrowly focused on particular technologies in particular settings, such as the appropriation of the television in the household. While such work is valuable, the wider scope of the SLIM project adds another dimension to social shaping research. It compliments the research of this thesis, which through drawing on the social shaping of technology and the systems of innovation perspectives also tries to gauge the shaping influence of the national context.

In addition, SLIM argues that the time scale of technological innovation is much shorter than for the processes of domestication and appropriation. This can create tension between different parts of the innovation system, particularly as technologies take a long time to establish themselves in markets, but in industrial production product life-cycles continue to shorten (Williams, Slack and Stewart, 1999).

2.7.1: The SCOT approach

The SCOT approach is informed by the need to move away from determinist assumptions about a rational, predictable and linear path of technological development. Over the years, research into innovation and technological development has become more dialectical, and the conceptual frameworks of projects such as this thesis incorporate elements of technological determinism and social shaping. (Although the balance of influence exerted by each theory varies from project to project.) But in the early years especially, SCOT defined itself largely by being an anti-thesis to technological determinism. Where technological determinism claims that innovation is a closed process, outside the reach of social influence, SCOT argues that the process is open and constructed by the actions of social actors. SCOT counters determinist assumptions that technology emerges under an autonomous momentum by arguing that the actions of social actors act as brakes on or accelerators to technological development, which means there can be no inherent autonomy to a technology's development. SCOT also rejects the notion that technology develops along a linear and predictable path. However, SCOT does recognise a rational underpinning to the construction of technologies, in that the deliberate actions of social actors can influence the development path through the selection of various options in the innovation process. However, the process isn't entirely open and all options are not available. SCOT offers the concept of variation and selection in the innovation process (similar to the variation and selection in Darwinian theory), in which social actors are presented with a number of options, or development paths, and can choose which path to travel. Certain paths are closed as others are chosen, but the development path chosen is not the only available one. Social actors choose according to rational criteria – the most efficient path, or out of self-interest – and as the innovation travels a particular development path, the available options become fewer until the innovation becomes a successfully developed technology. This conceptualisation is based on the frail assumption that innovators know in advance all possible outcomes to the innovation process, and that all related factors are within the innovator's control, allowing them to pick the most efficient development path. My case-study research suggests that an innovator's initial 'vision' of an innovation often

differs greatly to its final form, and many influential factors are outside an innovator's control.

Also, my conceptual framework argues that social actors do not act as one harmonious group, so the underpinning rationale is not as coherent as SCOT suggests, and it de-emphasises the conflicts that are inherent in the emergence of innovations. After the a-social theory of technological determinism, SCOT represents an early move towards recognising that innovations have a social context of production – that social factors and actors shape and influence an emerging innovation. But its emphasis on social actors rationally selecting the most efficient development path is too narrow a conceptualisation of the social context of production, and it implies that all actors influential to technological development are internal to an organisation. SCOT has a narrow focus on technological development; this thesis takes a wider approach to innovation, which can be technological, organisational or content, and it argues that actors external to an organisation influence the innovation process, as do factors at a macro, meso and micro-level.

SCOT argues that the very success of a technology masks the arbitrariness of its development, seducing many thinkers into believing its emergence is an inevitable outcome of history (historicism is a recurrent theme in determinist writing). Technological determinists tend to collapse a linear path on technological or social development. However, a number of retrospective accounts of technological innovation by social scientists fall into a similar trap. The SCOT literature introduces the term underdetermination – that technological factors alone can not account for the development of a technology. However, in outlining underdetermination, some SCOT theorists completely remove technological factors from the process and are guilty of social reductionism. In trying to explain technological development through purely social factors, they replace a technologically determinist agenda with a socially determinist one, and introduce into their work many of the flaws of the former research.

SCOT accuses technological determinism of shrouding technology in a hegemony, collapsing a linear path on development, ignoring that there are or were other possible development alternatives. In the SCOT conception, the actions of social actors blend to 'construct' the technology at the various stages of its development, until it is constructed in its final form. As Pinch and Bijker argue: "Technological artefacts are culturally constructed and interpreted" (1987: 28). (They imply that

another process of construction follows in the consumption phase of a technology, but they do not articulate this in great depth, and instead focus on the production phase.)

SCOT notes that modern technology systems appear to evolve in accordance with a loosely defined pattern. The pattern has seven stages, dominated by the activity used to describe the phase: invention, development, innovation, transfer, growth, competition, and consolidation. The phases, however, do not always occur in sequence; there can be overlap or back-tracking, and they do not claim that this is a ubiquitous pattern. Langdon Winner, in an essay in MacKenzie's and Wajcman's book, writes: "The sample [of innovations] is not big enough, however, to allow essentially quantitative statements such as 'most' or 'the majority' to be made" (1987: 56). It is a flaw of technological determinism that it continually makes such quantitative statements based on spurious assumptions. The technological bias of the model is obvious, but is important in the sense that digital media content innovations show similar patterns of emergence to other innovations, especially in the traditional media.

SCOT argues that the social construction of technology involves loose linkages between various actors. These, often subtle, linkages can not be accounted for in the linear technological determinist analyses, which often rely heavily upon quantitative methods to examine the innovation process. SCOT proposes that up-close, qualitative study of individual innovative case-studies is more useful to establishing a broad understanding of the entire, complex innovation process. The success of the final technology often has little to do with the intrinsic qualities in the technology itself, and often the difference between success and failure of a technological innovation depends on the amount of support it receives in the social environment. Success can depend on the amount of support or resources allocated to the project, according to the relative interests of the social actors involved. But even before then, a path may be abandoned even before someone has begun to follow it because, similar to self-censorship in the media, they know it will not receive the necessary support. For example, the venture capitalist who wants realistic, conservative and cost-effective business proposals¹.

¹ At a speech delivered to Enterprise Ireland's Digital Dividends conference in December 2001, Walter Hobbs, director of ACT Venture Capital, recommended that firms seeking venture capital investment should present business plans that were realistic, conservative, credible and cost conscious. ACT was one of the bigger venture capital companies in Ireland.

The social context of production is sensitive to the influences at macro, meso and micro-levels on innovation within a company. At the micro-level are the people within companies, who as cognitive beings actively shape and create content. Other micro-level influences are the finances and technological infrastructures of a company, as well as its competency and knowledge base. At the meso-level, it can be how industrial trends, styles or performances affect the company and innovation within it. At a macro-level, it can be national economic performance, government policies, national institutional set-up, and national cultural values.

The social context of consumption, as will be outlined, focuses more so on micro-level influences; most consumption studies are conducted within the household setting, and consider influential factors such as age, gender, financial status, education and occupation. However, macro-level factors such as national culture and national economic performance (financial status, occupation) and government policies (regarding the education system) also set the social context of consumption.

SCOT refocuses technology studies, from the technology to society, although its conceptualisation is undermined by determinist connotations, such as technologies being ‘constructed’ by social actors. This thesis prefers the less determinist language of social actors shaping or influencing their emergence. A precise application of SCOT to a case-study would have been of little value to my research, being concerned with content and not technological development. But the value of it, in broad theoretical terms, is that it opens up the innovation process to examination, recognises the influence of social actors (and it recognises the influence of social and cultural factors), and that innovations have a social context of production and consumption. It also allows for focused research on the emergence of individual innovations, in contrast to the macro-level focus of technological determinist studies.

2.7.2 Consumption social shaping theory

SCOT research tends to be confined to the social shaping of technologies during their production phase. Another process of shaping begins when an innovation emerges into society and the consumption phase begins. SCOT counters technological determinist assumptions that a technology is uninfluenced by social factors during its development, and that it emerges into society under an autonomous momentum.

Consumption studies counter determinist assumptions that technology is the driver of social change, and society adapts to accommodate new technologies. Consumption social shaping studies argue that society negotiates roles and uses for new technologies, in ways that are often different to the ones inscribed by the producers. And, contrary to the black-box conception of technological determinism, people are capable of appropriating and interpreting technologies (or, in this thesis, the wider concept of innovations), and forming social practices around them that are influenced by their particular social circumstances, such as age, gender, education, occupation and family-size. This facet of social shaping theory represents a significant theoretical shift towards recognising the importance of a technology's social context of consumption.

It is important to include a section outlining the broad principles and findings of the consumption literature. Although the thesis undertakes empirical work on how digital media content is produced and how innovations emerge, another social shaping process – and another arena for original empirical work – surrounds how it is consumed. Most of the research projects on consumption, as on production, attend to material, technological artefacts rather than to symbolic, content artefacts. Therefore, consumption research models such as domestication, like the production models employed in this thesis, have to be adapted to suit empirical research on content.

While the majority of production research is conducted in an industrial context, the majority of consumption research is conducted in the domestic sphere. In 1989, as a body of literature was building around the social construction of technologies, Roger Silverstone and Sonia Livingstone, among others, began work on the social shaping processes underlying the consumption of technologies. Their work is located in a particular setting – the domestic household. They describe the process of integrating a new technology into the household as the domestication process, and it accounts for how the people within the household actively negotiate a role for the new technology within the domestic arena and within their lives. Unlike technological determinist analyses, which regard important new technologies as 'changing people's lives', consumption theorists argue that a more complex process is at play. The ways in which a family or a family member appropriate a technology into the household depends on many social factors such as age, gender, education, financial status, occupation and location. It is too simplistic to claim that the new technologies have caused changes in the patterns of people's domestic lives – people engage with the

technology and negotiate a role for it and form social practices around it. But this role is not fixed; it can change over time as circumstances within the household alter, or as different technologies are introduced to the domestic setting. In Silverstone's conception (also, in his later, 1992, work with Hirsh and Morley), the technology is regarded as having a 'symbolic currency', which is part of the 'moral economy' of the household. He writes: "To understand the household as a moral economy...is to understand the household as part of a transactional system, dynamically involved in the production and exchange of commodities and meanings" (Silverstone et al, 1992: 19). A technology is a text, open to many interpretations and malleable in the ways it can be integrated and used. The interpretation of a technology does not necessarily correspond to the meanings and uses inscribed at the time of its production.

Silverstone originally put forward a model of domestication based on four phases: appropriation, objectification, incorporation and conversion. *Appropriation* involves the acquisition of the technology and its introduction into the home. *Objectification* sees the further integration of the technology into the domestic setting. How it is integrated is influenced by factors such as cultural capital, and the social and economic circumstances of the family. This phase has a spatial element – where a technology is physically located in the home is influenced by such factors. *Incorporation* examines how the technology is used within the domestic setting, how it is integrated into the patterns of people's lives, and how families negotiate new patterns of domestic practice around it. *Conversion* is where the private technology again becomes a public technology. When the family integrates and negotiates a role for the technology, they present it to non-family members outside the domestic setting.

His model was not fixed. He refined it in later (1992) work, when he presented a three phase model for the study of ICT consumption: commodification, appropriation and conversion. The first phase, not present in the original model, relates to how meanings are encoded by producers into technologies, and how users decode them. But users can decode them differently to how the producers intended. In this refined model, he addresses a weakness of the original, by acknowledging in the commodification phase the social processes involved in the production of a technology.

In other models there are phases such as entrenchment (for example, where a technology is at first regarded as a novelty but comes to be regarded as essential, such

as a mobile phone, which is bought by parents as a toy for their child but comes to be regarded as an important security device).

Like most social shaping research, domestication suffers from the weakness of drawing general conclusions from small-scale samples. It is difficult to quantify whether case-studies are representative of societies as a whole. Consumption studies often contain little information about macro or meso-level socio-economic conditions or trends. Silverstone, for example, conducts his study among mainly middle-class respondents, which is too narrow a sample to be representative. However, he claims his findings are applicable to society in general. If, as he claims, factors such as education, financial status, occupation and location affect how a technology is appropriated, the experiences of working-class and upper-class respondents should differ from those of middle-class respondents. Also, if the social factors particular to each respondent influences their appropriation of technology, any general conclusions have to be tentative, and can not be stated as findings of fact – no two people lead exactly the same lives, and so in Silverstone's conception could not expect to appropriate the same technology in exactly the same way.

However, domestication is more sensitive than technological determinism to how people interact with technology, and is more aware of how consumption can be an individual, private process. Technological determinism often makes precise claims about individuals from general statistics, gathered from standardised questionnaires, which often do not reflect the reality on a personal level. The value of consumption studies, through their application of qualitative methodologies, is to close the distance between the researcher and the respondent, and allow a clearer insight into people as cognitive beings interacting with technologies or innovations.

2.8: Raymond Williams: technology and cultural form

The work of Raymond Williams precedes by over a decade the articulation of the social shaping of technology concept, but his study in the 1970s of the social origins and cultural form of television – then a relatively new, emerging technology and medium – has taken on a seminal quality among modern social shaping theorists. Many of the tenets of the social shaping approach can be traced to his work. Williams was writing when the status of determinists such as McLuhan and Toffler was rising

towards its peak, and he was pushing against popular opinion in advocating a social, rather than a technological, based account of the development of television.

His most famous work, *Television: technology and cultural form*, was published in 1974. The opening line reads: “It is often said that television has altered our world” (Williams, 1974: 9). He spends the rest of the book trying to prove that television hasn’t altered the world. Rather, it is the way in which society have adopted, appropriated and shaped the technology – and the social practices people have negotiated around the technology – that have led to changes in the world. But television as a technology has not acted as an autonomous force for change.

He suggests that television developed more so out of social need than technological imperative, and therefore it is wrong to assume a direct line of causality: the technology enters society and changes the world. A complex process of negotiation ensues as society appropriates the technology and people incorporate it into their lives. The development of television is linked to changes in the patterns of people’s lives – leisure habits, information consumption – but the ‘cultural form’ of television is socially shaped. The ‘cultural form’ refers to the content carried on the medium, and how people have negotiated social practice around it. Although Williams was not working within a social shaping or a SCOT framework, traces of the approaches can be found in his work: he recognises the social influence on the development of television as a technology, and the social influences on how it was appropriated by society as a technology and cultural form.

He argues that the manner in which television as a technology was developed had not been the only way, or even the most efficient way. But as the conflicts over television’s development were resolved, a technological hegemony formed around it, and in modern times, few people realise that there had been alternative paths to its development.

But in the 1970s, and even today, his view was in the minority. He argues that one of the reasons why technological determinism – and statements such as technology is changing the world – have gained currency is because it promotes pithy phrases, which are repeated often and not subject to critical appraisal. He writes that: “We have got so used to statements of this general kind, in our most ordinary discussions, that we can fail to realise their specific meanings” (1974: 9). If a statement is repeated continuously, it becomes a received wisdom, a truth, an assumption, and little thought is given to the “specific meaning” behind it. When Williams heard the statement that

television has altered the world, he didn't want to simply accept it as truth. He wanted to ask the simple, yet important question: has television really altered the world?

He also wanted to debunk the myth that television was a sudden breakthrough, invented purely through scientific inquiry and developed in isolation, outside the reach of social influences. He showed greater awareness than the majority of his contemporaries of the social and cumulative aspects to innovation, how it does not occur in isolation, how it is an inter-disciplinary, inter-technological process. Technological determinism often tries to personalise the innovation process, and reduce it to the actions of a single, identifiable person. This greatly simplifies on the surface a process that, underneath, is complex. As outlined earlier, Thomas Edison is usually credited with the invention of the electric light, whereas social shaping analysis of his work suggests that he was not solely responsible, and that the electric light did not have a single moment of invention. Williams is similarly wary of allowing the development and emergence of television to be credited to any individual or to any single moment of invention. He writes:

"The invention of television was no single event or series of events. It depended on a complex of inventions and developments in electricity, telegraphy, photography, and motion pictures and radio." (1974: 18)

Williams argues that television did not emerge from autonomous technological imperative, but from social need. However, he stresses that social need does not necessarily result in the development of a corresponding technology to satisfy it – sometimes fulfilling a social need is beyond the ability of available technological systems. He also acknowledges that a socially useful technology might not be developed if the "real decision-making groups" in society do not consider it a priority (1974: 18). These groups include the industrial and political elites who decide where to allocate money and resources. A technology deemed important by them will more easily attract resources and investment, and thus will stand a greater chance of successful development. But Williams touches on this topic only lightly. He does not articulate fully how the influence of social actors can act as brakes on or accelerators to technological development, how important technologies might not survive, and how technological potential to fill a social need might not be realised because of a non-technological reason – such as the cost of bringing the innovation to market and stabilising it. Such influences on the success of a technology, or the reasons behind its

development, are better articulated in the later social shaping, SCOT and systems of innovation literature.

However, in Williams's conception, social need can account for certain technological development, and he attempts to outline his reasoning behind the development of television. His analysis, however, is guilty of social reductionism (purely social factors can account for the emergence of television). And similar to how technological determinists collapse a linear path on historical analyses of technological development, Williams appears to collapse a linear path on the social changes preceding television's emergence. He makes the development of television seem almost the inevitable outcome of social progress. He does state that there were many possible paths to its development, and that the way it was developed was not the most efficient². His general point is very relevant to this thesis: that an emerging technology, or innovation, is not on a pre-destined path. However, he implies that a form of technology similar to television was almost an inevitable outcome of social progress, which is a socially determinist belief, and too close to hard social shaping for the conceptual framework of this thesis.

In Williams's view, the modern era is characterised by industrial revolution and large-scale urbanisation, with a social structure that is increasingly based on a home-centred family life. Entertainment and the consumption of information have become less of a communal, social activity; such activities are increasingly conducted within the home, and thus a need has developed to deliver entertainment and information directly to the home. The first electronic medium to fill that role was radio; the second was television. Also, in societies in which people enjoy greater amounts of leisure time, new forms of entertainment and diversion are necessary, a role which television quickly assumed.

Williams also notes that the centralisation of power created a need for information to flow from the centre to peripheral areas of society. The development of the printing press by Gutenberg allowed early newspapers to fulfil this need in a rudimentary fashion. Newspapers evolved into a more efficient means of dispensing information, and were eventually aided by the development of radio – to dispense

² In many ways, Williams showed how he was a product of his time when writing about the inefficiencies of television. He based his criticisms on a comparison of television's relatively poor sound to the superior audio quality of radio, and its relatively poor picture definition to the superior one of cinema. Those concerns were rendered obsolete by modern television, which had very high

audio messages – and finally television, which took on the role of dispensing audio/visual messages (1974: 21). His account of television’s development is functionalist, and it echoes the determinist view that there is a neutral, rational logic underpinning the development of such a technology. But in his schema, the development path is guided more so by social than technological imperative.

Brian Winston, too, argues that television emerged more out of social than technological imperative, or out of ‘supervening social necessities’ as he conceptualises them. The supervening social necessities he associates with the emergence of television include the spare industrial capacity after World War 2, the rise of consumerism, the nuclear family, home-centred entertainment, and the development of popular culture through radio and television. Winston argues that: “There was no limit on the forces that could act as supervening social necessities” (1998: 6). However, his concept of supervening social necessities suffers from the functionalist and determinist weakness of Williams’s earlier work.

One of the central arguments of this thesis is that new innovations have continuities with the past – but, as Carolyn Marvin would argue, new innovations is a historically relative term (1983: 3). When Williams was studying television, it was a relatively new medium; by 2002, it was an established, traditional medium. One of my key arguments is that innovations share patterns of emergence, and understanding these will grant us a deeper insight into the processes of innovation. Digital media, which is at an early stage of its emergence, has strong continuities with traditional media, such as television and radio. In the early phase of its emergence, television had a similar pattern of emergence to digital media, in that it displayed strong continuities with previously existing media. This is similar to the social shaping argument that new technologies emerge out of modifications to previously existing technologies. Williams illustrates the point with television. He conducts a historical analysis of its emergence, although he doesn’t, in any depth, draw comparisons between television’s pattern of emergence and that of any previously existing media. However, he does include a number of instances to illustrate his argument. He writes:

“Many people have said that television is essentially a combination and development of earlier forms: the newspaper, the public meeting, the educational class, the theatre, the cinema, the sports stadium, and advertising

standards of sound and definition and would improve upon them further with the introduction of digital television.

columns and billboards...Yet it is clearly not only a question of combination and development. The adaptation of received forms to the new technology has led in a number of cases to significant changes and to some real qualitative differences.” (1974: 44)

Not only does television incorporate certain elements of traditional media, it modifies them. Williams backs his point by showing how radio and television news adapted the newspaper practice of using headlines. Newspapers use headlines at the beginning of a story, while radio and television employs headlines at the beginning of bulletins. Also, television took from radio the practice of having a newsreader with an authoritative voice – one that conveys confidence, reassurance and knowledge. But television made a “qualitative” change to this by also seeking newsreaders who look authoritative, to suit the visual aspect of television as a medium.

This is an extremely important topic for my thesis. Digital media combine many elements of print, radio and television, but are more than just a combination of the traditional media. It has resulted in some “real qualitative differences” to the techniques and practices it has borrowed. It has not simply grafted old techniques onto itself, but has moulded and adapted them to suit the new medium. My research chapters will show how traditional competencies in the production of print, radio and television have carried through to digital media, but not always intact. They are changed, either subtly or substantially, to suit the new medium. In this way, the thesis will highlight the continuities with the past and argue against the determinist notion that digital media is a “break with the past” (Toffler, 1970: 21).

2.9: Carolyn Marvin: the emergence of electricity and the relationship of old media to new

If, as Sørensen argues, the social shaping of technology should offer a generic approach to the study of technological development, the work of Carolyn Marvin is one of the earliest to offer a bridge between the SCOT and the consumption

approaches. Marvin's research concentrates on the emergence of electricity in the early part of the twentieth century, and the ensuing struggle as people negotiated roles for electrical devices, forming social practice around the artefacts and incorporating them into the patterns of their lives. Marvin links the consumption and SCOT approaches by recognising how "groups perpetually negotiated power, authority and representation" during both the production phase (the electricians themselves) and the consumption phase (the public) (1988: 8). She argues that electricity, the devices developed around it, and the uses to which it is put, are not fixed or determined by qualities inherent in the technology itself, but are the outcomes of complex negotiations between various groups in society. She writes that electricians sought to preserve a myth around the creation of electricity, to protect the status they enjoyed in society, as a result of being a small, privileged group with access to specialised knowledge. She writes:

"Mastery of technical secrets [of electricity] was both an indicator of status and a path to it...because of the esteem conferred on technological literacy by a society that revered it as a high secret, professionals were anxious to guard it from eager non-specialists who might dilute it." (1988: 39)

The patterns are similar to modern day, with information society gurus being accorded a privileged status for their perceived visionary insights into the nature of technological and social change. For electricians, electricity was a transformative agent, which would change society and people's lives for the better. The mass media of the early twentieth century made unrealistic predictions about the transformative powers of electricity. The situation is again similar today, with computer technicians and the mass media making pronouncements on the transformative potential of the new ICTs. In the early twentieth century, there was also a popular belief in the rational integrity of the electrician who "served no master but truth" (1988: 32). This alluded to the perceived 'neutrality' of technology, whereas social shaping holds that if social actors are crucial to the 'construction' of technologies, the interests and ideologies of powerful social actors will be built into the technologies. This follows on from earlier theoretical work by The Frankfurt School and Jurgen Habermas, who argue that technologies are highly ideological. This creates a technological hegemony (adapted from Habermas's concept of cultural hegemony), which makes the successful technology seem so natural that people think there had been no alternatives

to how it could have been developed. By infusing the technology with a 'natural' appearance, the hegemony presents the technology as neutral, and not designed to serve some social interests over others.

Marvin argues that technologies have "no natural edges"; they are social constructs, often fashioned out of previously existing technologies, and new technological practices are often fashioned out of older ones or adapted from older practices that do not work in the new setting. Indeed, she stresses the continuities with the old in this 'new' world of electricity. She writes:

"Experts and publics greeted a new world of electricity by elaborating an old one. New electrical inventions and ways of thinking about electricity were given shape and meaning by being grafted onto existing rules and expectations about the structure of social relations." (Marvin, 1988: 232-233)

She writes that new technologies don't change people's lives. She warns against "the temptation to derive social practice from media artefact" (1988: 7).

The SCOT literature outlines how major technological systems seem to share similar patterns of emergence. A later section of this chapter will try to draw comparisons between the patterns of emergence of two content forms: the magazine and digital media. That is not to argue that all, or even most, content forms share similar patterns of emergence, but the magazine and digital media seem to offer an instance where this was so. The purpose is to try to place digital media's emergence into a historical perspective. But one of the patterns of emergence that seems common to many new technologies – including new ICTs – is of being "given shape and meaning by being grafted onto existing rules and expectations about the structure of social relations" (1988: 233).

Digital media is still in its infancy, and digital media content creators are on a steep learning curve, drafting and re-drafting the techniques, codes and grammars for supplying content to their medium. But it would be hard to argue against Marvin's point, that these techniques, codes and grammars are being fashioned out of older ones used in older media; that the world of digital media is being greeted "by elaborating an old one" (1988: 232-233). All forms of media develop their own identity by drawing on what has gone before. They never develop in a vacuum, as technological determinists argue, where the medium and its content emerge independently of the

culture and ideologies of society. Marvin notes how the practices that develop around new technologies are shaped out of previously established social practices, and how, continuously, the past runs through the present. “New practices do not so much flow directly from technologies that inspire them as they are improvised out of old practices that no longer work in new settings” (1988: 5). As shall be outlined in greater depth later, content production practices for digital media are often fashioned out of older practices that no longer work on the new medium.

Marvin argues that one of the greatest difficulties people experienced with the emergence of electricity was how to make sense of the new, unfamiliar technology. They did so by projecting onto it meanings, values and symbolisms derived from older, familiar technologies. A similar statement can be applied to digital media. Print media codes have been projected onto the new medium in an attempt to make it an object for consumption. However, with advances in technology and enhanced computing power, the codes of audio and visual media are increasingly being projected onto digital media. In trying to make sense of the unfamiliar medium and technology of digital media, we are constantly referring to technologies and media that are familiar, such as print and broadcast. Marvin herself challenges the assumption that different forms of media are independent of each other. Rather, “separate media [do not] embrace distinct, self-contained codes, or spheres of interpretative activity” (1988: 7). This is evident in digital media, which draws on the technologies, codes and grammars of traditional media, even if it has to adapt or abandon some of them along the way.

Enter CD-ROM, a case-study in a later chapter, is a case in point. It delivered digital media content to personal computers on a CD-ROM platform and described itself as a magazine – the term magazine was employed as a metaphor to allow people to understand the concept of a digital CD-ROM content artefact. However, the metaphor was clumsy and imprecise on a number of occasions, and was at times confusing, with elements of the CD-ROM attributed descriptions that were patently unsuitable and misleading. Producers use such metaphors to render familiar something that is unfamiliar. Academics also do so, but SCOT theorist John Law warns that use of such metaphors can, occasionally, be counter-productive and imprecise (1987: 140). He notes how technological development is often compared to biological evolution, but there is not always a tight connection between the two. Innovation in an innovation system is compared to mutations in a biological system.

Mutations survive according to the Darwinian principle of the survival of the fittest, or the best will win out. However, the 'fittest' innovation does not always survive in a technological system, so the metaphor is not wholly accurate. Furthermore, such imprecise metaphors can give rise to misconceptions about the nature of innovation.

Marvin's work makes a valuable contribution to the conceptual framework of this thesis. Her research is rich in detail, and she demonstrates clearly the social influences on both the production and consumption of technologies, and the conflicts inherent in the emergence of a new technology system. (Technological determinism presents it as a harmonious process, which feeds into the technological hegemony once the technology has been established.) She demonstrates how electricity and electrical devices adopt and adapt the codes, grammars and techniques of previously existing technologies. However, like the majority of social shaping writers, she concentrates her research on material technological artefacts. My conceptual framework applies to the quite different area of content, so her concepts can not be carried through intact. But in a similar fashion, the production and consumption of a content artefact is also not a harmonious, conflict-free process. Also, digital media, not just as a technological artefact but also as a content one, has adopted and adapted the codes, grammars and techniques of previously existing media.

One of the weaknesses of her historical work is that she relies exclusively on secondary documentation, such as articles and reviews, which are open to interpretation, especially if examined polemically. History isn't just a neutral account of what happened, but an interpretation of what happened, and is vulnerable to the ideological biases of those who write it. However, this is a potential weakness of most research projects that are historical or retrospective.

2.10: Historical case-study: the emergence of the magazine as a content form

The SCOT literature notes that many technologies share similar patterns of emergence, although the researchers qualify their assertion by cautioning that their sample is too small to make generalisations that 'all' or even 'most' technologies share patterns of emergence (Bijker, Hughes and Pinch, 1987). Technologies, of

course, are not the primary concern of this thesis. The section will draw parallels between the emergence of a form of the traditional media – the magazine – and the emergence of digital media as a content form. That is not to argue that all media forms share patterns of emergence, but that the magazine and digital media provide an instance. This is to try to place the emergence of digital media into historical perspective and to argue that it has continuities with the past. The magazine was selected as a subject of study because a later case-study, of *Enter* CD-ROM, was a digital media artefact that tried to frame itself in a traditional media form, as a type of magazine. However, as will be outlined in chapter seven, the thesis is aware that *Enter* also drew on other traditional media forms, such as television and radio. Such instances will be highlighted where appropriate.

It is beyond the scope of this thesis to give a detailed history of the magazine. In trying to relate the section to my overall research, I am interested in how the magazine emerged and evolved as a content form, not in details such as when the first magazines were published, where and by whom. Therefore, I shall concentrate on instances that illustrate the emergence of the magazine as a content form, such as how (similar to digital media) the early magazine defined itself largely in terms of older media (books and newspapers) until it had established its own distinct identity. Also, how it drew on the techniques and practices of the older media, but in many cases adapted them to suit the new magazine format; and how it evolved over the centuries into a content form that is very different today from what it was at the beginning. Its evolution was linked to, but not determined by, the emergence of new technologies (printing-presses and photographic equipment) and to changes in society.

The magazine is a print medium and has its origins in other forms of print media, namely the book and the newspaper. As one journalist, William Owen, commentates, the early centuries of the magazine were defined by a struggle to distinguish it from other print media, to find its own identity and niche, especially with regard to design and content (Owen, 1992).

The struggle to distinguish itself from other print media intensified as the magazine matured. Early magazines borrowed heavily from the techniques of book publishing, just as, today, digital media is borrowing heavily from the techniques of traditional forms of media. This was, partly, because the magazine was widely regarded as a form of book, and not as a distinct new medium. Many publishers were slow to break out of the book mind-set and treat the magazine on its own terms. At the

time, book publishing set the standards for typographical settings and page design, and these standards were followed closely by the magazine, partly for technological reasons. Printing-presses prior to the 1900s could, usually, only handle standard typefaces, laid out on hot-metal plates and arranged in symmetrical columns that were wrapped from the top to the bottom of the page, in the manner of books. There was little use of graphics, pictures or photographs before 1900, because printing technology was often unable to accommodate them. Magazines, then, were largely a text-based medium, whereas today's magazines are a symmetry of text and images. So overtly did early magazines replicate the book that William Owen claims: "The magazine was distinguished from the book only by its flimsy cover" (Owen, 1992: 13).

When pictures and photographs began to creep into early magazines in the late 1800s and early 1900s, the means of displaying them was borrowed from an older means of display – the art gallery. Pictures and, later, photographs had decorative borders (similar to the frames of paintings), had perfect symmetry, and were usually shown whole, as in a gallery. (Cropping of pictures and photographs had yet to emerge as a common technique for magazines.) William Owen describes this as the 'art' treatment: "Photographs were hung on the page as if on a gallery wall" (Owen, 1992: 19).

Similar to how the book had set the standards for typographical layout and design, the gallery set the standards for pictorial layout and display. Early magazine publishers, unsure of their own (new) medium and wary of straying too far from convention, followed the techniques of the gallery. The magazine, partly due to technological limitations, had yet to set its own guidelines and styles for the display of paintings and pictures, so it grafted the techniques of the gallery onto itself. But these techniques were adapted over time, as publishers slowly realised that the techniques of the gallery didn't suit the format of the magazine.

Another reason why photographs and pictures were given the 'art' treatment was because the symmetry of a gallery arrangement suited the symmetrical arrangement of the typographical (book) settings that the printing-presses before the 1900s allowed. The page design technology and printing technology made it difficult for designers to wrap text around irregular shaped photographs or pictures. It was only after the 1900s that magazines began cropping photographs and varying their scale, and many more

years before they were comfortably able to wrap text around irregular shaped photographs or pictures.

Developments in technology allowed the magazine to evolve in different directions. However, the technology didn't determine the evolution of the magazine as a content form; rather, social factors (such as the creative role of authoring and design professionals) were a more crucial influence, as shall be argued later in this section. Technology's contribution to the evolution process was in giving magazines the freedom to experiment with new forms of expression that, previously, wouldn't have been possible. Improvements to printing-presses and modern desk-top publishing allowed greater flexibility in page design. With the invention in the 1860s of a colour Lithographic press, magazines could begin incorporating colour into their designs. When improvements to photographic technology followed, magazines began to make more dynamic and innovative use of photographs, especially after the invention by Oskar Barnack in 1923 of the first hand-held 35 millimetre camera (Owen, 1992). Journalist Anthony Davis links the emergence of an easily portable camera, which produced quality photographs quickly, to the emergence of a new content genre, photojournalism. Without such developments in technology, pictorial magazines such as *Life* in the United States and *Picture Post* in Britain (both first published in the mid-1930s) would not have been possible (Davis, 1994). However, the technology did not determine the tone or nature of the magazines.

One of the central arguments of this thesis is that, although technology enables the media to develop new content innovations, it does not determine what makes up that content. The thesis argues that social and other factors are crucial influences on a content innovation. In this vein, the content of magazines is always deeply influenced by the pervading culture of the times. The 1800s, early-1900s, post-war years, the sixties, and the nineties all produced magazines very different in content, but which reflected the overall tone or *Zeitgeist* of society in those times. For example, improvements to photographic and printing technology allowed magazines to develop the photographic montage, in which a number of pictures and images were overlaid each other or meshed together to create one image. The montage first emerged in the 1930s in German and Soviet worker magazines, such as the *Arbeiter Illustrierter Zeitung* (AIZ) and the *Sov'etskeo Foto*. The AIZ used montages for political satire. The target of its satire was the Nazi party and its leaders. Therefore, in 1933, when the Nazis assumed power in Germany, the magazine moved to Czechoslovakia. It was

printed there and smuggled back into Germany until 1938, when the Nazis entered Czechoslovakia. The AIZ was also one of the first magazines to use repetition of pictures, cinematic sequential picture stories, dramatic contrasts of picture scale, and cut-outs (Owen, 1992). The importance of this point is that it highlights how the technology enables new forms of content to emerge (the montage), but the tone of the content – political satire – is influenced by the wider social issues and cultural influences of the time, and how macro-level social and cultural factors are an influence on content.

The time needed for new innovations to develop and diffuse into popular use means that a content form, such as magazines or digital media, isn't complete in its early years. The magazines of today – characterised by full-colour pictures, glossy paper, desk-top layout allowing for elaborate design, better quality, cheaper and faster printing – are very different publications to the ones that existed in the 1900s and before. Magazines as they are today evolved over time. They weren't a 'given' from the beginning. This thesis believes the same can be said of digital media. Many of the technologies that will enable the evolution of digital media as a content form have not yet emerged. Many of the practices that will become standard in digital media content production are not yet possible. In ten years, the digital media of today will probably seem primitive, just as a 1900s magazine would seem today. Technology will enable changes in the evolution of digital media content innovations, but will not determine them, and wider social and cultural influences will set the tone.

James Monaco (2002) argues that an earlier content form – film/cinema – has over many years built elaborate grammars, and viewers have a mature ability to decode the signified/signifiers in a film text. Certain shots or music indicate certain meaning or moods, which the viewer, through understanding film/cinema grammar, can decode. However, the decoded meanings do not always correspond to the inscribed meanings of the film producers. Monaco suggests that a similar process of accumulating grammars is underway for digital media content, but is still at an early, weakly developed, stage.

Like digital media, the magazine initially struggled to distinguish itself as a new distinct content form. It was defined largely in terms of the older media (books). It borrowed techniques and practices from the older media, but slowly adapted them to suit the new format. And eventually it cut loose from the older media and found its own space and purpose. It evolved into a content form that was very different from

what it was at the beginning. This thesis argues that digital media is at the beginning of a similar process; that although digital media defines itself largely in terms of the traditional media, it will eventually be recognised as a distinct medium, having accumulated its own codes, grammars and rules of production, and its own niche role within the media. A quote from John Morrish illustrates the point. He writes: “A web magazine is a magazine by analogy only” (Morrish, 1996: 175). (Likewise, an online newspaper is a newspaper by analogy only.) Similarly, *Enter* was a magazine by analogy only. It defined itself as a magazine because, in the struggle to shape itself as an object for consumption, it had to draw on familiar, established concepts. But as digital media matures into a more distinct content form, such content innovations will have less need to define themselves in terms of the traditional media.

2.11: Conclusion

The next chapter, primarily on systems of innovation, will contain a synopsis of the overall conceptual framework, to clarify how social shaping contributes to it. Also, it will outline how social shaping compensates for the conceptual weaknesses of systems of innovation, and how systems of innovation offers a fuller articulation of some of the concepts touched on in social shaping theory.

It is important in this chapter to move beyond the technological determinist conception of innovation – as a closed process – and towards the open conception presented by social shaping theory. The main value of social shaping theory is that it recognises the importance of social and cultural influences, which as will be outlined, are of particular importance to content innovations. Also, social shaping theory recognises that innovation has a social context of production and consumption. Technological determinism suggests that the technology changes the environment of production and, in particular, consumption.

Chapter 3: Literature review 3: systems of innovation and the digital media sector

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3.0: Overview

The second major constituent of the conceptual framework is systems of innovation, which attends to how the linkages and interactions between actors within an economy form a system in which innovation occurs. In previous academic research on the role of innovation within the economy and the emergence of new innovations, there is little explicit overlap between the systems of innovation concept and the social shaping approach. However, this thesis argues that a conceptual framework that combines elements of both traditions will provide a deeper understanding of the processes underlying the development, production and emergence of innovations, at both a broad industrial level and the micro-level of companies. The systems of innovation concept, traditionally employed on macro and meso-level studies, provides a useful framework in which to analyse the emergence of the Irish digital media content industry: it highlights how innovation does not occur in isolation by examining the linkages between companies, and between companies and the supporting institutional set-up, and how the competencies and knowledge necessary for innovation are transferred within the system. It emphasises that the emergence of the content industry is subject at various levels to checks and balances, brakes and accelerators, both within and outside the company, and within and outside the industry. Above all, it demonstrates that innovation can not be explained, as Nicholas Negroponte puts it, “through purely technological imperatives” (Negroponte, 1995: 81).

Although not an exact fit, the traditions of social shaping and systems of innovation complement each other in the study of emerging innovations and an emerging innovative industry. Social shaping studies tend to focus on the influences and factors that shape the emergence of individual innovative artefacts, such as the television or the electric light (Marvin, 1998; Thomas, 1987; Williams, 1974). And, as with systems of innovation, the subjects of social shaping studies are, for the most part, technological or material artefacts.

Systems of innovation studies have a broader scope, and examine innovation internationally, nationally, regionally and sectorally. Sectors are binded by a common base of innovative activity (such as the digital media sector, which comprises technology, applications and content), and are of particular importance to studies focusing on areas of specialisation within a national or international system of innovation (automobile production in Sweden, for example). In so doing, it shows how the concept can be applied at many levels, including in this thesis at the level of individual companies. The systems of innovation concept will be applied most extensively in the qualitative study of the emerging Irish digital media content industry. A combination of systems of innovation and social shaping will be applied to the quantitative case-studies of individual content companies, to better understand the processes of innovation within them, and to assess the influences on the innovative process of actors both within and outside the firm.

There are a number of weaknesses in applying the systems of innovation concept to the study of the emerging content industry. Although the concept places innovation at the centre of economic growth, it is weak in accounting for how new innovations emerge. The main body of the literature is concerned with mature innovation systems, with a well developed institutional set-up, and an innovation process reliant heavily on formal R&D (based on the application of technical and scientific knowledge) within large private firms. The content industry is at an early stage of its emergence, and my research suggests, so too is the institutional set-up to support it. Furthermore, formal R&D, and the application of technical and scientific knowledge, is not a strong characteristic of firms within the industry. However, the emphasis of the literature began to shift in the early 1990s, particularly in writings from the Aalborg School, which tried to move the focus from formal R&D to interactive learning by actors in the system (Lundvall, 1992; Lundvall, 1998; Lundvall, Johnson, Anderson and Dalum, 2001). Also, in recent years, the concept has begun to be applied to emerging systems, such as the useful work of, among others, Egan, Saxenian and Pavlik in applying it to emerging digital media content industries in the United States and Canada (Egan and Saxenian, 1999; Pavlik, 1999; Cooke, 2002; Scott, 1998; Brail and Gertler, 1999; Heydebrand, 1999). The shift to emerging sectors, and the promotion of interactive learning, makes the concept more applicable to the emergence of the content industry and understanding how innovations emerge from it. However, this is

a marginal shift within the literature, and the dominant emphasis remains fixed on mature, industrial innovation systems.

In addition to this shift, a concept has emerged within the literature that has potential to be usefully applied to content innovation: styles of innovation. Systems of innovation – within a nation, for example – assume strong linkages and relationships between companies, and between companies and external institutions, as well as influential factors such as the natural resources of a nation. The particular characteristics or make-up of the system influences the ‘styles’ of innovation it produces. (In certain studies, such as Hoogma and Webber (1998), they are considered determinants of style.) Dissimilar systems of innovation tend to produce dissimilar styles of innovation. The literature, with its emphasis on industrial innovation, usually speaks of styles of innovation in the sense of technological similarity or dissimilarity (Vertova, 1998). For this thesis, the outcome would be content similarity or dissimilarity. Whereas the literature concentrates on the influence of natural (material) resources on innovative output, my research indicates that social and cultural factors have a greater influence on the ‘styles’ of content innovation that emerge from the Irish system. The concept has not been applied notably to the style of other digital media content industries abroad, to which content similarity or dissimilarity could be compared, to serve as a gauge on the influence of social and cultural factors and the institutional set-up of the system. This may open a worthwhile area of research in the future.

3.1: Joseph Schumpeter

The work of economist Joseph Schumpeter precedes by several decades the main body of literature on systems of innovation. However, the origins of the concept can be traced to his work, and he greatly influences the work of later theorists such as Christopher Freeman¹, Luc Soete and Charles Edquist, all of whom work extensively in the systems of innovation tradition.

¹ Freeman was technologically determinist in much of his work. However, in his writings on systems of innovation, he demonstrated an awareness that technology did not emerge under an autonomous momentum. He was aware that many factors influenced the emergence of a new technology. Freeman’s weakness as a theorist was that, in his model, he bestowed on technology too privileged a status; he over-estimated its influence on the innovation process at the expense of important, but less obvious, social factors. Freeman, in the opinion of the author, was a soft-determinist. The conceptual framework of this thesis incorporated elements of soft-determinism, and as shall be outlined in this chapter,

Schumpeter was one of the first economists to examine economic growth and technological change from an innovation perspective. The majority of neo-classical economists examine how resources, including technical knowledge, are allocated within an economy, and they neglect the innovation aspect to economic development. Writing in the middle of the 20th century, Schumpeter stresses the impetus that innovation can give to an economy, and he puts forward the notion of long wave cycles of capitalist development, which bring about 'creative gales of destruction'. These are periods of intense change, in which clusters of radical new technologies emerge to replace older, established ones. These periods of profound technological change are usually accompanied by similarly profound social changes, although Schumpeter never explicitly argues that the new technologies determine social change. But here he echoes much of the later post-fordist thinking, that capitalist development occurs in distinct phases. Although in the post-fordist conception, these phases are characterised by a set of social, political and economic conditions (Preston, 2001: 37; Schumpeter, 1994).

In contrast to traditional linear models of technological determinism, Schumpeter presents technological progress as a series of 'long wave' cycles of about 50 years each. His work draws on the earlier writings of Soviet theorist Nikolai Kondratieff, who in the mid-1920s tried to explain the reasons why capitalism had developed a predictable pattern of boom and bust periods every 50 years. These 'waves' were linked to technological changes but, importantly, were not triggered or determined by technology. New technologies could be exploited to their potential only if favourable economic conditions were in place (Hall and Preston, 1988: 4). Schumpeter, a decade or so later, articulated Kondratieff's theory in greater depth. However, he follows a narrower determinist line than his Soviet predecessor, in that he places a heavier emphasis on the ability of new emerging technologies or innovations to pull capitalism into a boom, or an up-swing phase. Like Kondratieff, he argues that the

Freeman's work made a valuable contribution to it. In researching the emergence of the systems of innovation concept, Freeman traced its origins back further than Schumpeter, to German economist Friedrich List, who in 1841 was writing about the national system of political economy (Freeman, 2000). His writings contained, in rudimentary form, many elements of the later systems of innovation concept. List's mission was to devise stratagems to push the German economy ahead of the English one, and he stressed the importance of learning about technologies to stimulate innovation. However, his intellectual contribution was noted only after the systems of innovation concept had been well established, meaning Schumpeter had a more immediate and direct influence on the concept as it was emerging.

innovation process has many dimensions, and factors such as economic and socio-political conditions are influential. The first phase of a cycle is characterised by an up-swing, in which a series of inter-related radical innovations emerge. There then follow a down-swing phase, characterised by a series of incremental innovations, or minor improvements, to the radical new technologies that were introduced during the up-swing phase. Minor booms and busts can occur during this time, but the general trend is for the down-swing to continue until eventually a new set of radical innovations emerge, which leads to the up-swing phase of the next cycle.

Schumpeter identifies four such cycles that were crucial to the development of industrial capitalism:

- 1:** The first long wave, from the 1790s to the 1840s, was characterised by the emergence of water and steam power, early mechanisation of a number of industries, including textiles, and new iron production techniques.
- 2:** The second long wave, from the 1840s to the 1890s, saw the introduction of railway transport, steam power in factories, and precision engineering of machinery and tools.
- 3:** The third long wave, from the 1890s to the mid-1940s, heralded the emergence of electrical engineering and machinery, as well as increased use of chemicals.
- 4:** The fourth wave, from the 1940s on, was characterised by mass diffusion of motorised transport, electronics and aerospace.

My conceptual framework privileges to a greater degree the social factors that are crucial to the emergence of new innovations, which in a Schumpeterian model are necessary for the beginning of the up-swing phase of a new wave. His model provides a historically grounded account of technological and industrial change. However, Schumpeter and subsequent neo-Schumpeterian theorists acknowledge the temporal assumptions of the model and qualify it by stating that the 50-year cycle of waves is an approximate timeline – the waves could be 40 or 60 years, longer or shorter.

However, like many retrospective accounts of innovation, it appears relatively easy to impose a pattern on history, to collapse a linear path on technological and economic development, and employ it as the basis for predicting future development. Such historicism is out of synch with the overall conceptual framework of this thesis, which holds that innovation is a risk-laden process, influenced by many factors and social actors, and as such cannot be predicted with genuine certainty. The process can not be reduced to the certainty and predictability of 'long wave' cycles. The

Schumpeterian and neo-Schumpeterian 'long wave' model betrays its determinist roots by trying to impose a predictable pattern on technological development. Although certain favourable technological, social and economic conditions facilitate the beginning of a wave, there is no guarantee that this will happen in the future, or that cycles of future innovation will follow the general pattern of those in the past.

Another weaknesses of the Schumpeterian approach is that he gives no precise details on how the emergence of a cluster of technological innovations sparks the up-swing phase of a long wave (Preston, 2001: 124). Neither does he give an adequate explanation for why or how new technologies begin to emerge. This echoes criticisms of the later systems of innovation literature, which through its bias towards macro-level analysis has difficulty explaining how new innovations are brought into the system (Webber and Hoogma, 1998). As already outlined, moves have been made to try to incorporate into the concept an adequate explanation for how innovations emerge. But this thesis further develops the concept by incorporating into it elements of social shaping theory, to recognise the social and cultural influences on content innovation, and the importance of an innovation's social context of production and consumption.

One of Schumpeter's arguments is that the new technologies stimulate production, which push the economy into growth. It is a determinist notion of a technology-led system of economic change, and more in line with supply side economics, which are characteristic of the majority of governmental and industry accounts of innovation.

However, Schumpeter does not reduce the process totally to technology. He places much of the responsibility for the beginning of up-swing phases on the shoulders of entrepreneurs, or 'heroic' entrepreneurs as he terms them. Similar to many determinists, but to a lesser extent, he tries to personalise innovation, which glosses over the complex and multi-dimensional processes that underpin it. Also, his emphasis on individual entrepreneurs implies that innovation is a relatively isolated process. Later systems of innovation writings emphasise that even private firms developing innovations have numerous and strong linkages to external actors.

Finally, Schumpeter's conception of 'creative gales of destruction' is useful to this thesis. (Later Schumpeterian work, or Schumpeter Mark II, focuses on the accumulation of competencies and innovations within a system, which is relevant to companies in the content industry, as they build up their competencies through interactive learning and experience.) It demonstrates that the profiles of innovating

industries are dynamic and changing, not static. Although Schumpeter uses it to explain technological change on a macro-national level, I apply it to the meso-level of an industrial system of innovation. A system of innovation, as shall be outlined, is continually in flux, as new innovations emerge or modifications are made to previously existing innovations. A continual process of change and restructuring also occurs in the organisational, social and economic layers. A tension arises as the new challenges or replaces the old, or as the role of an old technology is renegotiated in society. This change is often seen as a 'crisis' or a stress between opposing groups, as part of the conflict that is inherent in systems of innovation.

Innovation means something new: it can be a new combination of elements from previously existing innovations, or improvements (process innovations) to existing innovations. It encapsulates the continuities with the past, and the additions to it in the present. A radical innovation is a substantial development, such as the development of a new base technology, and a process (incremental) innovation would be an improvement to it. To further innovate, a system has to replace, eliminate or renegotiate established innovations or innovators.

3.2: Systems of innovation

As stated in the previous chapter, the social shaping approach emerged in the mid to late-1980s to challenge older, and cruder, theories of social, technological and economic change. Fragments of what would become the basis of the theory are present in the earlier works of, among others, Raymond Williams (1974), but it wasn't articulated in a unified form until the 1980s. Similarly, fragments of systems of innovation can be found in Schumpeter's work in the 1930s, and even as far back as Friedrich List in 1841, but again the theory wasn't articulated in unified form until the mid-1980s. However, unlike social shaping theory, which is concerned with technological change, systems of innovation is more focused on how innovation stimulates economic growth. Whereas systems of innovation stresses how interaction is necessary to form a system in which innovation occurs, social shaping is concerned with how the interactions *shape* emerging innovations, in both their production and consumption contexts.

Systems of innovation challenges orthodox economics, which tries to explain economic growth and innovation through the allocation of resources, under the

assumption that economic growth proceeds through the application of universal rules, and that the context of innovation matters little. As Lundvall writes, the conclusion of this rationale is that “national differences in culture and institutions may affect the way things are done, but it is assumed that the impact on the allocation of resources and the efficiency of production is so minor that they can be neglected” (Lundvall, 1997: 1). Systems of innovation offers a holistic view of innovation. Actors – organisations (companies), institutions (government/state agencies, universities) and economic structures (monetary system) – interact at various levels, and the linkages and relationships between these actors combine to, in effect, produce a systems in which innovation occurs. Unlike the neo-classical economic method of analysing resource allocation, early systems of innovation writing emphasises the importance of formal R&D in institutions such as universities and, especially, within organisations such as large private firms. This brings and accumulates new scientific and technical knowledge within the system, which is used as the basis of producing new innovations to stimulate economic growth. The institutional set-up supports companies as they develop innovations and, later, as they try to stabilise them within the wider economy.

Innovations, according to Charles Edquist, are “new creations of economic significance” (Edquist, 1997: 1). Often they are new combinations of previously existing innovations, or improvements to previously existing innovations, or significant (radical) new innovations. But rarely would an innovation emerge without being built upon or influenced by previous research or innovations. Similar to social shaping theory, systems of innovation highlights the continuities new innovations have with the past. However, a weakness of the approach is its failure to fully acknowledge the social influences on a system, or how the workings of a system are an inherently social activity.

Not all innovations are of direct economic significance, as Edquist’s definition suggests. Neither is all innovation technological or industrial. Organisational and institutional innovations are also important facets of emerging systems. This will be outlined in greater detail later in the chapter.

Before engaging in a deeper analysis of the concept, I must first qualify the use of the word ‘system’. Although at first sight it connotes something consciously developed, with all the constituent parts working harmoniously towards the same goal, this is not so. Systems of innovation are riddled with internal conflicts, between

actors that have competing or even opposing goals. For example, a competing goal would be a company that tries to increase its market share at the expense of a rival. An opposing goal would be a management that tries to introduce a new technology to the factory floor to improve efficiency, but meets resistance from workers because the technology changes work practices and results in job losses. Or it could take the form of government institutions, such as the one regulating monopolies and mergers, which tries to prevent a monopoly in an industry by blocking one company's bid to take over a rival.

But despite such conflicts and differing goals, and despite the fact that more new innovations perished than survived, the overall effect of the interplay of these various social actors is positive. The culmination of their actions is to form a system in which innovation occurs, even if many of the players are competing against each other and trying to advance at the expense of others. As Richard R. Nelson and Nathan Rosenberg write:

"There is no presumption that the system was, in some sense, consciously designed, or even that the set of institutions involved work together smoothly and coherently. Rather, the 'system' concept is that of a set of institutional actors that, together, play the major role in influencing innovative performance." (Nelson and Rosenberg, 1993: 5-6)

The systems of innovation concept is criticised for being determinist (that, for instance, the institutional set-up is a determinant of innovation) and functionalist (Lundvall, 1997: 10). My conceptual framework rejects the determinist undercurrent in the literature. And although institutions evolve to perform functions within the system, this thesis rejects the functionalist assumption that they are consciously created.

However, it is important to note that the system aren't entirely conflict based. There are institutions that facilitate the innovation process, such as universities (for educating workers and engaging in research) and state bodies, including the Labour Court (to help settle industrial disputes) and Enterprise Ireland (which provides support services to companies).

3.3: National system of innovation

Since the concept was first articulated, systems of innovation has had various applications as a tool for analysis, the most common of which is as a ‘national’ system of innovation [NSI]. The title was first used by Christopher Freeman in a book he wrote on innovation in Japan (Freeman, 1987). The term emerged to counter neo-classical assumptions that, although national cultures, institutional set-ups and economic structures differ, their effect on productive and innovative performance is negligible and can largely be ignored. The NSI argues that these factors have a crucial effect on productive and innovative performance, although there is a tendency in the literature to regard them as determinants. More recent writings argue that national cultures (although only passing references are made to the influence of culture), institutional set-ups and economic structures affect the style of innovations that emerge from national systems (Vertova, 1998; Lundvall, 1998). To assess the extent to which the NSI effects the style of innovation in the content industry, I had to place greater stress on social and cultural influences than would have been usual in systems of innovation studies, concerned mainly with industrial and technological innovations. Stefano Breschi and Franco Malerba, who contribute valuable writings to advancing the concept of a sectoral system of innovation, offer the following definition of an NSI:

“A national system of innovation takes the geographical boundaries of the innovation system as given and analyses the workings of that composite and varied set of actors involved in the innovation and diffusion processes – firms, universities, professional schools and public research institutes, and the government – and the links among them.” (Breschi and Malerba, 1997: 130)

A flaw in Breschi and Malerba’s definition is their assumption that the geographical boundaries of an NSI can be taken as a given. This is also a weakness of neo-classical economics, which according to Lundvall, regards nations as “national facts” (Lundvall, 1997: 1). For theoretical coherency, as well as the practical purpose of focusing my empirical research and analysis, I believe it is necessary to set a boundary to a system of innovation, be it industrial, sectoral or national. The boundaries in which a national system operate is a set of borders. However, it is a theoretical weakness to regard the borders as a given, or in the neo-classical sense, a

national fact. The tendency to regard national borders as a given reflects the tendency within the literature to examine mature, well-established systems within countries with similarly well-developed economies and stable borders. Historically, however, borders have shifted, and the boundaries of territories have been re-drawn. The borders of a nation are not always a given – sometimes they are in dispute, as in certain areas of the Balkans, or Northern Ireland. It would be more accurate to speak of a generally recognised, if not wholly accepted, set of borders.

Also, Breschi and Malerba's definition is reliant too heavily on a spatial concept of a nation, which is consistent with the general trend in the literature to emphasise natural resources (such as territory) and place less emphasis on social and cultural influences. Benedict Anderson (1983) offers an alternative vision of a nation. He argues that there is nothing natural about the setting of a country's borders, and so a nation can not be defined simply in terms of an area of land locked within a set of borders. He highlights that, especially after times of conflict, borders are re-drawn and peoples find themselves to be geographically in one country, but culturally and socially they regard themselves part of a different one. And so, Anderson argues, a nation is more than just the lines of its borders. He claims it is preferable to think of nations as "imagined communities", in which cultural beliefs and practices and social norms are shared and accepted by a majority of the people.

For my analysis, I take the NSI to operate within the borders of the 26 counties of the Irish Republic (disputes about the legitimacy of the border with the North will remain outside this thesis). However, such a spatial definition has to be underpinned by a recognition of the commonality of certain cultural practices and social norms among the various actors within the country's NSI.

Although I employ the NSI as an analytical tool, I take into account weaknesses and criticisms of the concept. A common criticism is that, because of globalisation and the increasing power and mobility of multinationals, the nation is becoming irrelevant as the basis of analysing innovation systems (Nelson, 1993; Weber and Hoogma, 1998; Lundvall, Johnson, Anderson and Dalum, 2001). Nelson, for example, argues that globalisation has led to the creation of an 'international' system of innovation, in which the economies and societies of the world's countries have become increasingly linked to and dependant upon one another. In such a climate, Nelson argues, it is difficult to isolate a nation as a subject for analysis, without making substantial reference to the international factors that influence and shape its

system of innovation. However, this thesis argues that there isn't any suggestion that a system of innovation should be regarded as a closed system. One of the key missions of the early literature is to demonstrate that companies do not innovate in isolation. Therefore, at a macro-level, it would be counter-productive to regard national systems as operating in isolation. My empirical research, both quantitative and qualitative, demonstrates that Irish digital media content companies have strong economic and institutional linkages to external actors both inside and outside the national system. To disregard linkages outside the national system would skew the empirical findings. That said, the NSI concept provides a useful framework in which to analyse the emerging industry. Characteristics of the Irish NSI, and the linkages firms form within it, tend to be the major influences on innovation within the content industry.

A further criticism of the concept is that, even setting aside external factors, the term NSI is internally misleading, although such a criticism could be directed at a system of innovation on any level. Richard R. Nelson writes:

"The term suggests much more uniformity and correctedness within a nation than is the case. Thus, one can discuss Canadian agriculture pretty independently of Canadian telecommunications." (Nelson, 1993: 518)

His argument operates on two levels. A linguistic flaw in the terminology is that 'system' implies unity, whereas much of the activity within the system is conflict-based (and these conflicts could intensify when conducted within the confinements of the national system). Second, with the reference to Canadian agriculture and telecommunications, Nelson is furthering the argument that the mere fact of a company's geographical location within a nation does not mean it can be analysed purely within the context of that country's NSI. Much innovation, especially industrial innovation that is the dominant subject of the literature, tends to be transnational. This further weakens the concept of the NSI: if innovation crosses borders, how can it be analysed within one set of borders? Lundvall argues that while multinationals spread their organisations over many countries (such as production and assembly plants), they tend to retain their core innovation R&D within the home NSI (Lundvall, 1998). This trend is noticeable in my quantitative study of the emerging Irish content industry: Irish firms that have expanded abroad tend to retain the core of their innovative activities in the domestic NSI (foreign offices are concerned, mainly,

with sales and distribution, or localisation). Foreign firms located in Ireland tend to retain the core of their innovative activities in their country of origin, and assign to their Irish operations the lower-end tasks of production, assembly and localisation. But this shows how, even for transnational organisations, the domestic NSI remains a central influence on their innovative efforts.

Numerous studies have been conducted to try to gauge the level of influence of the NSI, and a consistent trend has emerged that different NSIs produce different innovations. Even countries that are geographically and culturally close produce different innovations, depending on the characteristics of the institutional set-up and characteristics of the NSI. Charles Edquist, for example, outlines the following as a reason to retain the NSI concept:

“One reason is the fact that...there are sharp differences between various national systems in such attributes as institutional set-up, investment in R&D, and performance. For example, the differences in these respects between Sweden and Denmark are remarkable – in spite of the fact that these two small countries in Northern Europe are very similar in other respects such as language, culture, standard of living, lifestyle, consumption patterns, size of the public sector, and strength of trade unions.” (Edquist, 1997: 12)

Richard R. Nelson, although he stresses the difficulties of isolating a nation as a subject for analysis, also acknowledges how the particular characteristics of a nation and an NSI can effect innovation. He writes:

“Certainly, the policies and programs of national governments, the laws of a nation and the existence of a common language and shared culture define an inside and an outside that can broadly affect how technical advance proceeds...Although there are many areas of similarity between the systems of countries in comparable economic settings, there still are some striking differences as well. Japanese firms in the semiconductor business tend to be different from American, German or French firms...And the reasons for these differences reside, to a significant degree, in differences in national histories and cultures, including the timing of a country’s entry into the industrialisation process.” (Nelson, 1993: 16)

Of particular interest to this thesis is Nelson's statement about the importance surrounding the timing of a country's entry into the industrialisation process. This, historically, has had a strong influence on Ireland's path of industrial and innovative development. (This will be outlined in greater detail in chapter five, so only a brief summary will be given here.) When the industrial revolution was underway in Britain in the 1700s, Ireland didn't participate, being stifled by British occupation and deliberate policies to keep the country unindustrialised and weak. Thus, after independence was gained under the Free State in 1922, the country was poorly equipped to begin the industrialisation process. The economy was dependent on agriculture for several decades, with the turn to industrialisation beginning only in the 1950s. Entry to the EEC, and structural funds to improve the country's infrastructure, helped the country to industrialise. (Factors external to the NSI that assisted its development.) But due to the country's late entry to the industrialisation process, Ireland had to play infrastructural and economic catch-up with many of its fellow European countries. The process accelerated greatly in the late 1990s, with the Celtic Tiger boom, but it was only at the end of the year 2000 that the Taoiseach could claim Ireland had reached the average European standard of living (*Irish Times*, 8 January 2001).

As stated by Nelson, the differences between NSIs often stems from factors such as the resources of a nation, its history, politics, environment, culture and social structure. All of these factors can make a nation more or less conducive to innovation. But one of the main factors concerns the size of the nation. Whereas the United States is a large NSI, Ireland is a small one. This, as we shall see, has had quite profound effects on the innovative performance of the country.

Much of the discussion about the limitations of the NSI concept is conducted within the systems of innovation literature itself. Despite its worth in examining economic growth, innovation and technological development, it has yet to move, significantly, outside a small circle of academia and into the dominant discourse among government and industrial agencies. The Organisation for Economic Co-operation and Development (OECD) and the European Commission do acknowledge the concept and have incorporated it into their research agenda, but institutions such as the World Bank and the International Monetary Fund remain resistant to it (Lundvall, Johnson, Anderson, Dalum, 2001). Therefore, much of the writing that could have been construed as critiques of, or challenges to, the NSI concept do not

explicitly acknowledge it. Determinist writings on globalisation, for example, consistently relegate the importance of the nation. They emphasise the supposed borderless characteristics of globalisation, and the world-wide conformity being brought about by it, by announcing the “death of distance” (Cairncross, 1998), “the demise of geography” (Toffler, 1970) and the “global village” (McLuhan, 1989). Globalisation theories, in part, emerged in response to the perceived diminishing importance of nation states as players in global economics and innovation. While acknowledging that nation states have, indeed, lost some of their power and influence in world economics and innovation, I believe that the nation remains a crucial factor in and influence on innovation. The global market, which many (including Kelly, 1999) believe has pushed the nation into the background, is by no means homogenous; the composite countries are culturally, socially, environmentally, politically and economically diverse. What proves to be a successful formula for innovation in one country is likely to fail in another if it doesn’t pay due regard to these differences and adapt accordingly. A weakness in the systems of innovation concept in general is that it focuses on innovation production and disregards the context of its consumption, which often is crucial to the success of a content innovation. A study by Aphra Kerr (1999) provides an example of how crucially important national and cultural factors are in influencing the success or failure of an innovation. Kerr uses the example of an American software company that tried to provide content, via its Internet site, to the French market. Initially, most of the content was generated in America and translated into French. However, French consumers were turned off by the perceived American slant to the content. Even after attempts by the company to localise the content, by appointing an editorial team in France, the project still failed, because the perception remained that the content was an Americanised version of French (Kerr, 1999: 7-10).

The company suffered a great financial loss (somewhere in the region of \$200 million a year) because, naively, it believed that a formula for successful innovation in America could simply be transplanted into another national and cultural context with the same success. (Digital media content that proved popular with an American audience was unappealing to a French audience.) Also, the company believed that its practices for successful innovation in the development of software and digital media tools could be applied with similar success to the creation of digital media content artefacts. The company failed to appreciate the strong resistance that national culture

can mount in the face of unsuitable innovations (or content), and that the development of digital media content artefacts requires different competencies to the development of software applications. The example of the failed content project in France could be used to substantiate the argument that the fate of an innovation is not down purely to the innovation itself. Other, social, factors can be decisive. This case highlights how content innovations are open to cultural and social influences, in both their production and consumption. Cultural influences are more crucial than is evident in the systems of innovation literature.

3.4: Small national systems of innovation

Ireland is a small player in global economics, accounting for less than one percent of the economy of the European Union. For this reason, Ireland's NSI faces problems that the systems of larger countries do not, or at least not to the same extent. The defining disadvantage of a small national system is the size of its domestic market. The smaller the national system, the smaller the domestic market, and the more companies have to orient themselves towards the export market if they are to generate the profits necessary to justify (and, indeed, undertake) innovation.

According to Vivien Walsh, the scientific, technical and industrial processes of innovation are becoming more complex and costly, a trend that is squeezing tighter the innovative capacities of smaller systems (Walsh, 1988: 37-38). The cost savings associated with mass production and economies of scale are necessary to recoup investment in innovation; to achieve these economies of scale, however, companies have to move beyond the domestic market. This, argues Walsh, means that smaller countries are more deeply integrated than larger countries into the global market. She uses the example of Swedish companies, which are more likely to export and invest abroad than similar sized US companies. Walsh concentrates on industrial companies, generally those producing technological innovations. The findings of my empirical research support her argument: that Irish companies producing technological innovations are to a high degree export orientated. But her assertion is less applicable to the Irish digital media content industry, in which significantly fewer companies service foreign markets (see chapter five). Systems of innovation literature focuses on production, not consumption, and fails to consider how the social context of consumption can influence the commercial success or failure of an innovation. (To

counter this weakness, this thesis combines systems of innovation with social shaping theory, which is more sensitive to the social context of production and consumption.) Although industrial and technological innovations are also consumed and appropriated in social contexts, the cultural factors associated with content innovations are stronger, and often a content innovation that proves successful in one country can, because of cultural and social variances, prove unsuccessful in others. But this influence on innovation, largely disregarded by the systems of innovation literature, suggests why Irish content companies are less embedded in the world economy than technology or industrial companies. However, my study indicates that, between 1999 and 2002, the number of content firms servicing foreign markets increased. Ireland, since government policy began to shift in the 1950s from protectionism, has had an open economy, which has become deeply embedded in, and dependent upon, the global economy. However, as a small NSI, Ireland faces a number of problems. First, it has no indigenous companies of truly global stature in the ICT or high-tech sectors. (Some second-tier Irish companies were emerging when this study began in October 1999, such as Baltimore Technologies, Riverdeep and Iona Technologies. Their fortunes, however, dipped in the intervening three years, as shall be indicated in chapter five.) The country's largest telecommunications company, Eircom, was floated on the stock exchange in 1999, and it was quickly shown to be a small player in international terms. It tried to expand into the telecommunications market in Britain, but in 2001 began a retreat back to the domestic market, to focus on its core fixed-line telephony business.

Because the indigenous companies within the Irish NSI tend to be small-scale, the country depends on foreign investment, which although it has raised employment levels, has done little to raise the innovation level of the NSI. Ireland can claim to be the European home of many global ICT and high-tech companies, such as Microsoft, but the operations here tend to be at the lower-end of the high-tech industry – in assembly and localisation rather than R&D. Microsoft, for example, has its European headquarters here, but the operation is concerned mainly with the relatively downstream work of localisation and distribution of its products to the European market (Kerr and Preston, 1997: 21). The products themselves are researched and developed back at the company's headquarters in Seattle, America.

Most indigenous Irish companies that trade globally tend to concentrate on niche markets, especially those in the ICT or high-tech sectors. They search out markets that

the large corporations have either overlooked or believe would not be profitable or worthwhile to enter. Walsh argues that production of niche innovations is a characteristic of companies within small NSIs (Walsh, 1988). My empirical research suggests that this, more so than orientation to foreign markets, is true of both technological and content innovators in the Irish system. The global structures of traditional media are increasingly being represented in digital media content, and Irish companies tend to fill the gaps that are left: either producing indigenous Irish content that bigger, foreign companies do not, or providing niche content innovations – such as educational artefacts – that are too small or unprofitable for larger content companies.

The Irish Software Association [ISA] has targeted specialisation and niche markets as the way forward. In its 1998 report, entitled *To boldly go: the Irish software industry – a strategy for growth*, the association states that the country has to produce companies that can “dominate global markets in specific niches” (ISA, 1998: 1). However, such a strategy leads to another problem that is commonly experienced in small countries. Devoting resources and finances to R&D of niche products is risky – as with most forms of innovation, there is no guarantee of the outcome being successful and profitable. The market for a specialised, niche product can be too limited to be profitable. Also, the development of such products is costly, and firms in Ireland often experience difficulties in gaining access to venture capital. Another difficulty with the strategy is that (relatively) small firms competing in niche markets are unlikely to generate high levels of employment.

By considering the number of multinationals located in Ireland, it is obvious that Ireland is deeply embedded in the world economy. But how ‘embedded’ is the world economy in Ireland? For example, the Irish economy needs Microsoft (which employs about 1,500 people in this country), but does Microsoft need Ireland? If the company decides to move its European headquarters to Germany or France, the decision would adversely effect the Irish economy, but would have little effect on Microsoft’s performance in the world economy. Indeed, as Denis O’Hearn notes, widespread withdrawal of investment by multinationals from Ireland was a major contributor to rising unemployment in the 1980s (O’Hearn, 1995: 93). On a smaller scale, this began to occur again with the global economic downturn in 2001. Taking employment as a crude measurement of economic activity (and the weaknesses associated with such a crude measure will be outlined in chapter five), unemployment rose by 20,000 in the

year to February 2001, from a situation where it had been declining steadily since the mid-1990s (www.esri.ie, viewed on 18 June 2002). The Irish Republic's small, open economy is vulnerable to such decisions by multinationals. It is an instance of how the influence of nation states within systems of innovation has diminished that, often, they are more dependent on multinationals than multinationals are on them. As Charles Edquist and Bengt-Åke Lundvall argue: "The old model [of an industrial society] was based on the fact that the social-democratic state and the large firms were *mutually* dependent. If this dependency goes only one way in the future, the basis for corporatism will erode" (Edquist and Lundvall, 1993: 292).

The greatest threat to Ireland's economic fortunes comes not from within the country, but from outside. Decisions by foreign governments of the richest nations, and by multinational boards who decide to close down their Irish operations, can all have serious repercussions for the Irish economy. But the process does not really work vice-versa. An economic disaster in Ireland will probably go unnoticed by most of the rest of the world, but a downturn in, say, the American economy could have – and since the downturn of 2001, has had – serious effects on the Irish economy.

Therefore, to construct an accurate picture of the situation in this country, any systems of innovation analysis of Ireland has to place prominent emphasis on the fact that it is a small nation with an open economy.

3.5: Sectoral and industrial systems of innovation

Although the NSI sets the context, or the environment, in which Irish digital media content companies operate, the concept is too general for the purposes of this study. The more focused concept of a sectoral system of innovation has the potential to be fruitful, but it is still too loose for my research agenda. I use it as the basis of putting forward a related concept with a narrower scope. Later in the section, I shall explain why the sectoral concept is too loose and how I tighten it. But first, I shall discuss the sectoral concept in broad theoretical terms.

The sectoral system of innovation concept is useful for analysing trends among companies in a sector, how a sector is emerging, for uncovering its areas of specialisation, how the institutional set-up supports it, and how trends in the NSI affect the sector. The concept is most closely associated with the work of Stefano

Breschi and, in particular, Franco Malerba, who offer the following definition of a sectoral system of innovation:

“A sectoral innovation system [is] a system (group) of firms active in developing and making a sector’s products and in generating and utilizing a sector’s technologies; such a system of firms is related in two different ways: through the processes of interaction and cooperation and through the process of competition in innovative and market activities.” (Breschi and Malerba, 1997: 152)

Like the NSI, the sectoral system is not closed. Companies within the sector have economic and institutional linkages and relationships with actors external to the sector, such as the venture capital layer of the NSI, or institutional support provided by semi-state agencies such as Enterprise Ireland, which also provides institutional support to other sectors. The value of Breschi and Malerba’s definition is that it focuses attention on companies at the core of a sector, which is a useful means of uncovering information that could be overlooked in a broader, national analysis. Malerba’s (1999) concept of a sector, however, includes both the companies and the institutional set-up, but for my quantitative study, I narrow the focus to companies, while maintaining an awareness of the importance of the institutional set-up. Malerba, unlike much of the previous NSI studies, believes the concept has value for studying emerging sectors. He writes the following on how, typically, an industry or sector emerges:

“Early in the history of an industry, when knowledge is changing very rapidly, uncertainty is very high and the barriers to entry very low, new firms are the major innovators, and are the key elements in industrial dynamics. When the industry develops and eventually matures and technological change follows well defined trajectories, economies of scale, learning curves, barriers to entry and financial resources become important in the competitive process. Thus, large firms with monopolistic power come to the forefront of the innovation process.” (1999: 11)

My quantitative study suggests that the emerging content industry accords broadly to Malerba’s taxonomy: the barriers to entry are low (although gaining access to venture capital and funding is a consistent problem), and much innovation occurs

within smaller companies, although a tendency is emerging for smaller companies to be taken over by larger ones. In an embryonic form, larger companies, although not yet with monopolistic power, are beginning to edge ahead in the innovation process. This will be discussed in greater depth in chapter five.

The strengths and weaknesses of the sectoral concept echo those of the NSI, but on an appropriately reduced scale. The sectoral concept shifts attention away from the neo-classical approach of resource allocation and to R&D based innovation and, later, interactive learning. Sectoral systems of innovation studies stress the importance of formal R&D among companies in the sector, which as argued earlier is not as applicable to the content industry. The NSI influences innovation within a sector, and the sectoral system allows for a focused examination of this. The weaknesses of the sectoral approach are similar to those associated with the national approach: how to isolate a sector for study within an NSI. In defence of the NSI concept, I argue that there is no suggestion that an NSI should be regarded as a closed system. The same is true of the sectoral system: external linkages, whether to the NSI or the international system, are important, and my research has to maintain an awareness of them.

Breschi and Malerba classify sectoral systems of innovation under five headings, as follows (1997: 143-149):

- 1: Traditional sectors, such as agriculture and textiles.
- 2: Mechanical industries and the industrial district.
- 3: The auto industry.
- 4: The computer mainframe industry.
- 5: Software, the modern micro-electronics industry and Silicon Valley.

There is no room in Breschi and Malerba's schema for a content industry, or a general heading under which a content industry can comfortably be placed. This, again, is consistent with the dominant strain in the literature to direct research attention to industrial, technological and material innovations. Also, the broad scope of their classifications is rooted in the tradition of the concept being applied to macro-level studies. In an orthodox application of the sectoral concept, the digital media sector would comprise technology, applications and content. This is too loose for my research agenda, which is specifically on content. Therefore, I put forward concept of an industrial system of innovation. The advantage of this concept is that it allows research to be focused on areas within a sector that perhaps display characteristics or processes different to those of other areas in the sector. (As argued already,

technological innovation displays marked differences to content innovation, and are not always suitable to be grouped together for analysis in a broad sectoral study.) It allowed for an analysis of the patterns of emergence and processes of innovation that are particular to the content industry. The industrial concept mirrors the sectoral one but on a reduced scale, and contains similar strengths and weaknesses.

3.6: Taxonomy of innovations

Innovations, as I outlined earlier, are new creations of economic significance, usually new combinations of previously existing innovations, or improvements to existing innovations. Innovations are not a break with the past, as determinists such as Toffler (1970) claim, but a continuation and extension of it. Companies do not innovate in isolation, but interact on many levels with other companies and the institutional set-up, to gain access to required competencies, knowledge and infrastructures. The innovation process, being influenced by many factors and actors, is uncertain, and the results of it can not be predicted with genuine certainty. Bengt-Åke Lundvall writes:

“For instance, it is not reasonable to analyse a process of learning and innovation without bringing fundamental uncertainty into the picture. To do so would boil down to the contradictory assumptions that learners already knew everything that could be learnt, in advance, and that innovators knew all possible outcome to the process of innovation.” (Lundvall, 1998: 3)

The definitions of innovation within the literature are production based, and take no account of an innovation’s context of consumption: the different ways it can be appropriated, interpreted and transformed by users, or how social actors are active in negotiating a role for it that can differ from the one inscribed in it by its producers. (Also, the concept has only a limited recognition of an innovation’s social context of production, as shall be outlined later.) In this way, the literature implies that innovations arrive as closed artefacts. Christopher Freeman and Luc Soete provide a rare example in the literature of recognising that innovations have a context of consumption, although they restrain their argument from suggesting that the context of consumption can re-negotiate the role and use of an innovation. They warn against reducing innovations to their purely economic value. They write that innovations have value “in the more fundamental sense of enabling people to do things which have

never been done before” (Freeman and Soete, 1999: 2). They stress that innovations have social and cultural consequences (though not determinants, this thesis argues), and not just economic ones.

A recurring theme within the literature is how systems of innovation, in the main, do not produce radical new technologies, but incremental innovations to previously existing technologies. Richard R. Nelson, for example, writes:

“Most industrial R&D experiments are on products that have long been in existence – such as aircraft, automobiles and cameras (which have been in existence for 150 years). It is these existing products that serve to define the framework within which improvements can be identified and undertaken.”
(Nelson, 1993: 9)

The reason why most R&D is conducted on already existing innovations is as follows: an existing innovation represents an investment by a company. If the product is ‘retired’ to make way for a newer, better innovation, the company no longer gains any return on its initial investment. Because development of radical new innovations carries great costs and even greater risks, it is safer, and comparatively cheaper, to continue investing in incremental improvements to existing innovations. (A radical innovation would, for example, be the development of a new base technology, such as a computer; a process innovation would be an improvement to it, such as a computer with a faster processing speed.)

Gerard Rosegger (1986) illustrates the level of risk when trying to develop and introduce a new innovation or technology. He quotes a study of 120 American companies, which found that between 50 and 60 percent of all R&D projects never result in a commercially released product. He writes:

“For the United States economy as a whole, it has been estimated that some 10,000 new products are developed each year, of which 80 percent die in infancy; and that of the remaining 2,000 new products, only about 100 incorporate significant technological advances as well as satisfying an economic demand.” (Rosegger, 1986: 10)

Another way in which the development and introduction of radical new innovations can be impeded is through the previous selection of industry standards. As new innovations emerge into and are stabilized in an economy, a mass of legal and

technical standards builds around them, which influences or, often, restrains the direction of future innovations. For example, a radical new piece of software would have little chance of success if it is not compatible with Microsoft's operating system, which runs the majority of the world's personal computers. Although content competencies – writing competencies, filming and editing competencies, and design – are not subject to industry standards (but to widely recognised conventions), the adoption of industry standards in the technologies employed to produce and publish digital media content set a framework in which the industry has to work. For example, computer digital media content has to be developed either for PC or Macintosh platforms.

In any case, it would obscure the picture to place such an emphasis on radical innovation without the following qualification: R&D comprises a small part of any system of innovation. Indeed, as Christopher Freeman and Luc Soete highlight, less than two percent of the labour force in the United States is engaged in R&D. The figure is less than one percent in most other countries, including the Republic of Ireland (Freeman and Soete, 1999).

The preceding paragraphs highlight the literature's early stress on innovation through R&D. The organisational structure of digital media content companies, as will be outlined in the qualitative research chapters, does not incorporate formal R&D. The systems of innovation concept became more relevant to the content industry with the shift to innovation through interactive learning. Bengt-Åke Lundvall outlines the following model for interactive learning and the accumulation of knowledge and competencies, which although it is rooted in the study of industrial and technological innovation, is useful for the study of innovation in the content industry. His model is tied to the 'styles' of innovation produced by a system, a shift which also increases the concept's usefulness as a tool for analysing the emerging industry. His taxonomy is as follows:

- 1:** Know-what: based on knowledge of facts or information.
- 2:** Know-why: principles and laws of motion in nature, in the human mind and society; most closely associated with technological and scientific innovation.
- 3:** Know-how: competencies, the ability to perform a task. Lundvall writes that: "Know-how is typically a kind of knowledge developed and kept within the border of the individual firm or a single research team" (Lundvall, 1997: 15).

4: Know-who: to seek different sources of knowledge, competencies from outside the company. For example, in scientific innovation, to gather information from disciplines in which the company lacked knowledge.

(Lundvall, 1997; Lundvall and Johnson, 1994.)

The interactive learning taxonomy is underpinned by the following: learning by doing, learning by using and learning by interacting.

On adapting Lundvall's model to content innovation, know-why becomes less significant. The application of technical and scientific knowledge is not a strong characteristic of the content industry. The technological innovations – such as digital cameras – required to produce digital media content are developed outside the industry, although they might have been included in a broader sectoral study. Lundvall fails to elaborate on his definition of knowledge or information, or how they apply to the innovation process. But taking knowledge and information in their everyday sense, as cognition based on facts or perception, they are extremely important to the content industry. Much of the content produced by the industry is information, such as news, and structures and routine practices are developed within the organisation of companies to gather and produce information. An omission from Lundvall's taxonomy on competency and knowledge accumulation is how companies also accumulate infrastructures. In the case of content companies, these could be technical, production and information gathering infrastructures. This thesis incorporates infrastructure accumulation into Lundvall's model when applying it to the qualitative case-studies. Know-how and who are extremely important to the companies in my qualitative case-studies: how, to build a base of competencies within the organisation; and who, to gain access to competencies outside the organisation. In my empirical research, the know-why isn't as applicable. The validity of Lundvall's model will be tested more intensely in the qualitative research chapters. However, Lundvall's model, while not entirely relevant to the study of the content industry, is preferable to an alternative model offered by Freeman and Soete. Their model, from the perspective of this thesis, suffers from being rooted too deeply in the R&D-focused industrial concept of a system of innovation. For them, the requirements for successful innovation within a firm are as follows:

1: Strong in-house professional R&D;

2: Performance of basic research or close connections with those conducting such research;

- 3:** The use of patents to gain production and to bargain with competitors;
- 4:** Large enough size to finance fairly heavy R&D expenditure over long periods;
- 5:** Shorter lead times than competitors;
- 6:** Readiness to take high risks;
- 7:** Early and imaginative identification of a potential market;
- 8:** Careful attention to the potential market and substantial efforts to invoke, educate and assist users;
- 9:** Entrepreneurship strong enough effectively to co-ordinate R&D, production and marketing;
- 10:** Good communications with the outside scientific world as well as with customers (Freeman and Soete, 1999: 202).

The industrial and technical bias of their model is obvious, which makes it more difficult than Lundvall's model to adapt to the content industry.

1: Based on my empirical research, content companies tend not to engage in formal R&D, or have dedicated R&D divisions. Innovations to content artefacts tend to emerge from the various teams – management, editorial, technical – working on them. Market research is often conducted before a new content artefact is developed.

2: Content companies have little connection with actors performing basic research, although through the market they have access to the content innovations developed by competitors.

3: Patents do not really apply to the innovations developed by content companies, and so it is more relevant to speak of the importance of copyright to protect the content of one company from being reproduced by another. The branding of digital media content is, within the industry, viewed as an important means of establishing a successful content artefact, which increases the importance of copyright protection.

4: The tendency is that the larger the organization, and the larger the amount of finance it has access to, the greater its potential to bring more ambitious forms of content to market. (Again, the R&D reference is not relevant.) However, this is not always so in practice, and large organizations produce quite conservative forms of content. One of my research findings suggests that smaller digital media content companies, with a small amount of capital, often lack the necessary resources to bring a content artefact to market and stabilise it within the economy.

5: Shorter lead times than competitors is not a guarantee of success in the content industry; as in the majority of industries, it is difficult to judge what will and will not

be successful. The *Enter* case-study will present an example of a content artefact that was the first to market, but was unsuccessful and was withdrawn before any competitors emerged.

6: The readiness to take high risks applies to most systems of innovation, although in the emerging digital media content industry, the strategy of Irish companies seems low risk, as will be outlined in chapter five.

7: Early identification of a potential market is, again, not a guarantee of success, given the risk-laden and unpredictable nature of innovation. The three qualitative case-studies for this thesis, *Ireland.com*, Rondonondo and *Enter*, all identified a potential market early. *Enter* failed in the market and was withdrawn after a year and a half. Rondonondo was closed by its parent organisation within two years of being established. *Ireland.com*, although a well reputed website with high traffic figures, is a loss-making venture for The Irish Times Group, and when the parent company encountered financial difficulties, it reduced financial support to *Ireland.com*.

8: Educating and assisting users is an important area for some digital media content producers. In an emerging industry, there is a tendency to try to frame emerging new innovations in familiar terms, to make them objects for consumption. The *Enter* case-study will document the difficulty the producers had in explaining the concept of the CD-ROM magazine to interviewees, investors, advertisers and the public.

9: Entrepreneurship has, since the time of Schumpeter, diminished in importance as a spur to innovation. The majority of industrial innovation takes place within large multinational corporations, governed by boards of directors rather than single entrepreneurs. However, entrepreneurship is still important at the level of start-up digital media content companies. However, there is a tendency for successful start-ups to be taken over by larger companies, which dilutes the role of the entrepreneur in the development of further innovations.

10: Maintaining contact with the outside scientific world is not an important requirement for the digital media content industry, although maintaining a level of contact with the outside technical world is important. My research suggests that the competencies most likely to be sought outside the organization are specialized technical competencies that are too costly to develop in-house or are required on a one-off basis.

A criticism of the systems of innovation concept is that, although it examines processes of innovation (company linkages, institutional support), it fails to explain the genesis of innovations and how they emerge. This is, partly, because the early literature focuses on mature systems, and the concept has to account only for process innovations to mature technologies, and not account for their original emergence. One of the reasons for this is the literature's emphasis on macro-level variables, which are too distant from the micro-level processes within firms that influence the early emergence of an innovation (Webber and Hoogma, 1998).

To try to incorporate into the concept a greater sensitivity to the micro-dynamics of innovation, Matthias Webber and Remco Hoogma put forward the notion of technological niches, which they define as "a specific domain for the application of a new technology, functioning as a testbed where, under temporary protection from market and other institutional pressures, producers and users and sometimes government develop it to maturity" (Webber and Hoogma, 1998: 4). Again, the technological bias is evident, and implied in their definition is the assumption that, when diffused out of the technological niche, the innovation is near completed, subject only to later process innovations (a closed artefact). In the content industry, while early development is indeed cocooned within the micro-setting of the firm, ongoing development, revision, and re-design is common while the innovation is in the public sphere. Usually the content innovation is not "developed to maturity" before release. The learning-by-doing, learning-by-interacting and learning-by-using taxonomy means that the initial innovation might be deemed unsuitable or unsatisfactory and changed. It is, in general, micro-level changes that the systems of innovation concept has difficulty explaining. Although, because of the nature of content production and innovation – ever changing and ephemeral – distinct maturity is harder to quantify than for technological innovations. The assumption in the literature is that macro-level variables stimulate and direct innovation (top-down innovation). Webber and Hoogma argues that micro-level variables stimulate and direct innovation (bottom-up innovation). This thesis rejects the determinist assumption that innovation is directed (shaped or influenced is preferable, and more in keeping with the uncertain nature of innovation). It argues that a combination of top-down and bottom-up influences innovation within the content industry: the NSI influences the style of innovation, but the micro-level processes within companies – as will be outlined in the qualitative case-studies – crucially influence the innovations

that emerge. The concept of a technological niche is not applicable in Webber and Hoogma's form to the content industry, and at a minimum would have to be re-titled 'innovation niche', to account for the wider range of innovations recognised by this thesis (technological, organisational, content). My qualitative research suggests that development within a company is not entirely insulated from market pressures, or that a company can offer a closed environment in which to undertake early development. (The value of the systems of innovation concept is that, within acknowledged boundaries, organisations and systems are open to the outside.) Market pressures can cause a company to, in effect, eliminate the development of a content innovation, as in the case of Rondonondo developing E-TV (see chapter seven). The technological niches concept is emerging and still marginal to the main body of systems of innovation research. Few empirical case-studies are offered; the methodologies are unclear and draw little conceptual or methodological material from other disciplines. Webber and Hoogma try to develop the concept entirely within the established framework of systems of innovation literature. This thesis furthers the embryonic concept by drawing on social shaping theory, to study the micro-dynamics of innovation within companies and the social context of production, and to be aware that innovations also have a social context of consumption.

3.7: Types of innovation

Within the literature, there are, broadly speaking, four types of innovation strategy that a company can follow:

- 1:** Offensive innovation;
- 2:** Defensive innovation;
- 3:** Imitative innovation;
- 4:** Traditional and dependent innovation.

(Freeman and Soete, 1999)

Offensive innovation is a strategy designed to gain market leadership by being the first to introduce an innovation or artefact to the market. Only a small percentage of firms pursue a successful offensive strategy, and even fewer are successful for any length of time (Freeman and Soete, 1999). This is partly due to the high cost of undertaking basic research (or development costs for content) and the great risks and uncertainty that accompany the introduction of a new innovation. Another reason is

that once an innovation has been introduced to the market, it becomes a target for defensive innovation, whereby a competitor introduces a similar innovation. A defensive innovator will try not to fall too far behind the original innovator, lest it not be able to make up lost ground. Also, it will not simply re-produce the original innovation. It will make process innovations to it. A defensive innovator needs to be agile enough to anticipate and respond to new emerging innovations that are likely to be successful within the system.

The advantage of a defensive approach is that another innovator undertakes the costly basic research and risky introduction. The disadvantage, however, is that the company starts from behind, and for a time at least, a competitor enjoys monopoly profits.

The defensive approach of incorporating process innovations into the original base innovation is how such innovators differ from an imitative innovator. An imitative innovator 'imitates' an innovation that has already reached maturity. This type of innovation does not, in a significant manner, apply to the content industry. Although general forms of content innovations – such as portal websites, or interactive games – are similar, they are more akin to defensive innovations than exact imitations. Copyright laws prevent the reproduction of content without the prior permission of the copyright holder.

The term traditional innovator is perhaps misleading, because such an innovator doesn't really innovate at all. It is concerned with industries and products that have long since reached maturity, and the market no longer demands radical innovations, or even in some cases incremental innovations. These innovators are found in 'traditional' industries, such as agriculture, textiles, or the production of synthetic rubber.

The final innovator in Freeman and Soete's taxonomy is a dependent innovator, which as the term suggests is 'dependent' on the innovations of other industries, and highlights the cross-sectoral dimensions to innovation within an NSI. For example, a tyre manufacturer is dependent on the producer of synthetic rubber. Digital media content is dependent on technologies produced by computer and software applications innovators.

Offensive and defensive innovators are, my research indicates, the most relevant forms of innovators to the content industry, especially with it being at an early stage of its emergence. Few companies have gained monopolistic power, the barriers to

entering the industry remain low, and many new content innovations and artefacts are released, and the (seemingly) successful among them tend to be defensively innovated. This will be outlined in greater detail in the empirical research chapters.

Freeman and Soete's definition of defensive innovators is confusing, however. Their taxonomy, oddly, takes no account of offensive innovators that, once their innovation has been stabilised in the economy, have to defend their position from competitors, possibly by improving their own original innovation.

3.8: Styles of innovation

The styles of innovation concept emerged, partly, to address an increasingly acknowledged weakness in systems of innovation: how to explain why different systems produce different types of innovations. Neo-classical economics argue that national characteristics have a negligible influence over economic development. However, as the systems of innovation concept developed, and the weight of case-study evidence increased, it became apparent that national characteristics have an influence on the types of innovations that emerge out of an NSI. Early systems of innovation studies, based predominantly on measuring R&D activity and the importance of macro-level variables, are aware that national characteristics influence the innovation process, but have difficulty explaining why. Later work, which shifted closer to a model of interactive learning and competency accumulation, can more easily analyse the link between national characteristics and the styles of innovation that emerge out of the NSI. An NSI assumes strong linkages and relationships between companies, and between companies and external institutions, as well as influential factors such as the natural resources of a nation. The particular characteristics or make-up of the system will influence the 'styles' of innovations that emerge out of it. Dissimilar systems tend to produce dissimilar styles of innovation. The literature, with its emphasis on industrial innovation, usually speaks of styles of innovation in the sense of technological similarity or dissimilarity (Vertova, 1998). For this thesis, the outcome would be content similarity or dissimilarity. Whereas the literature concentrates on the influence of natural (material) resources on innovative output, my research indicates that social and cultural factors have a greater influence on the content 'styles' that emerge out of the Irish system. The concept has not been applied notably to the style of other digital media content industries abroad, to which

content similarity or dissimilarity could be compared, to gauge the influence of cultural factors and the institutional set-up of the system.

However, a flaw in the emerging approach is the assumption that national characteristics are a determinant of, rather than an influence on, the style of innovation. Studies of national characteristics are conducted at a macro-level, and are biased towards technological innovations, and concentrate, for example, on how the institutional set-up effects innovation. While institutional set-up is, indeed, a deep influence, cultural and social characteristics of the NSI are more important for influencing the 'styles' of content innovation.

The styles concept also adds a flexibility to the systems of innovation concept that had been missing: that not all innovation is rigidly systemic, that it can be a passing phase and, through the emphasis on learning, styles of innovation can be developed by someone not rooted in the tradition, or the industry (Lundvall, 1997: 14).

3.9: Taxonomy of institutions

Innovation depends on the interplay of a number of actors. One of the most important of these is institutions. The character of the institutional set-up is regarded by this thesis as an influence (but in the literature as a determinant) on the style of innovation that emerges from a system. In many popular as well as academic discourses on innovation, institutions are regarded as inhibitors, through placing restrictions and regulations on innovating firms. In many cases, this is indeed true. But the overall effect of institutions within systems of innovation is to facilitate and stimulate innovation.

According to Charles Edquist and Björn Johnson, institutions incorporate "norms, habits, practices and routines" (Edquist and Johnson, 1999: 43). They argue that within the literature there has been much conceptual vagueness about what exactly an institution is. Many institutional theorists regard institutions in the everyday meaning of the term, as a 'concrete' thing, such as a university, or government department, or an R&D department within a large private firm. Institutional economists, on the other hand, traditionally adopt a theoretical definition, although they rarely deal with the role of institutions in the innovative process. They adopt a 'sociological' meaning of institutions as the norms and processes that pattern behaviour, for example, routines,

shared expectations, and morals, “including certain ground rules for economic behaviour often referred to as property rights” (Edquist and Johnson, 1999: 43).

Edquist and Johnson offer a definition that they claim is flexible enough to encompass both concepts of an institution, but is not so rigid that it inextricably links them. Only a flexible definition, they believe, will be beneficial to the analysis of systems of innovation, which has a wide variety of institutions in a wide variety of forms. Systems of innovation, in the main, regard the innovation process as open, so a tight definition that narrows the conception of institutions could remove from consideration important elements of the overall process. This thesis adopts their open definition of an institution, which is sensitive to both its tangible forms (university, for example) and less tangible forms (the norms and practices therein).

Although neo-classical economics feel no unease about neglecting, or at times ignoring, the role of institutions, this, claims Edquist and Johnson, is an oversight that seriously undermines attempts to understand the true nature of innovation, especially within a market economy. They argue that:

“In any economy ‘out there’ exchange will always be supported by a wide range or routines, rules, norms and laws, i.e. by an institutional set-up. This support is so necessary for markets to be able to function that the concept of a pure institutional free market does not seem to make much sense.” (Edquist and Johnson, 1997: 48)

This institutional set-up includes the various laws governing trade. For example, the courts can provide redress for a firm that suffers from a breach of contract. Institutions also oversee the extremely important matter of copyright and patents, which protect the work of innovators, especially in high-tech and media industries. (Copyright, as stated, is an important institutional regulation in the digital media content industry.) Even the monetary system, under Edquist and Johnson’s definition, is counted as part of the institutional set-up. A market economy could not function without money and mechanisms, such as the Central Bank, to track and regulate the value of money.

Edquist and Johnson, broadly speaking, regard institutions as having three basic functions:

1: To reduce uncertainty in the innovation process by providing information (e.g. legal, technical and scientific information to firms, such as a university performing

basic research, which is later used by industry). They qualify this by saying that it is impossible to remove genuine uncertainty from the innovation process. They cite the example that most innovation projects are terminated before market testing, and among those that manage to reach the market, most do not survive long.

2: To manage conflicts and co-operation between firms and other interest groups within the system, such as the state's labour relations mechanism to resolve conflicts between workers and management. Such conflicts, if they are allowed to run unchecked, can seriously inhibit the productive and innovation processes.

3: To provide incentives for innovation (patents, copyright) and to channel resources to innovative activities by, for example, a government agency financing specific programmes, by providing grants, tax breaks and subsidies (Edquist and Johnson, 1997: 51-52).

Another reason why institutions are important is that they provide stability. Systems of innovation are constantly changing, as new innovators enter the system and unsuccessful ones are eliminated from it. There is no stable equilibrium that a system should settle on, because in such a situation, it will have ceased to innovate. So, in a constantly changing environment, institutions provide continuity. Although institutions change and re-shape themselves, they tend not to change as quickly as the surrounding innovations. This often leads to the accusation that institutions act as inhibitors to innovation.

Establishing regulatory frameworks for emerging innovations can slow their introduction. It can also have the effect of introducing them in a considered and intelligent manner, which doesn't leave the diffusion of an innovation purely to market forces.

Even if, sometimes, institutions do inhibit the emergence of a new innovation, they still play a central role in its eventual emergence (or not, as the case may be), both in terms of providing institutional support and creating a regulatory framework. They also play a role in cementing the position of an innovation in an economy. After an innovation has successfully emerged and stabilised within the economy, a mass of legal and technical standards build around it, with the potential effect of regulating or restraining future innovation in the area. For example, the adoption of industry standards can force future innovations down certain development paths while closing off others.

Institutions perform important functions in systems of innovation through facilitating and encouraging innovation. On a wider scale, the work of Ian Miles, among others, has examined the roles that services sectors and services innovation play in the new economy (Metcalf and Miles, 1999; Andersen et al, 2000; Miles and Miozzo, 2002). Miles argues that services innovation (such as the ways services sectors process and present information to organisations) is a quite neglected area of innovation research. However, services industries often act as facilitators to and agents for innovation (through technology and information transfer) in manufacturing industries. They are active users of cutting edge technologies and techniques, and thereby play a leading role in their appropriation into a market/economic environment. This gives services a central importance in innovation networks. Miles includes the following among the services industries: financial services, insurance, real estate, legal services, medicine and health. His work focuses mainly on manufacturing industries, and how services innovation facilitates or spurs innovation in manufacturing. The Irish digital media content industry also relies on financial services (investment), real estate (premises), and legal services (copyright protection). State agencies such as Enterprise Ireland and Forfas act as facilitators to innovation by supplying information and support to companies in the industry. It is important, therefore, to recognise services as an active layer in a system of innovation, especially as services have grown dramatically in importance as sectors in advanced industrial economies.

3.10: Organisations

For conceptual clarity, it is important to note that organisations are different to institutions, although many treat the terms as interchangeable.

Organisations, according to a definition offered by Edquist and Johnson, are *“formal structures with an explicit purpose and they are consciously created. They are players or actors within a system of innovation. In contrast, institutions may develop spontaneously and are often characterised by a specific purpose.”* (Edquist and Johnson, 1997: 47)

However, despite Edquist and Johnson’s contribution, there is little formal conceptualisation within the literature of the types of organisational structures that are

active within systems, or how on the micro-level of the company, they can influence the innovation process. So, for my conceptual framework, I drew on work from outside the literature. In the definition adopted by this thesis, the term organisation includes companies that develop digital media content innovations. The qualitative chapters suggest that the organisational structure that most facilitates content innovation is one with a high level of flexibility. In certain instances, when a digital media innovator is operating within a larger, rigid non-digital media organisation, tension arises, as they try to fit together.

Ian Mangham offers three schools of organisational theorising: classical or machine, human relations, and systems (Mangham, 1979).

The classical or machine school perspective borrows heavily from classical economics. It likens organisations to machines, in which the various parts – including the people contained therein – work together, like cogs, to produce the desired result. It assumes that the individual will always act rationally and in the best interests of the organisation.

The human relations school rigorously criticises the notion that people's contribution to organisations can be reduced to such mechanised and automated terms. It argues that individuals have much greater levels of autonomy in organisations than classical theorists allowed for, and indeed it believes that organisations work more efficiently when individuals are accorded such autonomy. The human relations school rejects the mechanised, impersonal and routinised concept of the organisation. It regards the individual as being central to organisations; they are not just cogs in a machine. Individual relationships, attitudes, values and emotions effect the workings of organisations. It differs from classical theory in that it emphasises people instead of positions. The individual is seen as central to the organisation; it is not the organisation that is central to the individual. According to this theory, an organisation operates best when people feel it satisfies their "social, ego and self-actualisation needs" (Mangham, 1979: 9).

Finally, the systems approach, which according to Mangham suggests that the optimum method of examining organisations is to conceptualise them as a system of interdependent, interacting elements, all of which influence each other.

This echoes many of the ideas of holism that informs the literature on systems of innovation: that a wide set of actors are connected, and that a change in one part of the system will effect the other parts. (It is, for instance, against theories such as Bell's

post-industrial society, which views the different realms of society as developing independently of each other.) The biological sciences are often used as metaphors for the workings of a system of innovation, especially among those who subscribe to evolutionary economics. The first is the metaphor of an organism: how all the parts of the body (of the system) work to keep the organism alive (the system innovating). This, in a more specific context, has also been applied to organisations in the systems approach, that all parts of the organisation work together to keep it functioning. The second metaphor borrows from the Darwinian theory of natural selection: the fittest firms survive, while the weakest perish: that variations occur in the system (in biology, they are mutations; in systems of innovation, they are new innovations). Good variations survive, while poor ones are eliminated. While these metaphors are not without their weaknesses (the best innovations do not always survive), they are useful for visualising how the system works (McKelvey, 1997).

Tom Burns and George M. Stalker offer an alternative organisational model for managing innovation (Burns and Stalker, 1961; 1979; 1994). Their model is sensitive to how the external environment (such as emerging technologies and commercial practices of an industry) can influence the organisation of a company. They propose that organisations can, broadly, be divided into 'mechanistic' and 'organic' systems. The type of system adopted is related to the rate of change in the commercial and technical environment of an industry. Mechanistic systems are characteristic of mature, relatively stable industries, which have low rates of change and highly established patterns. The organisations and individuals within them have to deal with few unfamiliar situations. Mechanistic organisations tend to spawn rigid bureaucracies; each department or individual within the organisation has a specialised role. If they encounter a situation outside of their responsibility, they will pass it on to their immediate superior or to the most appropriate site of power within the organisation. Burns and Stalker argue that an "ideology of bureaucracy" can become ingrained in a mechanistic organisation. If, for economic or technological reasons, the organisation has to adapt to change, it simply redefines roles and working relationships which "reinforce the formal structure" (Burns and Stalker, 1979: ix). When a mechanistic organisation expands, it adds on new layers of bureaucracy to deal with the new tasks.

Organic organisations are common to industries with a high rate of change in their commercial and technical environments, especially newly emerging industries.

Flexibility is the key, as the organisations and individuals within them have to face unfamiliar or rapidly changing situations. Because roles within organic organisations are less clearly defined there is less bureaucracy, which makes it easier for the organisation to respond to new emerging markets trends and technologies. Individuals enjoy more general responsibility within the organisation, because actions and decisions are not broken down into specialised components, as they would be in a mechanistic organisation. Therefore, write Burns and Stalker, “more information and considerations enter into decisions, the limits of feasible action are more widely set” (Burns and Stalker, 1979: 11).

They argue that organisations falling between their bi-polar ideal models are dysfunctional intermediates, because they hinder the organisations from achieving their desired goals. However, I argue that they were being too negative in assuming that such organisations are necessarily disadvantaged in achieving their desired goals. My three case-study companies were small and flexible, especially compared to the parent companies of two of the case-studies. However, roles within the organisations weren't entirely fluid, and a solid layer of bureaucracy underpinned the organisations in administrative areas. Their organisational structures were not regarded by the case-studies, or by my own research, as a hindrance to achieving their desired goals. There is room between Burns and Stalker's ideal models for organisational structures to be affirmative rather than dysfunctional intermediaries.

Like Manghan, Burns and Stalker examine the relative levels of fulfilment individuals achieve in different organisational systems. They suggest that individuals feel deeper commitment to organic systems, because they have more overall responsibility for the successful completion of tasks, and have a higher input into the performance of the organisation. They suggest that individuals in a bureaucratised mechanistic system view their contribution to the organisation in terms of their narrowly defined role within it. Beyond that they feel little responsibility for the overall success of a task. Because they lack responsibility and power, individuals feel alienated from the overall performance of the organisation. This echoes Manghan's argument about the relative levels of fulfilment individuals achieve in human relations and machine models of organisation.

Burns and Stalker also write that new industries are eroding the basis of traditional hierarchy in mechanistic organisations, where long service, experience and a knowledge of the workings of the organisation would lift people to senior positions.

In newly emerging industries, with companies based on organic organisations, technical knowledge can be the key to advancement. They write that in traditional mechanistic organisations “to be older meant that one was more effective and better qualified. But in the new situation of technical and commercial change, this basis of authority has become invalidated” (Burns and Stalker, 1979: xvii). There was some basis for this in the structures of my three case-study companies. People at senior levels did tend to have more experience and be older than those at lower levels, but they had less experience and were younger than people in equivalent positions in traditional media organisations. Also, because senior people in my case-study companies tended to be relatively young (no one had yet reached their forties), they maintained comparable levels of technical knowledge to younger people at lower levels of the organisation.

Based on my empirical research, the organic system (and, in broad principle, the human relations school) is most relevant to digital media content innovators, which depend greatly on new types and clusters of competencies, creativity and initiative, rather than on mechanical production and re-production. Autonomy for people to act on personal judgement and ideas is a strong feature of content production, and does not lend itself to the mechanical conception of individuals within mechanistic or classical organisations. The organisations must also be flexible enough to respond to the rate of change in the technological and commercial environment of the digital media content industry. Because the industry is still young, the rate of change is high. However, the organisations cannot be conceptualised purely in terms of organic or human relations models. There are elements of mechanistic models to be found also. There are instances of how the different parts of the organisation work together to form a system, or one part of the organisation takes charge of a specific task, and responsibility for this is not shared across the organisation. In the case-study chapters, I will write in greater depth on the structures, work practices and valued competencies within the organisational structures of digital media content producers, and outline which organisational theory is most relevant to them.

3.11: Information

It is important to note the role of information within a system of innovation, and examine how information is transferred within this “population of innovators”, as

Schumpeter terms it. Isaac Newton once likened the study of science to “standing on the shoulders of giants”, by which he meant that the scientific ideas and findings of the present are built upon those of the past; it is a continual and cumulative process. Similarly, the ideas and findings of the present will be drawn upon in the future.

The same is true of systems of innovation. The innovative successes and failures of the past are drawn upon in the creation of the innovative successes and failures of the present, and this will carry through to the creation of future innovations. Information is central to the process, especially for technical and scientific innovators. It is beyond the scope of any one company or organisation to possibly undertake every piece of research needed to develop an innovation, or to have access to every piece of specialised knowledge that is necessary. Even a firm that is undertaking basic (original) research still needs to draw on the research and work of others, be it through the use of scientific models or theories or scientific instrumentation that is created by other companies. In this way, the process of information or knowledge accumulation, in the pursuit of innovation, is inherently social. An example of this is information networking, in which an innovator has linkages to other companies or organisations that have access to specialised knowledge, research or competencies that are necessary for a particular innovation. However, in a specialised field, the information usually has a low circulation, primarily within the relevant group of engineers and scientists.

A system of innovation simply couldn't work without the transfer of information; consequently, the system has to develop mechanisms that allow for such transfer, from those who possess information to those who require it. This, for example, could take the form of information published in scientific journals, or research in universities or state institutions. Not only is the transfer of information important within a system, but also the transfer of competencies. Content companies often have to seek competencies from outside their organisations; in the context of digital media content production, the main competencies sought outside depend, often, on the background of the organisation. If its background is in content production, the main competencies sought outside tend to be technical. If the background of the company is technical, it tends to seek content competencies. Companies acquire competencies either through hiring the relevant people or companies, or acquiring companies with the necessary competencies. Linkages between companies within the system enable the transfer of competencies. As my case-study chapters will demonstrate, each of the

companies in my qualitative research depend on linkages to external companies or agencies for competencies that are lacking within their own organisations.

3.12: Synopsis of conceptual framework

An innovation is something new, either a new combination of previously existing innovations, or an extension of a previously existing innovation (Edquist, 1997). Innovations do not emerge in isolation, without context or any prior setting in an economy. Innovations are built upon prior innovations, or draw upon (in the case of industrial innovation, for example) technical or scientific knowledge established in prior research. The complexity of developing an innovation – the technical and scientific knowledge required, as well as the appropriate competencies and production infrastructures – mean that no one organisation could house all that is necessary, so interaction with external actors, on many levels, is crucial. This could be a company interacting with another company, to acquire necessary competencies, or with an institution such as a university, to acquire important scientific information.

In the late 1980s and early 1990s, a concept emerged to try to track the interactions that are necessary for the development and emergence of innovations (Freeman, 1987; Lundvall, 1992; Nelson, 1993). The systems of innovation concept notes the importance of interaction and linkages between actors in an economy, which despite functionalist and determinist connotations, it likens to the workings of a system. The concept also stresses how the various layers of the system (organisational, institutional and economic) are necessary for the development of innovations. Neo-classical economics tried to explain economic growth through the allocation of resources. Systems of innovation tries to explain it through innovation, with early analyses being based primarily on measuring the level of formal R&D activity in large private companies. The emphasis on formal R&D, based on technical and scientific knowledge, is indicative of the main focus of systems of innovation studies: industrial and technological innovation within mature systems in well-established economies.

The concept contains many deficiencies that have to be addressed before it can be applied to the study of content innovation within an emerging industry. Formal R&D is not a strong characteristic of digital media organisations, and innovation does not occur through the application of technical and scientific knowledge. In the early

1990s, a marginal shift occurred in the systems of innovation concept, making it more conducive to the study of content innovation within an emerging industry (Lundvall, 1992, 1998; Lundvall and Björn, 1994). A greater emphasis has been placed on innovation through interactive learning: learning by doing, by using and by interacting. Emphasis has also been placed on the importance of competency, knowledge and infrastructure accumulation within organisations, as their experience of developing innovations grows and the innovations become more complex.

The development of a content innovation is a multi-dimensional process, subject to influences at various levels: within the company, within the industrial system of innovation and the national system of innovation. However, the systems of innovation concept has to be adapted in two further respects before it can be applied to the study of content innovation: first, because of the concept's emphasis on industrial and technological innovation, it tends to disregard the social and cultural influences that are crucial to the development of content innovations. Second, with its emphasis on well-developed systems and, related to this, its focus on macro-level variables (such as the institutional set-up or the natural resources of a nation), it has difficulty examining the micro-dynamics of innovation within firms, or how new innovations begin to emerge. There is a move within the systems of innovation literature to focus attention on how the particular characteristics of a system effect the 'style' or types of innovations that emerge from it (Lundvall, 1997; Webber and Hoogma, 1998). This work, however, is at an early stage of articulation and is still marginal within the tradition. It, too, focuses on industrial and technological innovation and so holds little regard to the influence of social and cultural factors. Also, it is underpinned by the flawed assumption that characteristics such as the institutional set-up are determinants of innovation. But the styles concept does represent a slight move towards recognising that an innovation has a context of production (or, as conceptualised in this thesis, a social context of production). With the exception of brief and rare examples (Freeman and Soete, 1999: 2), the literature fails to recognise that innovations also have a context of consumption.

To compensate for the conceptual weaknesses of systems of innovation, this thesis draws on social shaping theory, which contributes to a deeper understanding of how the social context of production influences and shapes an emerging content innovation. It is also valuable to examining how the micro-processes of innovation – overlooked by the main body of systems of innovation research – are a crucial

influence. Whereas systems of innovation stresses how interaction is necessary to form a system in which innovation occurs, social shaping is concerned with how the interaction *shapes* emerging innovations, in both their production and consumption contexts. Social shapers argue that innovations can be developed in different ways, are not closed artefacts, but open to different interpretations and appropriations, and so are constructs of meanings and uses. As in systems of innovation, the main focus of social shaping research is technological innovation, and so the main concepts have to be adapted to the different area of content innovation. But social shaping does place a greater stress than systems of innovation on the importance of social and cultural factors, although much of the research is underpinned by a light determinist assumption that such factors determine the final form of an innovation.

Social shaping emerged in the mid-1980s to counter determinist assumptions that technological change causes social change. The early writers tried to shift the focus from technology's effect on society to society's effect on technology (MacKenzie and Wajcman, 1985; Bijker, Hughes and Pinch, 1987; Silverstone and Livingstone, 1989). They argued that the development of technologies is not a linear process, with a technological innovation emerging along a defined and predictable development path. Many development paths are open (a flaw in their argument, which suggests that innovators know in advance all possible alternative paths, and all possible final forms an innovation could take). They further suggest that innovators make rational choices to follow the most efficient path. This suggests that all factors influencing the innovation process are within the control of the innovator. The research for this thesis suggests they are not. Such control and rationality is also at odds with systems of innovation literature, which argues that innovation is an uncertain and risk-laden process.

Systems of innovation tends to apply its research at a macro-level, focusing on national economies and sectors within them. Social shaping studies, however, take a qualitative approach and examine the development and emergence of individual innovations or technological artefacts. The research directs attention to the micro-processes of innovation within companies, and how the actions of social actors shape the innovations that emerge.

Chapter 4: Methodology

Chapter 4: Methodology

4.0: Overview

Drafting a workable research methodology is one of the pivotal tasks for a doctoral study such as this. The quality of the research is largely dependent on the quality of the methodology. A strong, focused methodology provides a framework in which to gather information in a reliable, consistent manner, and to allow the researcher make productive use of the limited time with case-studies. The methodology makes the research process transparent, so weaknesses in the approach can be factored into a reading of the research, and to allow the methodology to be re-producible, so future research in the area can be conducted using similar methods and the research findings can be compared.

The previous chapters outlined the various theories and intellectual traditions that have informed the research. But there is a great jump from theory to the practical application of empirical research methods. It is important to note that the theories outlined so far are informing the research methodology, not dictating it. By imposing a prescriptive methodology, the thesis would be in danger of offering “a solution in search of a problem” (Jensen, 1991: 6).

A prescriptive and rigid methodology would produce flawed results – it would produce results to fit the methodology, and these results might not be a fair reflection of what is ‘out there’. Although the methodology is underpinned by methods from the two main traditions in academic research, qualitative and quantitative methods, it is flexible enough to adapt to circumstances as they arise within the case-studies.

4.1: Quantitative analysis

In academic literature, research traditions are usually polarised into two camps: quantitative and qualitative. Quantitative research is the older of the two approaches, and traditionally has been the dominant (Palys, 1997: 12). It is the research methodology most closely associated with technological determinism. Quantitative research involves counting, either the amount of something, or the level of change in

it, or the frequency with which it occurs. A simplified example of a quantitative research project would be as follows: the project would first define its fields of research interest, for example to find out how many people in Ireland own personal computers. It would then develop a systematic method to quantify the information, perhaps by framing a questionnaire that could be presented to a representative sample of respondents. The researchers would then tally the number of people asked against the number of computers owned to produce the final result – that 25%¹ of Irish people own a personal computer.

The quantitative approach employs systematic methods that can be repeated, so similar research can be undertaken at a later date and comparisons can be made. This enables researchers to measure the rate of change in a phenomenon – that 30% of Irish people owned a personal computer when a similar study was conducted the following year. This methodology is employed in my quantitative study of the Irish digital media content industry, to in part measure the changing profile of the industry since 1999.

Quantitative analysis has its roots in the natural sciences and positivism. Early advocates of applying natural science research methods to social science projects are Auguste Comte and Wilhelm Wundt. The belief that natural science methods are neutral carries through to their application to social science studies. The alleged neutrality of quantitative analysis is heavily criticised by, in particular, qualitative researchers, who argue that strong biases are built into the subject matter of quantitative studies, and into the methods used in such studies. Another defining element of quantitative analysis is detachment, or as Palys put it, objectivity through social distance (Palys, 1997). The thinking is that, to remain neutral, a researcher has to remain ‘apart’ from the phenomenon he is studying; if he becomes too close, personal feelings and biases will taint the findings. As we shall see later, detachment is a controversial issue within research debate.

The quantitative approach is a form of nomothetic analysis, which means it has a preference for aggregated data. The assumption is that, because a study encompasses the responses of many people, exceptions to the rule cancel each other out. Thus, the results of the study show what a ‘typical’ example of a phenomenon is, or how a respondent ‘normally’ behaves. Through statistical aggregation, general patterns of

¹ This figure is fictitious and used only for the purposes of example.

development emerge, which allows a researcher to make inferences about the pace and direction of a phenomenon's development.

4.2: Qualitative analysis

While quantitative analysis strives for detachment, qualitative analysis holds that the best way to study a phenomenon is to get as close to it as possible. Qualitative research distinguishes between case-studies or subjects based on their particular qualities. It is an inductive approach to research – it moves from the particular to the general. From the close study of a (relatively) small number of case-studies (for example, four digital media companies), it draws general conclusions about a phenomenon (the digital media industry). In effect, it is the reverse of the deductive quantitative approach, which aggregates data on a general phenomenon (the digital media industry) and uses this to make inferences about specific cases (what constitutes a 'typical' digital media company).

The literature on qualitative research seems to have a less coherent and defined awareness of what exactly the methodology is; this is because, compared to quantitative analysis, qualitative research is less definable. Quantitative research rigidly imposes rules on the method of the research – it explicitly defines what it is looking for, and establishes a systematic method for collating the relevant information. Anything that falls outside the system is ignored.

In contrast, qualitative research is a more open and flexible methodology, which allows the researcher to adapt it to the terrain of a particular case-study. For example, in the digital media content industry, quantitative research might produce an inferential (and abstract) example of what constitutes a 'typical' digital media content company. In reality, few – if any – digital media companies would conform perfectly to the 'typical' example (the Platonic idea versus the reality). Qualitative research is flexible enough to accommodate differences; it believes that there is a great deal to be learned from such differences, and it is a failing of quantitative analysis that it ignores the subtle differences between firms, or phenomena.

Qualitative analysis rejects the numbers of quantitative methodology, because it believes that one can not reduce the actions of rational, cognitive beings to mathematical methods and frameworks. This stems from qualitative analysis's roots in phenomenology. In line with their phenomenological influence, qualitative

researchers embrace Max Weber's concept of *verstehen*, which aims at an empathetic understanding of human actions and behaviour (Palys, 1997).

Qualitative research is traditionally associated with social shaping, because it is a human centred methodology. It places the researcher in close proximity to the relevant phenomenon, and the researcher studies it by employing the techniques of observation, interviewing and document analysis. For one of my case-studies, I spent several weeks at the office of the company, observing how the organisation operated, and how the employees interacted with each other and with the technological infrastructure that had been developed to produce digital media content. It also involves observing what decisions are made, how they are formed, and what are the crucial factors influencing the final choices (why is one course of action chosen over another).

Whereas quantitative research makes general trends visible and can provide a broad sweep of information regarding a phenomenon, qualitative research's strength lies in its ability to examine a particular case and tease out information that is detailed and of-depth. It can help achieve an understanding of the meanings of the events, situations and actions of the actors in a study, and the context in which they occur (Maxwell, 1996).

Qualitative analysis is a naturalistic method of research (Patton, 1987), in that it tries to study participants in their 'natural' setting. Especially with observation, the researcher tries to study the way a participant normally behaves and interacts with other actors; the ideal is that the participant will act the same way when the researcher is present as he would if the researcher were absent. Qualitative observation tries as much as possible to orient itself to the normal behaviour and routines of the participant, with the researcher trying to be as unobtrusive as possible on the natural setting of the participant.

4.3: Weaknesses of both approaches

Both methodologies have weaknesses, which have to be factored into the empirical research. In the case of quantitative research, its principle strength is also its principal weakness. It produces numbers, which make general trends visible but provide no depth of analysis of those trends. Also, it has only a limited facility to examine the context of a phenomenon, to examine for example how people appropriate and

interpret ICTs and form social practice around them. Underlying processes are missed, such as the interaction between the user and the machine, the integration of the machine into the user's life, and the routines and habits of use. All of these underlying processes are important, but too subtle to be picked up by 'detached' quantitative methods (Berger, 1991).

Whereas quantitative research is criticised for imposing rigid rules, qualitative research is often criticised for not imposing them. There is a perception, especially among natural scientists, that qualitative research is arbitrary, because as a research discipline, qualitative analysis seems to lack just that: discipline. Robert K. Yin dismisses that perception, arguing that "the demands of a [qualitative study] on a person's intellect, ego, and emotions are far greater than those of any other research strategy" (Yin, 1994: 55). A quantitative researcher follows the rules and routines established in the methodology, whereas a qualitative researcher has to be responsive to events as they happen; he has to use initiative, knowing that the quality of his decisions will reflect in the quality of research that is produced.

Quantitative researchers advocate objectivity through social distance, and claim they are more objective because their methods are rooted in the 'neutral' natural sciences. But quantitative analysis is just as vulnerable to bias as qualitative analysis. All research involves selection: selection of what to study, whom to include in the study, whom to leave out, what to ask, and what constitutes a representative sample. All of these instances leave room for the personal biases and preferences of the 'neutral' quantitative researcher to enter the study. It can be argued that the potential for bias on the part of a qualitative research is during the fieldwork, but the potential bias in quantitative research is at the time the methodology is framed.

The work of qualitative researchers is often crucially influenced by factors outside of their control. For example, this could relate to the quality of the access that the researcher is granted to the case-study. If the case-study is a company anxious to protect commercially sensitive information, then the researcher will not get a full view of the workings of the organisation, and the results will be flawed. If the case-study allows the researcher free access and relative autonomy while observing, and if the respondents are open and honest while being interviewed, this increases the chances of the research producing accurate and useful results. Problems can also arise if the researcher is seen as an outsider and treated with suspicion, or if the researcher's presence alters the normal behaviour of the case-study (Newcomb, 1999).

4.4: Synthesis

It would be inaccurate to dichotomise too severely the traditions of qualitative and quantitative analysis, because elements from both traditions are often used in research projects. Indeed, Uwe Flick notes that the two approaches are not “incompatible opposites” (Flick, 1998: 40). Projects that employ both techniques benefit from the analytical and empirical strengths of each. Flick describes the debate as to which is the superior methodology as “old and unfruitful” (1998: 40). Usually, the optimum results are gleaned through embracing both methodologies.

The four case-studies I selected required the use of techniques from both traditions.

1: The Irish digital media content industry – conducted using mainly quantitative methods. It is designed to map the general landscape in which Irish digital media companies operate, and measure the dynamics of innovation within it. It examines the commonalities and characteristics of digital media companies, and the advantages and disadvantages of being based in Ireland. Essentially, the quantitative case-study places the three individual qualitative case-studies into context. Also, it shows the general trends of the sector’s development. The techniques employed in this case-study are database and document analysis, as well as statistical aggregation.

2: The Irish Times Group and *Ireland.com* – a traditional media organisation that publishes a digital media content website. The in-depth qualitative analysis shows the characteristics particular to the print and digital media elements of the organisation, and the processes of innovation within them. The techniques used in this study include interviewing, observation and analysis of relevant documentation.

3: *Enter* – a magazine published on CD-ROM by a digital media start-up company. This was a retrospective study. The company, Pure Communications, is still active, but ceased production of *Enter* in mid-2001, so I had to adjust my methodology accordingly. I employed the techniques of in-depth interviewing and document analysis, and at the office of the company I was given a demonstration of how, editorially and technically, the CD-ROM was produced.

4: Rondonondo – a multimedia content venture that was based within a company (Eircom) whose core competency is in telecommunications technology. Here, the qualitative research tried to show whether the company’s traditional competency in technology had aided or impeded the digital media content project. Rondonondo

closed in 2001, which forced the researcher to frame it as a retrospective case-study. I employed the techniques of in-depth interviewing and document analysis.

4.5: Research strategy and evidence base

One of the challenges of conducting real-time research into an emerging industry is that the project is vulnerable to the unexpected: changes in the industry can necessitate changes in the research interests and in the methodologies. I have stressed, in previous sections, that qualitative research methods are flexible and can adjust to the changing terrain of a study. This was necessary for my methodology. In the first year of research, the Irish economy was positive and growing. In the second and third years, the economic environment had deteriorated, with performance declining across many sectors and industries, including digital media content. The changed circumstances had severe effects on my case-studies and, in turn, my research methodologies.

On beginning the thesis, my initial research strategy was broad. In principle, I wanted to conduct a meso-level case-study to monitor general trends in the emerging industry, and complement this with micro-level research in a number of individual companies. However, at this time, I wasn't sure which and how many companies I would use as case-studies. One of my early tasks was to narrow these broad principles into specific research strategies and case-studies that could be implemented within the three year timeframe of my study. In late 1999 and early 2000, while I was still in the literature review phase, I began to tentatively monitor companies that showed potential as case-studies. I also began to examine the logistics of empirical research: how could a meso-level study of the overall industry be implemented, how would I approach a research assignment within a company, and what sources of information and research tools were available to me?

The quantitative meso-level case-study was the first piece of empirical research I undertook, and its methodologies were the least effected by the Irish and global economic downturn. I set out my areas of interest – there were five categories of companies, which will be outlined in detail in chapter five. I identified sources where I could access information about companies in the industry. I outlined the aspects of the companies I was interested in: core innovative activities, employment levels, location, whether they were indigenous or foreign, and the number of people they

employed. I conducted the first section of the quantitative study in the last two weeks of March and the first week of April in 2000. I conducted the second and third sections during the same periods in 2001 and 2002. This gave me three snap-shots of how the industry was emerging, and allowed me to compare year on year progress and change. Each year I was able to return to the same sources of information and compile data in the same way.

The sample for 2000 contained 125 companies across all five categories; the 2001 sample contained 126, and the 2002 sample contained 106. Chapter five contains tables with detailed breakdowns of the companies. It also includes the criteria by which I included companies in the sample. When compiling the samples, I wrote a detailed profile of each company, which I updated in 2001 and 2002 to note any changes in innovative activities, ownership, employment levels, or export markets. These profiles are part of the evidence base for the thesis but were too large to include as an appendix. They can be viewed on request.

My sources of information were as follows: the online databases compiled by Enterprise Ireland, the Industrial Development Authority and Forfas (www.enterpriseireland.com, www.ida.ie, www.forfas.ie)¹. Additional information was gathered through two commercial online databases: Factfinder and Kompass.ie. I did encounter difficulties when using these sources. Government agencies, in particular, were slow to up-date their databases. These difficulties will be outlined in greater detail in chapter five.

The methodologies employed on the qualitative case-studies were more directly effected by the economic downturn, as well as by other circumstances that are more likely to hinder qualitative than quantitative research. On completing the first year's sample of my quantitative research, I argued that, broadly, three kinds of content firms were characteristic of Ireland's emerging digital media content industry: core digital media content firms, digital media content ventures emerging from traditional media companies, and digital content ventures emerging from technology-centred companies. The industry in Ireland is small and I had to choose from a small number of potential case-studies. I wanted to achieve balance by having at least one of each kind of company. That is not to argue that the case-studies selected are representative

¹ Enterprise Ireland had responsibility for building up and supporting indigenous industry in Ireland and for finding suitable strategic partners abroad for Irish companies. The Industrial Development

of all similar companies within the industry, or that general conclusions can be drawn from these particular examples. Rather, they provide a useful insight into how companies of differing origins operate within the system of innovation for the content industry. Examining the different types of companies gives a deeper understanding of the processes of innovation in different contexts, and of the factors that contribute to successful and unsuccessful content innovation.

Ireland.com and Rondonondo stood out as valuable case-studies. *Ireland.com* is the most high profile example in Ireland of a traditional media company supporting digital media content. Rondonondo held a similar profile for a technology-centred company. I had a wider choice in selecting a core content company but also faced greater difficulties when I approached potential case-studies. Martello Multimedia is a small company that develops content on commission from external parties. It was commissioned in 2000 by the Royal Irish Academy to produce a CD-ROM of the historical Cathach manuscript. I approached the company, outlined my research interests, and asked to use the Cathach project as a case-study. The company refused permission, citing a hectic schedule and the need to maintain confidentiality for a project in development.

Another potential case-study was Fios Feasa, a company based in County Kerry that developed CD-ROMs in the Irish language. It was appealing as a case-study for a number of reasons: first, it tried to sell its content within the domestic market and abroad, particularly to America. Second, it was an Irish language content developer, one of the few in the industry, and it would have presented a valuable opportunity to examine the difficulties of developing content in a minority language. The Irish Diaspora belongs to the wealthy English-speaking (Anglophone) community, and has been targeted as a potentially lucrative market for Irish content developers. Fios Feasa could have provided an interesting instance of how the Diaspora, and other foreign markets, respond to content produced in the Irish language. Third, the company was located in Kerry, away from the concentrated cluster of companies in Dublin and the well-developed infrastructure of the city. It could have added geographical balance to the case-studies (the final three were all located in Dublin) and highlighted the difficulties of being located outside the main centre of content development in this country. However, the company closed in 2000 and I eliminated it from consideration.

Authority's main role was to attract foreign companies to Ireland. Forfas promoted the development of enterprise, science and technology in Ireland.

My initial research strategy was to engage in participant observation in all of my qualitative case-studies, so I could view the 'real-time' production of content. In early to mid-2000 it was still a realistic ambition. But by this stage, I had to make definite decisions about how many and which companies I would use as case-studies, to allow time to do background research before making initial contact. I had intended to use four companies, but after consultation with my supervisor, I reduced the number to three. Four qualitative case-studies, in addition to the quantitative case-study, would have forced me to shorten each chapter and not do justice to the scope of the research.

I decided to include *Ireland.com* and Rondonondo, and added Pure Communications as the core digital media content company. Pure Communications published a CD-ROM magazine called *Enter*, which in 2000 was growing in popularity. I began to monitor the development of each company in mid-2000. However, the fortunes of two of the case-studies had fallen dramatically by the time I began empirical research in 2001. Rondonondo had closed by mid-2001 and Pure Communications ceased producing the Irish edition of *Enter* later the same year. Therefore, I had to revise my methodological strategies, moving them from operating on the basis of 'real-time' research to being retrospective accounts of innovation. When I selected these case-studies, they were innovators that still had the potential to be successful. By the time I began empirical work, they were failed innovators: one had been eliminated from the industry, and the other had shifted its interests to other areas of content production.

I secured interviews with individuals who held key positions in both organisations. In the case of *Enter*, the individuals were still employed by Pure Communications and they were able to give me a demonstration of how, editorially and technically, the CD-ROM magazine was produced. I still used most of my intended research techniques, such as document analysis and in-depth interviews, but the changed circumstances denied me the opportunity to observe the 'real-time' production of content and engage in informal interviews in the work setting, which provided many valuable insights during my research placement at *Ireland.com*. The tense of the interviews also changed. Interviewees from Rondonondo and Pure Communications spoke about what they did. Interviewees from *Ireland.com* spoke about what they were doing or were going to do. *Ireland.com* was the only case-study that allowed me to fully implement my intended methodology: document analysis, in-depth formal

interviews, observation of the 'real-time' production of content (during a three-week research placement), and informal interviews in the work setting.

The following is a log of the semi-structured in-depth interviews I conducted for each case-study, along with an approximate running time. Each interview was recorded and transcribed.

Ireland.com interviews:

Conor Pope, deputy editor, *Ireland.com*, personal interview, 29th August 2002.
Running time: one hour.

Conor Pope, deputy editor, *Ireland.com*, personal interview, 22nd August 2001.
Running time: one hour.

Conor Pope, deputy editor, *Ireland.com*, personal interview, 14th June 2001. Running time: two hours.

Brendan Marrion, marketing executive, *Ireland.com*, personal interview, 20th August 2001. Running time: one hour.

John McMahon, database administrator, *Ireland.com*, personal interview, 17th August 2001. Running time: one and a half hours.

Austin McGeogh, advertising executive, *Ireland.com*, personal interview, 17th August 2001. Running time: forty-five minutes.

The interviews were supplement with informal interviews with editorial and technical staff during my research placement at the company.

Enter interviews:

Roisin Carroll, technical designer, *Enter*, personal interview, 5th February 2002.
Running time: 45 minutes.

Ben Lenihan, creative director, *Enter*, personal interview, 29th January 2002. Running time: one hour.

Ken Sweeney, editor, *Enter*, personal interview, 22nd January 2002. Running time: one hour.

Rondomondo interviews:

Aoibheann Gibbons, chief operations officer, Rondomondo, personal interview, 27th July 2002. Running time: two hours.

Declan Tuite, senior production engineer, Rondomondo, personal interview, 2nd April 2002. Running time: one hour.

Emma Kavanagh, publications manager, Rondomondo, personal interview, 21st May 2002.

Each case-study chapter contains a section outlining in detail the precise methodology and any difficulties I encountered while trying to apply it.

4.6: Conclusions

Quantitative and qualitative research methodologies have various strengths, but I am also aware of their weaknesses. I argue that using them together offers the possibility of compensating for their weaknesses. Quantitative research methods allow me to document general trends in the industry's emergence. Using qualitative methods I complement this by examining instances of innovative organisations on a micro-level. The emergence of the industry is a multi-level process and needs to be examined at a macro, meso and micro-level. Combining qualitative and quantitative methods allows for such a multi-level analysis.

The downturn in the industry placed a strain on my research methodology; my quantitative methodology was largely untouched, but my qualitative methodology had to be substantially revised. Two of the case-studies, which I had intended to conduct in 'real-time', had to be re-framed as retrospective studies. This also changed the tone of the case-studies; instead of examining active innovators trying to successfully stabilise innovations within the market, I was examining failed innovators and the reasons for the failure.

Although this placed a strain on my initial research strategy, the strain was felt less by my conceptual framework. Technological determinism tends to overlook failed technologies. Social shaping of technology is concerned with reasons why some technologies are successfully developed and adopted and why other (some times more efficient) technologies aren't. And systems of innovation regard failure as inherent in innovation: an innovation system is based largely on conflictual dynamics, with successful innovators and innovations advancing at the expense of others, and unsuccessful innovators and innovations being eliminated from the system. The initial case-study selection – of the industry in general and of three companies – was, in many respects, going to be a study of success. However, it turned out to be a study that was closer to failure. The industry experienced a downturn and the three companies encountered difficulties of various degrees. The literature informing my conceptual framework was already aligned to the possibility of examining failure, and although I did have to re-frame the conceptual framework, the shift was less substantial than it was for my initial research strategy.

Chapter 5: Case-study of the Irish digital media content industry

Chapter 5: Case-study of the Irish digital media content industry

5.0: Overview

The literature review outlines the importance of systems of innovation at national, sectoral and industrial levels. It notes how innovation and the emergence of innovative industries is subject to macro, meso and micro-level influences, both within the innovation systems and without. In particular, it argues that national social and cultural factors influence the 'styles' of innovation that emerge from a system.

This chapter contains the quantitative case-study of the Irish digital media content industry. It aims to illustrate trends in and influences on the industry's emergence, to gauge the general level of innovation and areas of innovative activity within it, and to locate the national and industrial systems of innovation in which individual digital media companies operate. The chapter is based on an original quantitative study I conducted at yearly intervals between 2000 and 2002. The initial profile of the industry was compiled in the last two weeks of March and the first week of April 2000, and was updated at the same time the following years. This provides three snapshots over a three year period of how the industry is emerging.

The literature on systems of innovation argues that an emerging industry will not be stable: its profile will change constantly, as unsuccessful innovators are eliminated, new innovators enter, successful innovators prosper, and previously successful innovators go into decline. The literature also outlines how some innovators, having reached a certain innovative level, cease to develop further, become dependent on a core, stable artefact, and begin to stagnate. The literature further argues that companies within a small domestic market – and a small NSI – are characterised by a struggle to break into larger foreign markets, to recoup investment in innovation. The three year quantitative study allows me to assess these tendencies in an Irish context. The majority of innovation studies and systems of innovation analyses are focused on industrial innovations and within mature industrial sectors, and are rarely applied to content innovations and the emergence of content industries (Nelson, 1993; Freeman, 1999; Edquist, 1999). The processes of innovation surrounding the development of a content innovation or artefact are often more difficult to quantify than those

surrounding an industrial innovation. Content development tends to be based on creativity and initiative, and other less tangible influences, rather than on the application of scientific or technical knowledge. Although the general pattern of the digital media content industry's emergence displays similarities to that of an industrial sector, there are important differences, which will be discussed later in the chapter.

The emergence of content industries (whether digital media or traditional media) depend, crucially, on the prior development of technological (industrial) innovations, for example broadcasting systems, television sets and electricity in the case of television as a medium. As noted earlier, the technology does not determine the content or the cultural form of the medium, but it does enable the creation and delivery of certain types of content. The digital media content industry depends on the previous emergence of hardware and software applications.

The quantitative study concentrates on companies whose core innovative activity is the creation of digital media content. However, the study regards hardware and software applications innovators as indirect contributors to the emergence of the industry, and so traces their development over the three years. This not only gives a fuller context to the emergence of the content industry, but also allows me to contrast its emergence with that of industries more traditionally associated with industrial innovations.

5.1: Resources and limitations of the approach

Elsewhere in the thesis, I outline how the majority of studies of Ireland's digital media industry – from both governmental and industry sources – attend to the material, technological, applications and infrastructure aspects of the industry's emergence, rather than to the content, symbolic aspects. Part of the (implicit) reason for valuing the hardware and software industries over content is that technical companies tend to create a higher number of jobs (as shall be demonstrated in the quantitative study). A record of high job creation and low unemployment is a valuable asset to any government. Content is relatively neglected as a distinct industry within the overall Irish digital media sector. This is indicated by the fact that no state industrial or economic agency has compiled an official database profiling the companies within the industry, or no agency has devoted significant resources (financial or human) to monitoring its emergence year on year. (However, in late

2002, Enterprise Ireland commissioned a directory of digital media companies. It was commissioned too late to be used as a resource for my research, but it does suggest a growing institutional regard for the industry.) The state agencies that have built-up databases of companies within the digital media industry fail properly to segregate the companies according to their core innovative activity, with the result that content companies are listed alongside hardware companies, software applications developers and, on occasions, telecommunications companies (see www.enterprise-ireland.com, www.ida.ie, www.forfas.ie). The research for this thesis also suggests that the agencies failed to significantly update their databases between 2000 and 2002. However, it is not uncommon for industrial classifications and statistics to lag behind new innovative developments. But for real-time research into a newly emerging industry, this poses problems.

Many quantitative studies, including Daniel Bell's *The coming of the post industrial society* (1976) and much of Toffler's work, are based on industrial and economic statistics produced by state and industrial agencies. Although such an approach contains weaknesses (discussed elsewhere in the thesis), such information provides a valuable reference for tracing the development of an industrial sector, especially in the case of a sector in the early stages of its emergence. Official chronicling of the digital media content industry's emergence is haphazard, and provides little coherent overall analysis.

In the absence of an official, comprehensive database focused on content companies, I had to address the situation by drawing on information gathered from a variety of sources. The databases compiled by Enterprise Ireland, The Industrial Development Authority and Forfas offered a starting point¹. Because content companies were not segregated from non-content companies, I had to examine the entire listings, checking each company individually to determine whether its core innovative activity matched the criteria for inclusion in my study. (The criteria were set out later in the chapter.) Additional company listings were gathered through two commercial online databases: Factfinder and Kompass.ie. Factfinder, in particular, proved useful, because it updated its company listings and profiles every six months. Factfinder was operated by *Business and Finance* magazine, which was a quality

¹ Enterprise Ireland had responsibility for building up and supporting indigenous industry in Ireland and for finding suitable strategic partners abroad for Irish companies. The Industrial Development

publication of Irish business news. However, as with the state agencies's databases, neither Kompass.ie nor Factfinder segregated companies according to their core innovative activity. Media articles were also used to keep a check on new emerging companies.

Within very real resource limitations, I have tried to map and record every company active in digital media content creation in Ireland between 1999 and 2002, alongside every new entrant to the industry in the same period. To this end, I have compiled a database of Irish digital media content companies that is more focused than any offered by state agencies or commercial databases. One of the weaknesses of my approach, however, is that, despite using a number of sources, some eligible companies may have slipped through without being recorded by the study. New, smaller digital media innovators especially might not have come to the attention of state agencies or commercial databases, and thus would not have been included in their listings. But in any system of innovation, recording the presence of new entrants is a difficult task: some new companies shy away from publicity, to protect innovations in development from being imitated before being brought to market, or to deny an advanced warning to an established innovator that it will have to protect its position within the industry.

With the above constraints factored in, I believe the resulting database is as comprehensive and detailed as time and resources allow. It provides an accurate indication of the profile, trends in and influences on the emerging industry between 1999 and 2002.

Because of the time devoted to compiling the database, I had to narrow the scope of the quantitative study. I decided to focus on companies whose core innovative activity is the production of digital media content. However, many important actors within the industry are located within larger organisations whose core innovative activities are not the production of digital media content. When this study began in 1999, a lot of hype surrounded the possibilities for digital media content. Clearly, much of this hype had evaporated by 2002, yet only three years previous, many technology companies that possessed the technological infrastructure to deliver digital media content also advanced serious strategies to become creators and publishers of it. In addition, many traditional media companies were eager to expand their interests

Authority's main role was to attract foreign companies to Ireland. Forfas promoted the development of enterprise, science and technology in Ireland.

onto the web. The majority of the technology companies had, by 2002, retreated from the production of digital media content and had refocused on their traditional core competencies (Eircom, for example). The traditional media companies had, in many cases, begun to scale-down their digital media content ventures or were planning to reduce the level of their investment (*Ireland.com*). Non-core producers had an important influence on the emergence of the industry in the three years of the study: they were often the leading innovators within the industry. Their location within larger, profitable organisations allowed them to call upon deeper financial, technical and human resources than many core-producers, which in the Irish industry tend to be small and poorly funded. My quantitative study is necessarily selective, and it would have been desirable to include non-core producers because these also belong to any fully comprehensive systems of innovation analysis of an emerging industry. The qualitative case-studies, however, try to address and compensate for this problem. Two of the qualitative case-studies are based on non-core producers: one from a company with a technology background (Eircom, and its digital media unit Rondonondo), and one from a company with a traditional media background (The Irish Times Group, and its digital media subsidiary *Ireland.com*). The case-studies examine how location within a larger organisation influences the production of digital media content, what factors are emerging as particular to (or have a greater tendency to occur within) non-core producers, and how these contrast to factors that are emerging as particular to (or have a greater tendency to occur within) core-producers.

For the study, I divide the companies into five categories, as follows:

- 1: Irish digital media content producers (MPs).
- 2: Foreign digital media content producers (FMPs).
- 3: Irish indirect digital media content producers (IMPs).
- 4: Foreign indirect digital media content producers (FIMPs).
- 5: Innovative Irish firms (IFs).

(The rationale behind the classifications will be outlined in the next section.)

The study includes indigenous and foreign companies. Foreign companies and investment forms important layers of Ireland's NSI and the industrial system of innovation, because they are active innovators within the system. They are important centres for employment and the development of competencies associated with digital media content production (both creative and technical). But my study suggests that

operations in Ireland tend to engage in the lower innovative aspects of the digital media content creation process, localisation for example. The indirect producers, both indigenous and foreign, are involved in the production of hardware and software applications, and are the more traditional focus of governmental and industry analyses and academic innovation studies. They are included in the study because they offer a valuable opportunity to contrast the emergence of a material (technological) industry that has close and important linkages to the emerging content industry.

The fifth category is a by-product of the way the state agency and commercial databases are structured. Because their listings don't segregate content, software and hardware companies, I had to check the profiles of many companies that were not involved either directly or indirectly in the development of digital media content. Many of these companies produced original innovations in the areas of software or hardware development. It required little additional effort to compile a database of them. By including innovative software and hardware companies, my research indicates that many of the trends I uncovered within the content industry are not exceptional or exclusive to it. Many similar developments are occurring in other areas of the so-called digital economy, such as software development, and are often influential factors within the overall NSI. Also, by highlighting the characteristics that are not exclusive to the content industry, a clearer picture begins to emerge of the characteristics that are particular. The fifth category is also useful for gauging the general level of innovation achieved by indigenous technology companies, how it fluctuated over the years, and how closely it kept in line with innovative fluctuations in the direct and indirect content categories.

5.2: Classification of companies and criteria for inclusion

The following paragraphs outline the criteria I set for classifying the companies. The sample for 2000 contains 125 companies across all five categories; the 2001 sample contains 126, and the 2002 sample contains 106. The tables in this chapter contain a breakdown of the figures that emerged from the empirical research. The original research material on which the figures are based can be supplied on request.

1: Irish digital media content producer. Code: MP. This includes Irish companies that are producing digital media content innovations or artefacts of their own, as well

as companies that have produced webpages or CD-ROMs for clients. Although the latter's work is based on the content that their clients want on the web or CD-ROM, the companies heavily shape the selection, design, editing and final form of the content. In that way, the companies are active in the creative process that leads to digital media content.

2: Foreign digital media content producer. Code: FMP. This is a foreign company involved in the development of digital media content innovations or artefacts. To qualify for my study, the company isn't required to have developed an innovation or artefact from beginning to end in Ireland, but it has to have undertaken some innovative activity here as part of the overall development process. The results of my study suggests that most foreign content creators use Ireland as a base for localising innovations or artefacts for re-sale in other markets, with the primary R&D being conducted in the company's country of origin.

3: Irish indirect digital media content producer. Code: IMP. This includes Irish companies that have developed hardware or software artefacts that facilitates the creation of digital media content, for example a company that has developed web-authoring software. However, to qualify for my study, the company has to have added an innovative element of its own: a company that simply re-sells Microsoft web-authoring applications doesn't qualify. A company that has developed its own piece of web-authoring software, even if it is only to undertake a specialised task, does qualify, because it has shown itself to have made an innovative use of the new technologies. Such an innovation would be classed as process or incremental, which the study suggests is characteristic of most of the companies in the category.

4: Foreign indirect digital media content producer. Code: FIMP. This includes foreign companies located in Ireland that have developed hardware or software artefacts that facilitate the creation of digital media content. To qualify for my study, the company has to have undertaken some innovative activity in Ireland associated with the development of the final artefact. Companies that simply use this country as a base to assemble their hardware or package their software are not included.

5: Innovative Irish firm. Code: IF. This includes Irish companies that are not involved in the development of digital media content innovations or artefacts (either directly or indirectly), but have shown themselves to be innovative through developing their own piece of hardware or software. In my study, this is usually a

company that has developed a specialised piece of hardware or software to serve a niche market.

Later sections of the chapter will contain a detailed breakdown of each year's sample, and will outline the emerging trends in each category.

5.3: Development of Ireland's NSI

Richard R. Nelson, while examining the different development paths of the Korean and Taiwanese NSIs, writes: "The reasons for these differences reside, to a significant degree, in difference in national histories and cultures, including the timing of a country's entry into the industrialisation process" (Nelson, 1993: 16). With this in mind, no analysis of Ireland's system of innovation would be complete without making reference to the past. Space is limited, so only a brief schematic account is possible here. The aim is to sketch the development and the peculiarities of the Irish system of innovation and to explain why, among its European counterparts, Ireland was one of the last countries to experience extensive industrialisation. It also traces how macro-level influences, such as government policy to open the economy, attract foreign investment, and direct investment towards certain industries, influenced the content developed in the industrial system. Also, as industrialisation matured, how the institutional set-up thickened to support it.

Ireland's long-standing dependence on agriculture as the basis of its economy was in large measure a result of the country's 800-year-long colonisation by England, which ended only in the early part of the twentieth century. Historian Tim Pat Coogan argued that the union with England in the eighteenth century killed off most Irish industries, which also had the affect of stifling the "spirit of enterprise" in the country (Coogan, 1976: 150). It was English policy to keep Ireland unindustrialised, weak and poor, and only in the north-east corner of the country – populated mainly by unionists loyal to England – was industry allowed to flourish.

When the country finally gained independence under The Treaty of 1921, the government of the Free State was more concerned with ensuring that the fledgling democracy did not collapse than with trying to industrialise the country. Even if the government had turned its hand to trying to push industrialisation, it would have faced a difficult task. Centuries of colonial repression, two wars – the War of Independence and the Civil War – and the partition of the North under the terms of The Treaty had

left the country with a weak economic base. In 1926, for example, only 13% of the Irish workforce was employed in manufacturing, as against a figure of 40 to 45% in Britain (O'Malley, 1994: 32). But in spite of an awareness that the richer economies of Europe were moving away from dependence on agriculture to dependence on industry, the Irish government still regarded the land as the foundation of Irish society, both economically and culturally.

The Free State embarked on an era of economic protectionism that lasted until the mid-1950s, although in a real practical sense the barriers of protectionism were not pulled down until the Sean Lemass era of the 1960s. Until then, however, if innovation did occur in the Irish economy, it did so in the area of import substitution. Such policy planning, according to economist Eoin O'Malley, was underpinned by a belief that "protection helped to overcome the difficulties faced by new or small [Irish] firms in competing with larger and stronger established foreign competitors" (O'Malley, 1994: 32). The downside of the strategy was that it helped firms only in technically mature and less complex types of industry, meaning "there was little progress in developing the more technologically demanding or highly skill-intensive activities" (1994: 32).

In effect, Free State policy was a reversal of the government's strategy between 1999 and 2002. Whereas the modern leaning is to welcome and encourage competition, and build up the Irish economy through embracing high-tech industries, the Free State government tried to eliminate foreign competition from the domestic market, and it shied away from high-tech industries.

Conservatism was the dominant characteristic of Ireland's economic thinking, and this was best exemplified by the Department of Finance, which since the foundation of the state was not only the most powerful government department but traditionally also the most conservative (Lee, 1989). It was too occupied with the year to year task of preventing the further deterioration of the country's finances to devote significant resources to devising stratagems to lift the country out of its economic rut. As historian Joe Lee remarks:

"The Finance perspective was even more myopic than that of the politicians, who at least often looked as far as the next election. Finance gave the impression that it rarely looked beyond the next budget." (Lee, 1989: 345)

By the time Lemass came to power, it was clear that a radical shift was taking place in global, and especially European, economics. The European Economic Community had been formed in 1957, and it was becoming apparent that the economies of the future would work on the principals of free competition and closer ties between nation states. Economic isolationism and protectionism, as practiced by Ireland, would not serve the country's interests any longer (if, indeed, they ever really did).

One way in which the government opened up the economy was by encouraging foreign companies to invest in Ireland. But as a concession to Irish companies that had depended on protectionism for survival, and weren't equipped to compete with superior foreign companies, the government often sought assurances that these companies would mainly be export orientated and not focused on the Irish market. (No such assurances were sought by the government in the modern era, reflecting a shift to neo-liberal, free-market policies.) However, this did not mean that Ireland became a hotbed of innovation upon opening its economy. Until the end of the 1960s, foreign investment was concentrated in industries that, although labour-intensive, had already reached a high level of technical maturity. These industries included clothing, footwear, textiles, plastics and light engineering (O'Malley, 1994). The tasks carried out in the Irish operations were more manufacture and assembly than R&D, and they had little affect in raising the level of innovative activity within the Irish national system.

The next major step in the country's economic development came with membership of the European Economic Community (EEC). Ireland, along with Britain, had applied for membership of the EEC in the 1960s. However, when the French government of de Gualle vetoed Britain's entry, Ireland withdrew its application because it did not want to be inside the EEC while its largest export market, Britain, was outside. France eventually lifted its veto, allowing Britain and Ireland to join in 1971. From then on, Ireland was seen abroad as a gateway into the EEC (now European Union) market, which made it more attractive as a location for foreign multinationals.

This had positive and negative effects. The most obvious positive effect was increased employment, and consequently more money, from wages, circulating in the local economies. But in the 1970s and '80s, the Irish economy derived few other benefits from the multinationals' presence, certainly not in terms of creating skills-

intensive employment or raising the general level of innovation within the national system. Ireland's economic development resembled the 'dependency' model that emerged in many South American and Asian countries: dependency on foreign investment to create employment, predominance of low-paid, low-skilled manufacturing jobs, exportation of profits out of the country, and a relatively weak base of indigenous industry. (The relative failure of indigenous industry, and dependence on foreign multinationals, was examined in a report by the Organisation for Economic Co-operation and Development (OECD) on Ireland's innovative standing in the 1980s. The report, entitled *Innovative policy Ireland*, ranked the country's innovation orientation in the bottom quartile of the industrialised countries.) Sociologist Denis O'Hearn notes how foreign multinationals operated within the Irish economy without becoming deeply embedded in it. He writes:

"Trans-national corporations (TNCs) imported nearly all of the material inputs they used in production and exported nearly all of their output, so that they did not create demand for Irish products (backward linkages), nor did they supply down-stream Irish companies, which used their semi-fabricated products in the production of something else (forward linkages)...TNCs failed to reinvest resources in the Irish economy, instead removing the vast majority of their profits from Ireland. By the mid-1980s, observers began to refer to a 'black hole' through which capital was sucked out of the Irish economy."
(O'Hearn, 1995: 91)

Although the situation improved since the 1980s, the trend continued into the period between 1999 and 2002. In a specific industrial sense, my quantitative study suggests that foreign digital media companies (both direct and indirect producers of content) base their lower-end innovative activities in Ireland and retain the higher-end R&D activities in their country of origin.

Membership of the EEC, and the free trade among member countries that accompanied it, left many indigenous companies exposed. Finding themselves uncompetitive in their domestic market, many of them had to close. The multinationals absorbed much of the job losses from indigenous industry, but when recession forced the withdrawal of many multinationals from Ireland in the 1980s, the unemployment rate rose sharply, from about 10 percent to 20 percent (O'Hearn, 1995).

Ireland industrialised within an unusual political system, which like most elements of recent Irish history related back to the manner in which the country achieved independence. Unlike in other European countries, such as England and Germany, where national politics crystallised around social and economic issues, politics in Ireland revolved around the national question (Chubb, 1992). In England and Germany, the emphasis on social and economic issues created a political system balanced on a left and right-wing axis. In Ireland, the defining difference was not the parties' social and economic ideologies – which were practically indistinguishable, anyway – but whether they were for or against The Treaty of 1921. The Treaty created the Free State, which was independent of Britain, but it divided the country into North and South, with six counties in Ulster remaining in the United Kingdom. Shortly after The Treaty came into effect, a civil war ensued between pro and anti-Treaty supporters. Fine Gael was the pro-Treaty party; Fianna Fail (or Sinn Fein, as it was then known) was anti-Treaty. The Irish Labour party tried not to align itself to either side in the national question, trying instead to concentrate on social and economic concerns. So dominant was the national question in Irish society at the time that Labour drew little support and became isolated and weak. This status quo has carried through to the modern day. Fianna Fail and Fine Gael are still the biggest parties, with Labour a distant third. The Treaty, however, is no longer a significant factor in attracting support for the parties; traditionally, support was based on family loyalties – if a father voted Fianna Fail, it was likely his son would too. Although, there is evidence that this is changing and that the parties are more susceptible to floating voters among the younger population. However, the social and economic policies of the major parties remain similar, with all of them nestling in a relatively close bunch in the centre of the political spectrum. This has a significant influence on the policies pursued to industrialise the country.

For many years, industrialisation was based on social-democracy – a balance between state intervention and capitalism. Industrial policies were heavily influenced by Adam Smith's notion of trickle-down economies. The Irish state's thinking was best encapsulated in the Sean Lemass phrase: "A rising tide lifts all boats." The state would assist business; the better business did, the greater would be the levels of employment; employment would, in turn, alleviate poverty. The state facilitated business through tax breaks and grants, and it established the Industrial Development Authority (IDA) to attract foreign companies here, and offer institutional support.

Also, the state intervened directly in the economy by establishing state and semi-state bodies such as Telecom Eireann, CIE, the ESB and Aer Lingus. However, in recent years, the government has been more influenced by neo-liberal policies, and in many areas of economic activity, the state has been rolled back. Many state bodies have relative autonomy by being semi-state bodies. Other state-bodies (or semi-state bodies) have been privatised, such as Telecom Eireann, or have at some stage been considered for privatisation (Aer Lingus). The market in Ireland, especially in telecommunications and broadcasting, has been deregulated. This neo-liberal thinking is very much in evidence with regard to the digital media content industry. In general, it is left to the market to guide the direction in which the industry is emerging. Numerous government sponsored reports that have been published on digital media and the “Information Age” are heavily influenced by neo-liberal ideology. They espouse a market-led, technology-push development – the value of digital media is primarily economic, not social, and people are regarded as consumers rather than citizens in an “Information Society” (IDA/Forbairt, 2000; Enterprise Ireland, 1999; Information Society Ireland, 1996; Forfas, 2001). This thesis argues that neither Information Society nor market-led supply side economics provide a sound basis for developing the digital media industry, because both are based on a flawed understanding of the nature of technological and social change. Yet, the state is an influential actor within Ireland’s system of innovation; consequently, so too are the neo-liberal policies that it implements.

The economic boom that the country experienced in the late 1990s can be traced to the financial difficulties of the 1980s. Governments in the late-1970s and early-1980s borrowed heavily to finance give-away budgets. Throughout the early-1980s, public finances sank deeper into debt as the government had to borrow more and more money to meet its public spending commitments and to repay interest on the original sums borrowed. Also, the widespread withdrawal of multinationals from the country led to a sharp increase in the unemployment rate; public finances came under increased pressure as the government received less money from corporation and income tax and had to pay out more in unemployment and welfare benefits. The only valve to release pressure from the public finances was the fact that many younger people emigrated during that period. In the late-eighties, the Fianna Fail government of Charles J. Haughey initiated the Programme for National Recovery, which reduced public spending and thus reduced the amount of money the government had to borrow

to meet its spending commitments. The programme also promoted Social Partnership between employers, workers and the government, which helped produce stability within industry and improve what were poor levels of industrial relations. Agencies such as the IDA began to aggressively promote Ireland as a suitable location for multinationals. The IDA was successful in this, and as more multinationals located here, the government received more in corporation and income tax, and had to pay out less in unemployment and welfare benefits.

In simplified terms, the culmination of this was the Celtic Tiger economy in the late-1990s, during which the government worked with budgetary surpluses for the first time in the state's history. However, Ireland as a small, open economy is vulnerable to economic trends in the wider global market. The slowdown of the American economy in 2000 began to be felt in Ireland in 2001. Although the Irish economy did not fall into recession, economic growth began to fall (Irish economic growth in real GDP was 10.5% in 2000, 6.6% in 2001, and was expected to be 3% for 2002 – www.ersi.ie, viewed 15 April 2002). The quantitative study will measure the effect the global and Irish economic slowdowns had on the content industry.

The aim of this section is to outline in broad terms the historical, political and economic influences on the NSI in which the content industry is emerging. The positioning of Ireland as an open economy welcome to – and dependent upon – foreign investment affects the digital media content industry. Foreign innovators are a stronger feature of the hardware and software applications industries than the content one. But the general national economic policies of the government, the success in implementing them, and the institutional and organisational structures in place to support economic and innovative activity, are all influences on the emergence of the content industry. The holistic conceptual framework of this thesis holds that all these seemingly disparate actors are bound by linkages – some strong, some weak – and contributes to a process that facilitates the emergence of the content industry and innovations within it.

5.4: Clusters

This thesis has, so far, treated the Irish Republic as one cluster of digital media development. This is acceptable because of the small size of the country. However, now that I am applying the concept of an industrial system of innovation, rather than

assessing it in broad theoretical terms, I must state that Irish digital media content companies are geographically concentrated in one area of the country, the capital city, Dublin. Of the 63 companies (both indigenous and foreign, MP and FMP) in the 2000 study, 49 (77.77%) were located in Dublin. Of the 63 companies in the 2001 study, 51 (80.93%) were located in Dublin, and in the 2002 study, the figure was 44 (81.48%) of the 54 companies.

Table A: the location of firms in the MP category for 2000, 2001 and 2002

Location of firms:		
Category: MP		
Year: 2000	2001	2002
Dublin: 44 – (75.86%)	Dublin: 46 – (79.31%)	Dublin: 41 – (80.39%)
Cork: 2 – (3.44%)	Cork: 3 – (5.17%)	Cork: 3 – (5.88%)
Monaghan: 1 – (1.72%)	Monaghan: 1 – (1.72%)	Monaghan: 1 – (1.96%)
Carlow: 1 – (1.72%)	Carlow: 1 – (1.72%)	
Limerick: 2 – (3.44%)	Limerick: 1 – (1.72%)	Limerick: 1 – (1.96%)
Waterford: 1 – (1.72%)	Waterford: 1 – (1.72%)	
Galway: 3 – (5.17%)	Galway: 3 – (5.17%)	Galway: 3 – (5.88%)
Kerry: 1 – (1.72%)		
Wicklow: 1 – (1.72%)	Wicklow: 1 – (1.72%)	Wicklow: 1 – (1.96%)
Kildare: 1 – (1.72%)		
Donegal: 1 – (1.72%)	Donegal: 1 – (1.72%)	Donegal: 1 – (1.96%)
Total firms: 58	Total firms: 58	Total firms: 51

Table B: the location of firms in the FMP category for 2000, 2001 and 2002

Location of firms		
Category: FMP		
Year: 2000	2001	2002
Dublin: 5 (100%)	Dublin: 5 (100%)	Dublin: 3 (100%)
Total firms: 5	Total firms: 5	Total firms: 3

Table C: the location of firms in the MP and FMP categories for 2000, 2001 and 2002

Location of firms		
Categories: MP and FMP		
Year: 2000	2001	2002
Dublin: 49 – (77.77%)	Dublin: 51 – (80.95%)	Dublin: 44 – (81.48%)
Cork: 2 – (3.17%)	Cork: 3 – (4.76%)	Cork: 3 – (5.55%)
Monaghan: 1 – (1.58%)	Monaghan: 1 – (1.58%)	Monaghan: 1 – (1.85%)
Carlow: 1 – (1.58%)	Carlow: 1 – (1.58%)	
Limerick: 2 – (3.17%)	Limerick: 1 – (1.58%)	Limerick: 1 – (1.85%)
Waterford: 1 – (1.58%)	Waterford: 1 – (1.58%)	
Galway: 3 – (4.76%)	Galway: 3 – (4.76%)	Galway: 3 – (5.55%)
Kerry: 1 – (1.58%)		
Wicklow: 1 – (1.58%)	Wicklow: 1 – (1.58%)	Wicklow: 1 – (1.85%)
Kildare: 1 – (1.58%)		
Donegal: 1 – (1.58%)	Donegal: 1 – (1.58%)	Donegal: 1 (1.85%)
Total firms: 63	Total firms: 63	Total firms: 54

The increased concentration in Dublin results mainly from new entrants being established there and many of the smaller content companies in other areas of the country closing. The pattern of companies being concentrated in Dublin – and the level of concentration increasing consistently over the three years – is also evident when I assess the overall location of companies across the five categories. The percentages rose from 74.4% in 2000 to 76.16% in 2001 and 76.41% in 2002.

Table D: the location of firms across all five categories for 2000, 2001 and 2002

Overall location of firms		
Category: all categories		
Year: 2000	2001	2002
Dublin: 93 – (74.4%)	Dublin: 96 – (76.16%)	Dublin: 81 – (76.41%)
Cork: 11 – (8.8%)	Cork: 12 – (9.52%)	Cork: 10 – (9.43%)
Galway: 4 – (3.2%)	Galway: 4 – (3.17%)	Galway: 4 – (3.77%)
Limerick: 5 – (4%)	Limerick: 4 – (3.17%)	Limerick: 3 – (2.83%)
Waterford: 1 – (0.8%)	Waterford: 1 – (0.79%)	
Kerry: 1 – (0.8%)		
Kildare: 1 – (0.8%)		
Donegal: 1 – (0.8%)	Donegal: 1 – (0.79%)	Donegal: 1 – (0.94%)
Carlow: 1 – (0.8%)	Carlow: 1 – (0.79%)	
Clare: 1 – (0.8%)	Clare: 1 – (0.79%)	Clare: 1 – (0.94%)
Monaghan: 1 – (0.8%)	Monaghan: 1 – (0.79%)	Monaghan: 1 – (0.94%)
Wicklow: 2 – (1.6%)	Wicklow: 2 – (1.57%)	Wicklow: 2 – (1.88%)
Louth: 2 – (1.6%)	Louth: 2 – (1.57%)	Louth: 2 – (1.88%)
Meath: 1 – (0.8%)	Meath: 1 – (1.57%)	Meath: 1 – (0.94%)
Total: 125	Total: 126	Total: 106

The number of counties in which relevant companies are located reduced annually. In 2000, the companies were spread over 14 counties. By 2001, the spread had reduced to 12, and to ten by 2002. Over the three years, Cork had the second highest concentration of companies (8.8% - 9.52% - 9.43%), with Limerick and Galway next (4% - 3.17% - 2.83% and 3.2% - 3.14% - 3.77% respectively). Such a spread of digital media companies is consistent with the demography of the country. According to the most recent set of census figures available to the study³, the population of Ireland is disproportionately concentrated in the east of the country, in Dublin and the province of Leinster (CSO, 1996). Over half the population (1.9 million) live in Leinster, with half of those people living in Dublin and its hinterland. The west of the country is especially depopulated, with Connaught having only 12% of the population, despite accounting for 25% of the land mass. Munster, with one

million inhabitants, is the second most populated province. The three Ulster counties in the Republic – Donegal, Cavan and Monaghan – has a combined population of 234,000 people. The trend in recent years, through migration and emigration, has been a depopulation of rural areas, especially in Connaught, and a growth in population in urban areas, especially Dublin.

Digital media content clusters tend to emerge in the larger urban areas, where they have access to well developed infrastructure, institutional and organisational support, employees and customers. But many authors, including Egan, Saxenian and Pavlik (all 1999), have concerned themselves with examining why strong digital media content clusters emerge in one city and not in another. Their work concentrates on America, where some large cities, such as San Francisco, lack a strong digital media content cluster, whereas others, such as New York, have very strong ones. Some of the trends uncovered by their work are relevant to explaining the development of clusters in Ireland, although a direct comparison is difficult. The Republic of Ireland has only one large city, Dublin, in which a content cluster could realistically have developed. (It is interesting that the second and third largest Irish cities developed the second and third largest clusters respectively.) However, this does not mean I cannot assess Dublin's suitability as a location for a digital media content cluster.

Edmund A. Egan and AnnaLee Saxenian have studied the San Francisco Bay area, which has a strong digital media technology cluster. It was expected that, as a spin-off from this, a strong digital media content cluster would emerge. This failed to happen, despite the perceived suitability of the area. Egan and Saxenian explain that the area is "unusually weak in traditional media...there was no media industry to employ artists, writers, musicians and other creative talent" (Egan and Saxenian, 1999: 20-27). Their work assumes that each large urban centre offers a developed infrastructure (telecommunications, transport), institutional and organisational support, and a pool of employees and customers. However, the decisive factor seems to be whether the city has strong competencies in content creation, not in technology. John V. Pavlik (1999) conducted a similar study to Egan and Saxenian, except his mission was to determine the conditions that had enabled New York to develop a strong digital media content cluster. He, too, places emphasis on the balance between technical

³ The Central Statistics Office in Ireland planned to undertake another census of the country in 2001, but postponed until 2002 because of the outbreak of foot and mouth disease. The results of the census will be published too late for inclusion in this study.

competencies and content competencies. Although New York is relatively weak in technology, it is strong in traditional media content competencies. Pavlik notes that seven of the world's largest media companies are located in New York, including Time Warner (ranked one), Viacom (four), Advance Publications (fifteen), NBC (nineteen), CBS (twenty-four), Hearst Corporation (thirty-seven), and Dow Jones and Co. (forty), as well as *The New York Times* (Pavlik, 1999: 83). This emphasis on content in traditional media is reflected in the digital media cluster that has developed in New York. Pavlik notes that 76% of the city's digital media companies are concerned with content creation and design. Only 5% are concerned with software development. The remaining 19% is made up of digital media marketing and consultancy companies (Pavlik, 1999: 81). A study by Nachum and Keeble (cited in Cooke, 2002) links the concentration of film and music industries in Soho, London, to the clustering there of digital media companies, with the cluster showing a "bias towards traditional media and advertising, growing from the audio, video and print media in the neighbourhood" (Cooke, 2002: 296).

Shauna G. Brail and Meric S. Gertler have conducted a similar study in Toronto, Canada, and have arrived at similar conclusions concerning the criteria necessary for the development of a strong digital media content cluster. They write: "A key aspect of the Toronto economy that is absolutely fundamental to the emergence and strength of multimedia production in the region: namely, its status as Canada's major centre for cultural industries and related activities" (Brail and Gertler, 1999: 100-101).

I would argue that in Dublin, too, it is content competencies rather than technical ones that are decisive to the development of the digital media content industry. But again, direct comparisons with the American or Canadian situations are difficult to make. Because Dublin is the Republic's only large city, it is also the centre for the country's technological competencies, as well as its content competencies. The cities cited by Egan, Saxienan, Pavlik, Brail and Gertler have strong competencies in either one or the other, but not in both. In an Irish context, Dublin has strong competencies in both, which makes it a rare cluster for analysis. (At least, rare when compared with the clusters examined in traditional academic literature.) The majority of the country's media organisations operate out of Dublin. The country's two main newspaper publishers, The Irish Times Group and Independent News and Media, are located in the city, as are all of the country's national Sunday newspapers. Also located there is the state's national television and radio broadcaster, RTE; the national independent

radio station, Today FM; the independent television station, TV3; and most of the country's magazines are published in Dublin, as are most books. The only notable media exceptions are TG4, the Irish language television broadcaster, which is based in Galway; and *The Irish Examiner* newspaper, which has its headquarters in Cork but maintains a bureau in Dublin. The city also contains the main theatres, museums and the National Concert Hall. These organisations and institutions accumulated together form a rich cluster of culture, arts, media and entertainment competencies upon which digital media content developers can draw. It is consistent with the work of Allen Scott (2000), who argues that major cities become centres of cultural production, and also with Andy Pratt's (2000) argument that in centralised systems of innovation – as Ireland had – the major cities account for a disproportionately high level of media activity.

Certainly, it fits the profile of an area that would be suitable for a digital media content creation industry, in terms of the competencies that are regarded by Pavlik, Egan and Saxenian as necessary for such a development. It must be remembered, however, that in Ireland there is no real alternative to Dublin, given the centralised government apparatus, and concentration of industry, institutions and population.

Another reason why Dublin is a suitable location for an emerging digital media content industry relates to Amin and Thrift's concept of "institutional thickness" (cited in Pavlik, 1999: 86-87). This concept regards the institutional support that is available to a firm to facilitate its operation. This thesis argues that it would be fruitful to widen the concept to institutional and organisational thickness. In chapter three, I discuss the important role of organisations and institutions within systems of innovation, and also the difference between an organisation and an institution, and the different roles each play. Organisations engage in the transfer of knowledge, competencies and infrastructures – from, for example, companies that possess them to those that require them – and a larger cluster offers greater depth of and range for transfer.

Innovation requires the support of each, and both also emerge along with an industry. This 'thickness' is really an institutional (and an organisational) infrastructure that supports innovative activity within the digital media content industry. The holistic conceptual framework of this thesis acknowledges a wide dispersal of institutions and organisations that supports innovative activity. They range from financial institutions to state bodies such as Forfas, and also

telecommunications facilities (Eircom) and venture capital funds. Ireland has a highly centralised government and state apparatus, which is concentrated in Dublin. As the capital city, it has the most fully developed organisational and institutional infrastructure. However, this should not be taken to mean that the infrastructure has *fully* developed. Pavlik writes that in New York the digital media industry will not reach maturity until after the institutional thickening has finished, or at least has evolved to a higher level. Only then, “hype will be replaced by viable business opportunities” (Pavlik, 1999: 94). In 1999, many ICT and digital media content ventures in Ireland were based more on hype than viability, as suggested by the contraction of the industry uncovered by the quantitative study (discussed in a later section). Business models for digital media content were also emerging and changing during the three years, and were becoming more disciplined towards turning a profit from content. Companies were less prepared to subsidise unprofitable digital media content ventures. For example, during my research at *Ireland.com*, a source told me that The Irish Times Group was hardening its position towards supporting the website, which was coming under intense pressure to reduce losses.

The Irish digital media content industry is at an early stage of its emergence, so the institutional and organisational thickening is far from finished. It is a gradual process, similar to how, gradually, a mass of legal, technical and economic supports build around major new technology systems as they stabilise within an economy. An indication of how immature the thickening is for the content industry came from the state agencies that had not compiled distinct profiles of it. However, there are indications that they are beginning to recognise the industry as being distinct from hardware and software applications industries. Enterprise Ireland, for example, organised in December 2001 a conference to discuss the potential for digital content creation in Ireland. Enterprise Ireland, which offers institutional support across a wide-scope of industries, has also begun to commission reports on the digital content industry, such as *Multimedia Ireland: realising the potential* (1997) and *Update of new media industry* (1999). The reports attend to many of the trends highlighted in this thesis: under-financed companies, the difficulties of stabilising products within export markets, development of niche products, and the need to increase the sophistication of products, technologies and competencies. The underlying philosophy of the reports, however, is of a technology-driven, market-led industry, and the reports

rely heavily on quantitative statistics without putting them into the context of a coherent analysis of the emerging industry.

5.5: Employment

When research for this project began in 1999, Ireland was still experiencing the Celtic Tiger economy – the most sustained period of economic growth in the state’s history. Optimistic estimates of future growth touched most industries in the economy, including digital media content. But the economic slowdown of 2001 and 2002 dissipated much of the optimism, and again the content industry was no exception. In 1999, the national unemployment rate had been dropping consistently since 1993, when it was 16%, to just under 6% in 1999, to 4.7% in 2000, 3.7% in 2001 and 4.2% in 2002 (www.ersi.ie, viewed 16 April 2002). Again, trends in the wider system of innovation were reflected in the content industrial system.

Irish digital media content producers (MPs) comprised the largest category over the three years, yet provided the lowest average employment: the average staff size was 32 in 2000 and 2001, and 38 in 2002.

Table E: Number of firms and their employment averages in MP category, 2000, 2001 and 2002

Year	No. of firms	With employment figures	Total employment	Average employment
2000	58	49	1,594	32.53
2001	58	52	1,696	32.61
2002	51	48	1,865	38.85

These figures suggest that MPs bucked the wider trend – rising average employment at a time of economic slowdown and job cuts in the wider NSI. However, average employment rose between 2001 and 2002 partly because the industry contracted, from 58 companies for the first two years to 51 in the third. Smaller companies, with employment figures below the average, closed and thereby increased the average employment of those remaining. However, despite the industry’s contraction, it did experience an overall increase in employment, from 1,594 to 1,696 to 1,865, at a time when employment was decreasing in the wider system of innovation.

Such flat figures mask the dynamics of change that were occurring on the ground (company) level of the industry. The employment figures give no indication of the

precise nature or quality of the jobs; this is a weakness of my study, but it was beyond my resources to obtain a detailed breakdown of the type and quality of the jobs in each company across the five categories. However, this study takes employment as a crude measure of expansion, contraction or stabilisation of companies within each category. The year between 2000 and 2001 was quite stable for the MP category: employment remained stable in 78.85% of companies; it rose in 17.3% and fell in 3.8%. The profile of the industry remained stable, with five companies dropping out and five new entrants. Between 2001 and 2002, the industry was less stable. Employment held steady in 66.66% of companies. It fell in 18.75% and rose in 14.55%. Three firms had been taken over and absorbed into larger organisations, and could no longer be considered separate entities. The slowdown affected the industry in that the number of new entrants had decreased (three) and the rate of dropout had increased (seven).

Table F: Changing profile of and employment averages for MP category, 2001 and 2002

Year: 2001

Employment figures were available for 52 of the firms: in the year since 2000, employment remained stable in 41 (78.84%).

Employment fell in 2 (3.8%).

Employment rose in 9 (17.3%).

There were five new entries to the category and five drop outs.

Year: 2002

Employment figures were available for 48 of the firms: in the year since 2001, employment remained stable in 32 firms (66.66%).

Employment fell in 9 (18.75%).

Employment rose in 7 (14.58%).

There were three new entries to the category.

Three firms were absorbed into larger organisations that had bought them out.

Seven firms dropped out of the category.

The MP employment figures contrast poorly to those in the IMP category, which despite the economic slowdown also experienced an overall rise in average and total employment. Over the three years, average employment rose from 74.28 to 75.78 to 96.16, with total employment rising from 1,040 to 1,061 to 1,154. The category experienced a high degree of stability between 2000 and 2001, with employment remaining stable in 85.71% of companies and rising in 14.28%.

Table G: Number of firms and their employment averages in IMP category, 2000, 2001 and 2002

Year	No. of firms	With employment figures	Total employment	Average employment
2000	15	14	1,040	74.285
2001	15	14	1,061	75.785
2002	13	12	1,154	96.16

Table H: Changing profile of and employment averages for IMP category, 2001 and 2002**Year: 2001**

Employment figures were available for 14 of the firms: in the year since 2001, employment remained stable in 12 (85.71%).

Employment rose in 2 (14.28%).

No company in the category experienced a fall in employment.

One new company entered the category, and one dropped out.

Year: 2002

Employment figures were available for 12 of the firms: in the year since 2001, employment remained stable in 2 firms (16.66%).

Employment fell in five (41.66%).

Employment rose in five (41.66%).

Two companies dropped out of the category.

There were no new entries.

No company experienced a fall in employment. One company dropped out and one entered. From this stable position, the industry experienced a high level of change between 2001 and 2002: employment held steady in only 16.66% of companies. It fell in 41.66% and rose in 41.66%. Two companies dropped out and none entered. The overall pattern in both MP and IMP was a rise in employment accompanied by a contraction in the number of companies – the industries moved towards fewer but larger companies. (As the systems of innovation literature argue, industries tend to emerge along this pattern, as they progress towards maturity. In new industries, when barriers to entry are low, innovations spring mainly from small start-ups, but the industry moves towards a structure of larger companies with monopolistic power as the years passed.)

These patterns are replicated broadly when I examine foreign digital media content companies, both direct and indirect producers. Total employment had dropped in both categories by 2002, and although average employment had continued to rise in one, it had begun to fall in the other. Foreign direct and indirect digital media content producers tended to operate on a much larger scale than their Irish equivalents, with their average employment often being multiples of that in the indigenous categories. Average employment in the FMP category rose over the three years from 324.6 to 444.6 to 706.66. Its total employment, however, did not rise annually. Having grown

between 2000 and 2001, it experienced a dip between 2001 and 2002, from 1,623 to 2,223 to 2,120.

Table I: Number of firms and their employment averages in FMP category, 2000, 2001 and 2002

Year	No. of firms	With employment figures	Total employment	Average employment
2000	5	5	1,623	324.6
2001	5	5	2,223	444.6
2002	3	3	2,120	706.66

Table J: Changing profile of and employment averages for FMP category, 2001 and 2002

<p>Year: 2001 Employment figures were available for five of the five firms. Employment remained stable in four (80%). Employment rose in one (20%).</p>
<p>Year: 2002 Employment figures were available for three of the three firms. Employment remained stable in one (33.33%). Employment rose in one (33.33%). Employment fell in one (33.33%). Two firms dropped out of the category. There were no new entries.</p>

Economic indicators suggested that the global economic slowdown began to be felt in Ireland in 2001. The FMPs tended to be more deeply embedded in the global economy than equivalent indigenous firms (discussed in a later section), and were quicker to display the affects of the global economic slowdown. Indigenous industries, less embedded, were somewhat slower to display the affects. Although a high rate of drop-out was experienced in the indigenous content industry between 2001 and 2002, it was off-set by rises in employment in the remaining companies.

FIMP was the category most strongly affected by the economic slowdown in terms of employment, even if all of the companies within the category remained active for the full three years of the project. Between 2000 and 2001, total employment rose from 8,285 to 11,395, but fell in 2002 to 9,237. Reflecting the trend in the wider NSI, employment fell between 2000 and 2001, but rose by 2002, although not to the 2000 level. Average employment mirrored the pattern for total employment: it rose between 2000 and 2001, from 1,035.635 to 1,424.375, but had fallen by 2002 to 1,154.645. The profile of the category remained stable over the three years, although this masked the extent of change on the ground level. Between 2000 and 2001, employment remained stable in 50% of companies, rose in 37.5% and fell in 12.5%. Change in employment (which this study takes as a crude measure of

expansion, contraction or stabilisation of firms) had accelerated by 2002. Employment remained stable in only 12.5% of companies; it rose in 25% and fell, quite dramatically, in 62.5%. The category was composed mainly of American multinationals, which in the harsher economic climate were scaling down their operations abroad and, in the main, were consolidating their business in their country of origin. None of the companies, however, pulled out of Ireland completely, although some American multinationals not included in this study – such as Gateway, the personal computer manufacturer – did.

Table K: Number of firms and employment averages in FIMP category, 2000, 2001 and 2002

Year	No. of firms	With employment figures	Total employment	Average employment
2000	8	8	8,285	1,035.625
2001	8	8	11,395	1,424.375
2002	8	8	9,237	1,154.625

Table L: Changing profile of and employment averages for IMP category, 2001 and 2002

Year: 2001

Employment figures were available for eight of the firms: in the year since 2000, employment remained stable in four (50%).

Employment rose in three (37.5%).

Employment fell in one (12.5%).

No firms entered or dropped out of the category.

Year: 2002

Employment figures were available for eight of the firms: employment remained stable in one (12.5%).

Employment rose in two (25%).

Employment fell in five (62.5%).

No firms entered or dropped out of the category.

The final category (IF) is Irish firms that are not located, either directly or indirectly, within the digital media content industry, but have produced innovations in the areas of hardware or software applications development. Among the indigenous categories, IF followed more closely than MP or IMP the trends in the wider Irish NSI, in which employment rose in 2001, but fell in 2002. A similar pattern was discernible in this category. Between 2000 and 2001, total employment rose from 1,817 to 2,010, but fell by 2002 to 1,414. Average employment between 2000 and 2001 rose from 46.589 to 51.583, but fell by 2002 to 47.133. The category achieved a high degree of stability between 2000 and 2001, when it contained 39 and 40 companies. However, it contracted significantly by 2002, falling to 31. Considering

the parallel drops in average and total employment, not only were fewer people employed in the industry, they were employed in fewer and smaller companies. Between 2000 and 2001, employment remained stable in 71.79% of companies; it rose in 20.51% and fell in 7.6%. However, a greater degree of flux was evident in the category in 2002, with employment remaining stable in only 33.33%, rising in 30% and falling in 36.66%. There were no new entrants, but seven companies dropped out and two were absorbed into larger organisations that had bought them out. Like the other categories, the tendency was towards contraction.

Table M: Number of firms and their employment averages in IF category, 2000, 2001 and 2002

Year	No. of firms	With employment figures	Total employment	Average employment
2000	39	39	1,817	46.589
2001	40	39	2,010	51.538
2002	31	30	1,414	47.133

Table N: Changing profile of and employment averages for IF category, 2001 and 2002

<p>Year: 2001 Employment figures were available for thirty-nine of the forty firms: in the year since 2000, employment remained stable in twenty-eight (71.79%). Employment rose in eight (20.51%). Employment fell in three (7.6%). One firm entered the category.</p>
<p>Year: 2002 Employment figures were available for thirty of the thirty-one firms: in the year since 2001, employment remained stable in ten firms (33.33%). Employment rose in nine (30%). Employment fell in eleven (36.66%). Seven firms dropped out of the category. Two were absorbed into larger organisations that had bought them out.</p>

There is a tendency among state agencies to prioritise hardware projects over content projects, because the payback in terms of employment is seen as greater. In a related study, Aphra Kerr (1999) notes the difficulty a Northern Irish CD-ROM producer had in securing state funding for a cultural content project. The project would have been shelved had the company not received funding from outside of Ireland, from the European Union. Even then, the company experienced difficulty, because the EU failed to appreciate the cultural specificities of the project, and often made unrealistic demands on the company in return for the funding.

The trend of valuing the technology over the content is related to the determinist notion that, once the technology is in place, everything else will follow on. This has

failed to materialise in Ireland in terms of a vibrant content industry, with contributing factors being a lack of funding and venture capital, a small domestic market, lack of demand from abroad for Irish digital media content artefacts, and the persistent dominance of the traditional media as outlets for Irish content.

Another characteristic of the indigenous digital media industry is that it operates on a much smaller scale than the foreign digital media companies located here. The gulf in average employment in the technology orientated indirect categories is striking. For indigenous companies in 2000, the average was 74.285. The average for foreign companies was over fourteen times that, at 1,035.625. As regards direct content producers, foreign companies had an average employment that was over ten times that of indigenous ones: 324.6 as against 32.53. The gulf narrowed significantly by 2002. The multiple for indirect producers was twelve times, 96 as against 1,154. Irish innovative firms, which were not related to digital media content, also provided a small average employment: 46.5 in 2000. This further suggests the small-scale of indigenous technology companies.

5.6: Venture capital investment in the digital media content industry

Access to venture capital is a problem for many indigenous content companies and is a serious hindrance to innovation. A joint report by the IDA and Forbairt, published in 1999, conducted a survey in which indigenous digital media companies – though not specifically in the content industry – were asked where they had derived their start-up capital from, and what were their sources of current capital (IDA/Forbairt, 1999: table xi). The companies were asked to list their sources of funding under six categories. For both start-up and current capital, the largest category was founder's personal funds, and the smallest was venture capital. For start-ups, 80% of the companies listed founder's personal funds as a source of capital; only 10% listed venture capital. For current capital, the respective figures were 50% and 7% (approximately).

Forfas, in its National Competitiveness Report for 2001, reported a cross-sector drop in venture capital investment, from what were already poor levels, especially in the content industry. At Enterprise Ireland's Digital Dividends conference in December 2001, Walter Hobbs, a director of ACT Venture Capital, one of the larger venture capitalists operating in the Irish system, stated that his company was more willing to invest in core technologies (hardware, software, applications) than leverage

core technologies (customer accounts, service providers, content). Core technologies are viewed within the venture capital industry as a more secure investment, because they are regarded as a tangible product. Hobbs said: “Content is perceived in Ireland as a tough area, risky. It doesn’t mean they [venture capital companies] don’t invest, but perception can be taken as reality” (Digital Dividends, 2001). Within a system of innovation, there are various brakes on and accelerators to the emergence of a new industry. Venture Capital is an important layer within the national system, and its perception of content as a risky investment is certainly a brake on the emergence of the industry. At the same time, the venture capital layer does, in instances, act as an accelerator, as in the expansion of one of my qualitative case-studies, *Enter* CD-ROM magazine. In November of 2000, it received a venture capital investment of £2 million, which allowed it to publish its content artefact in the British market. But, within six months, the company had pulled out of the foreign market. Its expansion was a failure, which could have been viewed within the venture capital industry as a further confirmation that content is a risky investment.

5.7: Irish digital media content producers (MPs)

The companies in this category tend to fall into narrow bands of characteristics: few employees, not radically innovative, and concentrated on domestic and niche markets.

Vivien Walsh claims that the defining characteristic of a small NSI is the size of its domestic market: the smaller the domestic market, the greater the pressure on a company to export to find the larger markets necessary to benefit from economies of scale and recoup the cost of heavy investment in innovation (Walsh, 1988). She claims that companies in smaller nations are more likely than ones in larger countries to be well integrated into the world economy, which is one reason why Swedish firms are more export orientated than their American counterparts. Ireland has a small system, comprising only one percent of the total economy of the European Union, and seems a fitting example of Walsh’s conception of a small national system.

Her writings focus on industrial companies (and industrial innovations). My research findings suggest that, in the Irish system, technology orientated hardware and software applications companies are more inclined than content companies to move beyond the small domestic market. My findings suggest further that certain factors exert a stronger influence on content companies than on industrial companies, and

these factors are often crucial to restraining content companies within the domestic market. (This will be discussed in more detail later.)

One limitation of the quantitative data available for this study is its inability to provide precise indicators such as the exact percentages for the amount of business each company conducts within and outside the domestic market. My approach is to measure the number of companies that indicate they service foreign markets. This activity might not make up the majority of their business, but it signals an attempt to move beyond the domestic market and widen the reach of their innovations.

Of the five categories, MPs showed by a significant percentage the greatest propensity to operate entirely within the domestic market. In 2000, 58.62% indicated that they operated entirely within the domestic market – the only time that the majority of companies in any of the categories were limited to the domestic market. Some 41.38% of companies serviced foreign markets, although many of these, according to their client lists, retained the majority of their client base in Ireland.

By 2001, the category had shifted substantially towards foreign markets: content companies that indicated they serviced foreign markets out-numbered those that operated entirely within the domestic market, 55.17% as against 44.83%. But by 2002, the category had begun, marginally, to tighten around the domestic market, with 47.05% of companies operating within the domestic market and 52.94% reaching abroad. The category's expansion into and contraction from foreign markets mirrored trends of employment in the wider system of innovation, which rose between 2000 and 2001, but fell by 2002, although not to the 2000 level. Similarly, the tightening of the MP category in 2002 around the domestic market did not reach the 2000 level. The year between 2001 and 2002 saw dramatic change in the profile of the category, with three new entrants, three being absorbed into larger organisations, and seven dropping out. The companies that dropped out tended to be among those supplying innovations abroad, which suggested they were quicker to feel the effects of the global slowdown than those operating entirely within the domestic market were. Indeed across the five categories, there was a correlation between the category's level of activity in the global economy and its employment and contraction levels.

Table O: Percentage of firms in the MP category that operated entirely within the domestic market or serviced foreign markets

<p>Year: 2000 Of the 58 firms, 34 operated entirely within the domestic market (58.62%) Twenty-four indicated that they serviced foreign markets (41.38%)</p>
<p>Year: 2001 Of the 58 firms, 26 operated entirely within the domestic market (44.82%) Thirty-two firms serviced foreign markets (55.17%)</p>
<p>Year: 2002 Of the 51 firms, 24 operated entirely within the domestic market (47.05%) Twenty-seven indicated that they serviced foreign markets (52.94%)</p>

The technology oriented IMP category had a higher percentage of companies supplying innovations to foreign markets, and it represents a tighter fit with Walsh's argument that firms within smaller NSIs try to break into larger markets. In 2001, 26.66% of firms operated entirely within the domestic market, while 73.33% indicated that they supplied innovations to foreign markets. The percentages remained stable for 2001. But in 2002, reversing the trend in the MP category, IMPs tightened around the foreign markets, with the percentage rising to 76.92. The category contracted marginally during this period – two companies dropped out, and there were no new entrants – but the affects were felt more so by those operating entirely within the domestic market.

Table P: Percentage of firms in the IMP category that operated entirely within the domestic market or serviced foreign markets

<p>Year: 2000 Of the 15 firms, 4 operated entirely within the domestic market (26.66%) Eleven indicated that they serviced foreign markets (73.33%)</p>
<p>Year: 2001 Of the 15 firms, 4 operated entirely within the domestic market (26.66%) Eleven indicated that they serviced foreign markets (73.33%)</p>
<p>Year: 2002 Of the thirteen firms, three operated entirely within the domestic market (23.08%). Ten firms indicated that they serviced foreign markets (76.92%).</p>

In the two foreign categories, FMP and FIMP, 100% of the companies indicated that they serviced foreign markets – their presence in Ireland inherently suggests that they are active beyond the borders of their country of origin. But their embeddedness in the world economy is reflected in the patterns of their total employment, a rise by 2001, a fall by 2002, but not to the 2000 level. A pattern emerged that the more

deeply a category was embedded in the world economy, the less likely it was to show a rise in total employment. The global slowdown of 2000 began to significantly affect Ireland in 2001, so those companies deeply embedded in the world economy were exposed to it for longer and tended to feel its fuller affects.

Table Q: Percentage of firms in the FMP category that operated entirely within the domestic market or serviced foreign markets

<p>Year: 2000 Of the five firms, five indicated that they serviced foreign markets (100%).</p>
<p>Year: 2001 Of the five firms, five indicated that they serviced foreign markets (100%).</p>
<p>Year: 2002 Of the three firms, three indicated that they serviced foreign markets (100%).</p>

Table R: Percentage of firms in the FIMP category that operated entirely within the domestic market or serviced foreign markets

<p>Year: 2000 Of the eight firms, eight indicated that they serviced foreign markets (100%).</p>
<p>Year: 2001 Of the eight firms, eight indicated that they serviced foreign markets (100%).</p>
<p>Year: 2002 Of the eight firms, eight indicated that they serviced foreign markets (100%).</p>

This pattern was true, also, of the IF category, which was more deeply embedded in the global economy than the other indigenous categories, MP and IMP. Its employment rose to 2001 and fell to 2002 – it fell below the 2000 level (the only category that did so). Also, the category significantly tightened around the global market over the three years. Between 2000 and 2002, the number of companies indicating that they were active abroad rose from 69.23% to 75% to 80.65%. The category contracted significantly between 2001 and 2002, from 40 to 31 companies, which accounted for the loss in employment. Some 36.66% of the companies remaining in the category shed jobs during the period. This contrasts poorly with the content industry. In terms of employment, the contraction in the category was off-set by job rises in the remaining companies, which characterised the category as having fewer but larger companies. The IF category produced fewer and smaller companies.

Table S: Percentage of firms in the IF category that operated entirely within the domestic market or serviced foreign markets

<p>Year: 2000 Of the 39 firms, twelve indicated that they operated entirely within the domestic market (30.76%). Twenty-seven indicated that they serviced foreign markets (69.23%).</p>
<p>Year: 2001 Of the forty firms, ten indicated that they operated entirely within the domestic market (25%). Thirty indicated that they serviced foreign markets (75%).</p>
<p>Year: 2002 Of the thirty-one firms, six indicated that they operated entirely within the domestic market (19.35%). Twenty-five indicated that they traded serviced foreign markets (80.65%).</p>

The foreign firms, by their presence in Ireland, are all active in foreign markets. Of the three indigenous categories, the technology orientated IMP and IF categories are substantially more embedded than the content MP category in the world economy. IMP and IF are closer to the traditional subject (industrial, technological and material innovations) of systems of innovation analyses and innovations studies, and correspond closer to the findings that emerged from the literature. One such finding is Walsh's contention that firms within a small NSI will be characterised by a struggle to break into foreign markets. This contention is less relevant to the content industry than to industries associated with technology – indeed, content was the only category to display a retreat to the domestic market, even if the retreat was slight.

The innovations literature indicates that as major technology systems emerge so too do a mass of legal and technical standards to support them (Winner, 1987: 76). Major technological systems, such as ICTs, cross national borders, but they also conform to certain industrial standards. Variances occur between systems in different countries, but the requirement that innovations conform to industrial standards ensure that the variances are slight. Therefore, a process or product innovation to the major technology system could, with relative ease, be adapted or localised to suit such variances. The technical differences are specified. The industrial technical standards for computer hardware and software applications tend to conform closely across the global economy, so an Irish firm adapting a niche hardware or software application would have a relatively easy task. This would seem to have underpinned the trend for the IMP and IF categories to become increasingly embedded in the global economy over the three years.

However, the principle of rigidly applying industrial standards is not as relevant to the content industry and the production of content innovations or artefacts. As

indicated in the literature review, content doesn't always travel well between nations and regions, due to language, cultural and social differences. More so than technical innovations (although societies could appropriate such innovations in different ways), content innovations often reflect the cultural and social values of the society of which they are a part, and it is more difficult to transplant them into societies to which these values are not common or familiar. Content is often culturally specific, which is a factor of development that tends to be overlooked by technology-centred accounts of innovation but has real and profound implications for companies in the MP category producing content rooted in Irish social and cultural values and history. MP companies are more inclined to remain confined within the domestic market, or to return having ventured outside it, because an expected demand for Irish content abroad has failed to materialise. Over the three years, the Irish online content ventures that gathered substantial audiences abroad were the RTE website, *Ireland.com*, *Online.ie* and Local Ireland. (RTE and *Ireland.com* are part of non-core producers.) Of these, Local Ireland closed, owing euro6 million to Eircom. RTE and *Ireland.com* were being scaled down because their parent organisations had encountered financial difficulties in their core businesses. And *Online.ie* implemented job cuts between 2001 and 2002. No offline content projects (such as CD-ROMs) have gathered a large audience abroad. A CD-ROM version of *The Book of Kells*⁴ was developed in 1999, but it had limited sales abroad. Aphra Kerr (1999) notes the difficulty of trying to move an unsuitable content innovation into a foreign market, and the strong resistance posed by local social and cultural values. In the industry, the companies that are most

⁴ The following information was gathered through an interview I conducted on 16 November 2000 with Elaine Kirwin, Operations Manger of X Communications, which developed the CD-ROM of the *Book of Kells*. The CD-ROM came in two editions, a standard edition and a limited edition. It had an overall print run of 10,000 copies. Between its launch on the 24 February 2000 and the date of the interview in mid-November of the same year, all 500 copies of the limited edition had been sold, as had 6,000 copies of the standard edition. Ms Kirwin estimated that the majority of CD-ROMs had been sold within Ireland and to Irish people. However, 700 copies had been sold to the United States through the company's online ordering system. Also, 1,000 CD-ROMs accompanied the actual *Book of Kells* when it went on tour in Australia in mid-2000, and all of those copies were sold. About one quarter of the CD-ROMs were sold through the Trinity Library shop, and Ms Kirwin estimated that a sizeable portion of those customers would have been foreign tourists. When I asked her to weigh development costs against the market for the artefact, she told me that the project would recoup its development costs when all 10,000 copies of the initial print run were sold. That estimate was interesting, as it gave an idea of the sales required by a reasonably ambitious digital media content project to break even. We could take the following crude measurement to gain some idea of the cost involved. Each copy of the standard CD-ROM cost £20 (multiplied by 9,500 copies gave a total cost of £190,000), while the Limited Edition cost £40 (multiplied by 500 copies was £20,000.) All 500 copies of the limited edition were sold (generating revenue of £20,000), as were 6,000 copies of the standard edition (£120,000). So, nine months after the artefact was launched, it was roughly £70,000 below its break-even figure.

successful abroad supply content that is unrelated to Irish social and cultural values and history, such as digital media educational artefacts supplied to the North America market.

5.8: Innovative activities of Irish digital media content producers (MP)

The companies in this category tend to be characterised as follows: few employees, not radically innovative, serving niche markets, and with a higher percentage of companies than in other categories operating entirely within the domestic market. The innovative activities of the companies in this industry fall into six categories, as follows:

1: Design: This includes companies engaged in the design of content for clients, usually corporate, such as the design of websites. In many cases, these companies supply writers and graphic designers to produce the content available on corporate or other websites. Many of the companies in this area also offer consultancy services, e.g. for website design. These actors tend to engage in low-end innovative activities, and their business models tend to be conservative: they are first commissioned by a client before they begin designing content.

2: Development of educational or training digital media content artefacts: This includes companies that develop artefacts to educate people through the medium of digital media. A wide variety of educational artefacts are produced by these companies, such as Smartforce's educational artefacts for the American educational system, or Compupharma's training artefacts for the medical profession. The companies in this category tend to engage in higher-end activities. They tend to develop the artefacts from the beginning through to the final form, and employ a wide range of competencies in the process, such as writing, animation, audio and video. The artefacts themselves tend to have high levels of interactivity with the user. It is a higher risk business model, because the companies are not commissioned to develop such artefacts and there is no guarantee of recouping their investment when the artefacts are delivered to market.

3: Production of uncommissioned digital media content: This includes companies that develop digital media content innovations or artefacts with the intention of publishing them themselves or bringing them to market. This is higher-end content creation, because the idea for the innovative content artefact usually originates and is

developed within the company. The majority of the competencies required – technical, creative, organisational – are developed within the company. Examples here include *Emigrant* publications, which publishes a weekly online news-service for Irish emigrants, or Pure Communications, which produces a monthly CD-ROM magazine for retail. These companies tend to employ a higher risk business model: they receive no significant income until the innovation is brought to market, and within a system of innovation, the majority of innovations brought to market fail.

4: Commissioned digital media content: This category includes companies that produced content innovations or artefacts, such as CD-ROMs, on commission from clients, usually corporate. These range from producing elements of an overall innovation or artefact – such as animations for a CD-ROM – to producing the artefact from start to finish, drawing on all the technical, content and organisational competencies and infrastructures necessary for such a production. This tends to be a lower-end innovative activity because the companies are usually servicing the needs of non-digital media corporate clients whose requirements don't stretch either the technology of digital media or the content competencies associated with it. It is a conservative innovative approach because the companies in this category do not attempt to develop content of their own, which could be more ambitious and make a more innovative use of digital media technologies and content creation competencies.

5: Localisation: Through localising the content of others, these companies play active roles in shaping the final form of the innovations or artefacts, and in the process that leads to content creation. So, in this study, they are included as part of the content industry. The companies in this category usually engage in lower-end innovative activities, such as dubbing language or editing content to fit with the dominant social and cultural values of the intended market.

6: Development of interactive games: Interactive games, in the three years of my study, failed to become a significant element of the Irish digital media content industry. Shauna G. Brail and Meric S. Gertler suggest one possible explanation as to why games developers struggle in smaller systems of innovation. They write:

“Games development is a very expensive mass market undertaking that requires access to finance, markets, distribution channels and, increasingly, the support of large corporations” (Brail and Gertler, 1999: 107).

The main interactive games developers and publishers are located in larger countries and larger systems of innovation: America (Electronic Arts, Microsoft), England (Eidos), France (GT Interactive) and Japan (Nintendo, Sony, Sega, Konami). However, some games developers are emerging in Scotland and in peripheral regions of England (Cornford and Naylor, 2001). Aphra Kerr (2001) notes the oligopolistic structure of the global games industry. A few companies control publishing and act as gatekeepers for the industry. Independent games developers encounter extreme difficulty in financing development of games – which can take two years or more – and successfully bringing them to market without securing a publishing deal from one of the main games companies. Kerr's study records the immense difficulty experienced by Irish developers – which tend to be small-scale, poorly financed, and located away from the main centres of games development – in securing publishing deals. In the three years of my research, Funcom was the largest games developer in Ireland; it employed 30 people and secured a deal with Sony to publish a game, *Speed Freaks*, on the Playstation console in Europe in 1999 and America in 2000. However, Funcom closed its Dublin office in 2001.

Table T: Innovative activities of the firms in the MP category, 2000 (first row across), 2001 (second row across) and 2002 (third row across)

Design	Localisation	Educational and training artefacts	Uncommissioned digital media content	Commissioned digital media content	Games
17 (29.3%)	3 (5.17%)	14 (24.13%)	8 (13.79%)	15 (25.86%)	1 (1.72%)
14 (24.13%)	3 (5.17%)	13 (22.41%)	8 (13.79%)	17 (29.31%)	3 (5.17%)
13 (25.49%)	1 (1.96%)	10 (19.6%)	11 (21.56%)	13 (25.49%)	3 (5.88%)

Of the companies active in design in 2000, 58.82% offered consultancy services. In 2001, 50% of the companies offered consultancy services. In 2002, 38.46% offered consultancy services.

In 2000, 62% of the industry was involved in the relatively low-end tasks of designing content, producing commissioned content and localisation. Only 13.79% was responsible for the higher-end tasks of developing uncommissioned digital media content.

As stated earlier, the year between 2000 and 2001 was one of high stability for the category, and so it proved for the breakdown of the innovative activities of the companies within it. There was a slight drop in the number of companies offering design and consultancy services. The level of localisation remained the same, while the number of companies producing commissioned digital media content rose by

almost 4%. Some 58% of firms were engaged in these relatively low-end innovative activities, so there was a slight shift (4%) to the higher innovative areas of developing uncommissioned content, educational and training artefacts, and interactive games. Development of interactive games and educational artefacts rose, while uncommissioned content production remained stable at 13.79%.

The year between 2001 and 2002 brought a quite dramatic contraction of the category, and the remaining companies were more likely to be located in the higher innovative areas of uncommissioned content production, educational and training artefact production, and games production. Some 52% of companies were located in the relatively lower innovative areas of localisation, commissioned content production, and design and consultancy, down 10% over the three years and suggesting an industrial shift to higher innovative activities. Design and, especially, consultancy continued to diminish within the industry. The percentage of companies involved in the production of commissioned digital media content remained stable, at 25.49%. But the number of companies producing uncommissioned content rose sharply, to 21.56%, suggesting that through the economic slowdown, these companies remained durable and new companies were willing to engage in this innovative activity. Over the three years, the tendency was for this industry to contract, but for the remaining companies to move to higher innovative activities.

Also, proximity is a notable feature for companies producing commissioned content. For example, Dublin-based company X Communications was commissioned by Trinity College Dublin to develop a CD-ROM version of the *Book of Kells*. The company's other notable commissions included developing websites for the EBS Building Society, Amarach Consulting and the Film Institute of Ireland.

Guinness Ireland, CIE, Dublin Bus, Beamish and Crawford, Aer Lingus, The Sunday Business Post, and many others, had their websites developed by Irish digital media companies when, technologically, there was no reason why foreign digital media companies could not have done the same job to a similar or superior standard. My research findings suggest that the same holds true in reverse: Irish digital media companies tend not to receive commissions from abroad, even though there are few technological reasons why they couldn't produce work to the same quality as a foreign client's local company.

Despite arguments that the emergence of ICTs would diminish the importance of distance (Toffler, 1970; Cairncross, 1998), it remains an important influence on the

emergence of the Irish digital media content industry. My quantitative study suggests that Irish digital media content producers, in the main, produce for and receive commissions from Irish clients. Often, it is not the technical competencies of a company that wins a contract, but its proximity to the client. Thus commissions are won through less tangible forms such as informal networks – relationships between people – that technology-centred theories omit.

The NSI's characteristics – small domestic market, venture capital layer reluctant to support content, attraction of foreign companies that based lower-end innovative activities here – influence broadly the innovations that emerge from the Irish system. They tend to be small scale, aimed at niche markets, not radically innovative, and not especially rooted in Irish social and cultural values. Further research, over a longer period of time, will be necessary to study how NSI characteristics influence the styles of innovation that emerge from the industry. The industry is still at an early stage of its emergence, and the styles of innovation have yet to fall into established patterns. It would be beneficial to re-apply the styles of innovation concept when the industry has reached a higher level of maturity, and the styles of innovations emerging from it have fallen into more established patterns. This would provide a more solid basis for gauging the influence of NSI characteristics on styles of innovation.

5.9: Innovative activities of foreign digital media content creators (FMPs)

The results of my study suggest that FMPs tend to be larger-scale than MPs, provide high levels of employment, and their overall (international) organisations tend to be highly-innovative. However, the innovative activities conducted within the Irish national system of innovation tend to be the lower-end tasks of localisation and, from a systems of innovation perspective, contribute little to lift the innovative level of the industry. For 2000 and 2001, 80% of the companies were involved in localisation, mainly for the European market. Only 20% of the companies focused their main efforts on the production of original content innovations or artefacts. However, by 2002, innovation was eliminated from the Irish system, as the economic slowdown began to hit and multinationals consolidated their businesses around their country of origin. All of the remaining companies in 2002 were active in localisation, which this thesis argues is a relatively low-end element in the process of content creation.

Table S: innovative activities of the firms in the FMP category, 2000, 2001 and 2002

Year	Localisation	Content production
2000	4 (80%)	1 (20%)
2001	4 (80%)	1 (20%)
2002	3 (100%)	

This raises questions about how embedded multinationals are in the Irish economy. Localisation is a task that could have been undertaken with relative ease in many different countries. Ireland's attractiveness to foreign multinationals is based on favourable tax incentives, an educated, English speaking workforce, modest wage levels and a presence within the EU market. Yet, these are not enough to copper-fasten the multinationals to Ireland. As Denis O'Hearn notes (1995), many multinationals which based low-end manufacturing operations here pulled out of this country in the 1980s when economic conditions (outside as well as inside Ireland) turned unfavourable. To a lesser degree, a similar pattern is emerging with ICT companies engaged in the production of hardware and software applications; they tend to base lower-end manufacturing, assembly and localisation operations here. The more low-tech the operations are here, the easier it is for multinationals to leave. What is also apparent is that multinationals are contributing little to turning the Irish economy into a system of radical innovation. The government has acknowledged the need to entice multinationals to establish higher-end operations here, to secure them to the Irish economy (RTE, 15 September, 2000). But with the slowdown – and multinationals consolidating their businesses around their countries of origin – this failed to occur on a significant scale during the timeframe of this project.

5.10: Innovative activities of Irish indirect digital media content companies (IMPs)

The main characteristics that emerged from this category are as follows: the companies tend to be small-scale, provide low levels of employment, are not radically innovative, but have a higher propensity than indigenous content companies to service foreign markets. Over the three years, this tended to be a stable category. In 2000, 40% of the companies were involved in the production of software applications, 26.66% developed hardware products and 33.33% combined hardware and software (which, given the small scale of the companies within the category, suggests a lack of

specialisation). By 2001, the category had consolidated around the development of software (46.66%), eased on hardware (20%), while the number of companies combining software and hardware remained stable (33.33%). The category suffered a slight contraction by 2002, which affected most strongly the development of hardware products. Software applications development remained relatively stable at 46.15%, but hardware development dropped to 15.38% (some 10% over the three years). The number of companies combining hardware and software development rose to 38.33%.

Table U: innovative activities of the firms in the IMP category, 2000, 2001 and 2002

Year	Software innovations	Hardware innovations	Both
2000	6 (40%)	4 (26.66%)	5 (33.33%)
2001	7 (46.66%)	3 (20%)	5 (33.33%)
2002	6 (46.15%)	2 (15.38%)	5 (38.33%)

The companies in this category apply themselves to the development of process or product innovations to emerging or established major hardware or software systems that facilitate the production or delivery of digital media content. These technology systems tend to be highly standardised across global markets, which in part is a factor for many companies operating outside the domestic market. They service niche markets, in a vein similar to Vivien Walsh's contention that companies within a small system of innovation would concentrate on niche, process innovations, or "specialised applications of a basic technology" (Walsh, 1988: 53). The level of innovative activity seemed to rise little over the three years.

5.11: Innovative activities of foreign indirect digital media content producers (FIMPs)

Similar to foreign digital media content producers, the companies in this category tend to be large-scale, provide high levels of employment, and the organisations as a whole tend to be highly innovative. However, the more innovative activities are not undertaken here, but tend to be carried out in the multinational's country of origin, which stifles their contribution towards raising the level of innovative activity within the Irish system.

In 2000, 50% of companies manufactured innovations or artefacts here that were researched and developed elsewhere. Some 12.5% had manufacturing operations that

incorporated an element of development (although their main activity remained manufacturing). Of the firms, 37.5% maintained localisation operations here (e.g. localising software applications) that had an element of development. (But again, the main focus was localisation, not development.)

Table V: Innovative activities of the firms in the FIMP category, 2000, 2001 and 2002

Year	Manufacturing	Localisation	Manufacturing with development	Localisation with development
2000	4 (50%)		1 (12.5%)	37.5%
2001	4 (50%)	1 (12.5%)	1 (12.5%)	2 (25%)
2002	4 (50%)	1 (12.5%)	1 (12.5%)	2 (25%)

The level of development carried out in the category dropped between 2001 and 2002. For both years, 50% of the companies maintained manufacturing operations, 12.5% maintained localisation operations, 12.5% maintained manufacturing with an element of development, and 25% maintained localisation with an element of development. The innovative level of the category seemed to drop after 1999.

5.12: Innovative firms (IF)

The companies in this category tend to be small-scale, not radically innovative, provide relatively low levels of employment, but of the three indigenous categories shows the highest propensity to service foreign markets. In 2000, 94.87% were involved in the production of software innovations, while 5.13% combined their software innovations with hardware innovations. The relevant figures for 2001, after the category had undergone a slight expansion, were 92.5% and 7.5%. In 2002, after it had undergone a significant contraction, the figures were 93.55% and 6.45%. The innovative level within the industry was low and consisted mainly of process innovations to previously established major software systems, conforming to Vivien Walsh's conception of companies in small national systems developing "specialised applications of basic technologies" (Walsh, 1988: 53). The process software innovations they developed were to serve niche markets. The major software systems tended to be established globally, which in part accounted for the high number of companies in this category that delivered to foreign markets.

Table W: innovative activities of the firms in the IF category, 2000, 2001 and 2002

Year	Software	Hardware	Software and hardware
2000	37 (94.38%)		2 (5.13%)
2001	37 (92.5%)		3 (7.5%)
2002	29 (93.55%)		2 (6.45%)

5.13: Conclusion

The innovation studies approach which is informed by technological determinism suggests that new sectors and industries emerge along a linear and predictable path, on an upward route with an ever increasing size and sophistication of its innovations. Despite predictions for continued future growth in 1999, the content industry had contracted by 2002. And although it has tightened around higher-end innovative activities such as the development of uncommissioned content, educational and training artefacts, and interactive games, the sophistication of innovations and artefacts being developed has not raised significantly since 1999. In the three years of the case-study, the emergence of the industry was closer to Schumpeter's waves theory of mini-booms and busts, growths and contractions, but with the overall trend within a wave (50 years or so) being of growth and an increase in the sophistication of innovations developed within the industry.

A three year study covered but a fraction of a Schumpeterian wave, and research over a longer time-span would be necessary to test the suitability of the waves concept to account for the emergence of the Irish digital media content industry. However, given the short history of the industry, the approximate 50 year time-span of a Schumpeterian wave is not available. However, in my research, the year between 2000 and 2001 brought marginal growth and, in keeping with the systems of innovation concept, unsuccessful innovators were eliminated from the industry but were replaced by new innovators. The industry contracted between 2001 and 2002 – although new innovators entered the market, they were outnumbered by unsuccessful innovators eliminated from it. The contraction coincided with the slowdown in the wider economy, and although the contraction in the content industry wasn't in synch or directly proportional to that in the wider economy, it suggests that trends in the national system influenced those in an industrial system (a macro-influence on the industry's emergence – the qualitative chapters will examine micro-influences on

individual companies, which are the constituent parts of the emerging industry). The thesis rejects any assumption that trends in the NSI determined those in the industrial systems, but the national system proved to be an influential factor over the three years. Nelson suggests, for example, that: “The factors that make for commonality within a single country...largely define the factors that make for commonality across sectors within a country” (1993, 518). All the categories in my study share certain commonalities – they are clustered around Dublin, tend to engage in lower-end innovative activities, and a slowing of growth coincided with that in the wider economy. The macro-economic forecasts for 2003⁵ suggested a return to a higher level of economic growth, and this, in turn, could influence growth in the content industry. The year between 2001 and 2002 may be viewed as a blip in an overall trend of growth, or one of the mini-busts of Schumpeterian theory. However, such forecasting cannot be verified by this thesis, which rejects the notion of inevitable technological trajectories or any such predictability in the emergence of a new industry.

⁵ The Economic and Social Research Institute, according to a story in *The Irish Times* (23 April 2002), predicted that although economic growth for the whole of 2002 would average 3.1%, the economy would grow by 5% for the final three months of the year. The rate for 2003 was expected to be 4.4%.

Chapter 6: Case-study: *Ireland.com*

Chapter 6: Case-study: *Ireland.com*

6.0: Introduction

The purpose of the last chapter was to draw a general picture of the Irish digital media content industry – to monitor its emergence and the main influences on it, and tease out its main characteristics and areas of innovative activity. The methodology chapter argues that such a general study is necessary to produce balanced and accurate results in my research.

The general study, by its nature, is too removed to examine many of the subtle and complex processes and interactions that take place within individual digital media content companies. Many of these processes and interactions have a profound influence on the direction and final form of a content innovation. Therefore, they need to be examined to develop a better understanding of the nature of digital media content creation, and to gauge how macro and meso-level influences affect innovation at the micro, firm level, and vice versa. To achieve such an understanding, the following case-study chapters will leave the general and focus on the particular.

The particular, in this chapter, is a qualitative case-study of a digital media content venture located within an organisation whose core activity is not the production of digital media content. The organisation is The Irish Times Group, whose core activity is to publish a quality daily broadsheet newspaper in the Republic of Ireland. The subject of the case-study is the Group's website, *Ireland.com*. In researching the emerging digital media content industry, I am interested in Irish examples of digital media content innovations, how they emerge and evolve, and the influences on them. *Ireland.com* presents an opportunity to examine a digital media content form (website) that has a direct relationship with a traditional media content form (newspaper). This relationship heavily influences the style, content and production of *Ireland.com*, but as the website has matured, it has evolved into something distinct, something more than just a digital media reflection of *The Irish Times* newspaper.

As outlined in the literature review, in relation to books and magazines, emerging media content forms often borrow heavily from traditional media content forms. But the relationship and influence weakens as the new media form matures and develops

its own codes, grammars and techniques. Whereas the magazine was once regarded as “a book with a flimsy cover” (Owen 1992: 13), the book and the magazine today are regarded as two distinct, independent content forms. I will argue that *The Irish Times* and *Ireland.com* are at an early stage of a similar process. Of course, the similarity with books and magazines can not be carried through intact, because they are general content forms. *The Irish Times* and *Ireland.com* are specific content innovations, produced by the same organisation, which bonds the two on many levels. But, this thesis argues, *The Irish Times* and *Ireland.com* are a specific instance of a general trend – that, generally, digital media has borrowed heavily from the production techniques, competencies and values of traditional media, but as digital media has begun to mature, it has refashioned many traditional media practices to suit the new medium and has developed competencies, techniques and values of its own. (From a systems of innovation perspective, *Ireland.com* as a content innovation has begun to accumulate competencies, knowledge and infrastructures. It has achieved this not through the undertaking of formal research and development, as specified in the early systems of innovation writings, but through the interactive learning that later incarnations of the model are moving towards.) In this vein, *The Irish Times* website has evolved since its establishment in 1994 into a content innovation that has many elements and practices distinct from the newspaper. So much so that the term online newspaper, popular in the mid-1990s when the web was first emerging into mainstream use, is no longer spoken in the office of *Ireland.com*. Although the website publishes content originally generated for the newspaper, it also offers content and services generated exclusively for the website, and generated using techniques more suited to the web than to *The Irish Times*’s traditional print concerns. *The Irish Times*, a newspaper company since 1859, has in recent years embraced, learned and evolved new content creation and technical competencies and entered new media domains. This thesis argues that few media forms are static – they change in terms of style, content, production techniques, and technology. As demonstrated in the literature review, magazines are still evolving, despite being an established, traditional media content form. Newspapers, too, are evolving, as is digital media. Although the fundamentals of the print *Irish Times* are the same as in 1994 – same standards of journalism, target readership, news values – the newspaper was not the same in 2002 as it was then: changes had occurred in Irish society, which in 1994 was entering the Celtic Tiger economic boom; certain sections of Irish society had

experienced seven years of unprecedented economic growth and wealth, and there had been many social changes associated with this. These changes influenced the content of the newspaper and its style and presentation. The paper expanded, with more pages, supplements and business sections; it introduced a magazine and recruited new journalists and workers who exerted an influence over the final product. *The Irish Times* as a newspaper and a traditional media content innovation continued evolving. It was not static. Neither was *Ireland.com*, but because it was based in a newer medium (digital media), its evolution was more apparent and dramatic. It evolved into something more than what it was when it was first launched in 1994.

But there is a lot of uncertainty over its future development direction. A senior *Ireland.com* employee said no one knows for sure how digital media as a content form will evolve, so it is important to be flexible enough to adapt. This case-study presents an opportunity to assess the evolution, thus far, of *Ireland.com* as a content innovation, to examine the organisational innovation in *Ireland.com* and *The Irish Times*, and assess how it interacts with external actors both within the digital media content industry and outside.

Being, for so long, a traditional newspaper company, The Irish Times Group has had to undergo a quite significant organisational innovation to integrate a new media division into its structure. But, as shall be argued later in the chapter, The Irish Times Group is at an early stage of this organisational innovation; it is in transition and, in effect, operates a two-tiered organisational structure: the first is the more systematic, rigid organisational structure of the print newspaper, where the layers of bureaucracy and the demarcation of tasks and responsibilities has been forming since 1859 and has reached a high level of maturity. (As shall be outlined later, newspaper newsrooms have developed a conventional structure and *The Irish Times* newsroom does not differ greatly from it.) The second is the more fluid, flexible structure of the digital media division. A rigid structure has had less time to develop. In any case, staff at *Ireland.com* believe a rigid structure would not be suitable. Digital media is at an early stage of its emergence, and so are the organisational structures to support it. (In the conceptual framework of this thesis, not only is there an emergence of a supporting institutional set-up external to the company, but also the emergence of organisational structures within the company.) At this early stage, *Ireland.com* believes it is best to keep its organisational structure as flexible as possible, so it can respond quickly to changes as the medium matures.

In early 2001, The Irish Times Group was re-aligning itself as not just a newspaper publishing company but an open-ended publishing company, capable of delivering content across print and digital media platforms. In the organisation's own words, it wanted to embrace competencies, content forms and markets that were not always consistent with "the traditional franchise areas of the newspaper" (<http://www.Ireland.com/about/web/webhistoryv.htm>, viewed on 23 July 2001). However, later in 2001, financial difficulties in the core newspaper business forced a re-assessment of the Group's ambitions. The Group consolidated around the core business, and although it maintained the new media division, financial support to it was cut and it was put under increased pressure to deliver revenues. However, the process of organisational innovation within The Irish Times Group influences the production of content, and the final form of content innovations, both for print and digital media. It is important, therefore, to consider this organisational innovation, especially at this early stage of the website's emergence, when the options remain relatively open and no rigid structure has been established.

Ireland.com is run by a subsidiary company, Itronics Ltd, but it is a wholly owned subsidiary and *Ireland.com* can not be treated as an actor that is independent of the overall *Irish Times* organisation. *Ireland.com* is worthy of a case-study analysis because it is one of the most successful Irish digital media content innovations. It has achieved a large usership both within and outside the state, and as such is an important actor within the industry. According to the latest independently audited figures for the website (May 2002), it receives 25.5 million page impressions per month and has 2.3 million users (www.ireland.com/about, viewed 2 September 2002). The focus of this case-study will not be on how those 2.3 million users consume the content on *Ireland.com*, or their patterns of consumption, but on how the content for *Ireland.com* is produced. The website would seem to have overcome the difficulty of being able to produce content that is consumed both within the domestic market and abroad. The empirical research for this thesis suggests that Irish digital media content companies, especially core companies, have difficulty producing content that is commercially successful beyond the limited domestic market. In this respect, *Ireland.com* highlights how a traditional media company can have advantages over a start-up in producing a digital media content innovation.

6.1: Methodology and justification for case-study

The advantages and disadvantages of the research methodologies employed by this thesis are discussed in an earlier chapter and so shall not be repeated here. I shall, however, note the particular methodologies I employed while undertaking the case-study of *Ireland.com*. I used qualitative methods, which included semi-structured in-depth interviews with a number of people involved in the editorial, technical and commercial areas of the *Ireland.com* organisation. I also undertook document analysis, mainly of the website itself, and I engaged in observation during a three week period I spent in the office of *Ireland.com*, in August 2001. I left the office with an agreement to renew contact at a later date, when my thesis was nearer completion, to discuss any intervening changes to the website that were relevant to my study. The main reason for this was that, during my three week research placement, the incorporation of audio and video was planned as the next phase in the website's development. Renewing contact, I believed, would allow me to better assess the process of integrating audio and video into the website, which had, since its establishment in 1994, been mainly text and image-based. However, by the time I renewed contact in August 2002, events at The Irish Times Group had taken an unexpected turn, and had affected the innovative development of *Ireland.com*. My aim was no longer to assess the integration of audio and video, as originally agreed, but to assess how the changed financial circumstances at the Group had affected the development of the website.

6.2: Background to *The Irish Times* and *Ireland.com*

6.2.1: Background to The Irish Times

The Irish Times was established in Dublin in 1859 as a quality, broadsheet newspaper. In its early years, the politics of newspaper accorded with the political views of its founder, Major Laurence Knox. It was a conservative newspaper, and it described itself as such in its first edition on the 29th March 1859. The newspaper later aligned itself with unionist politics in the years prior to Irish independence from Britain. On the foundation of the Free State in 1922, the newspaper committed itself to following

an “independent political line” (<http://www.Ireland.com/about/print/history.htm>, viewed 23 July 2001). However, in an emerging Irish society still struggling with the National Question, it took many years for the public’s perception of *The Irish Times* as a unionist newspaper to fade. According to one commentator, the public’s perception of unionist sympathies within the newspaper was not unfounded, with many on the editorial and managerial staff being more sympathetic to the government in London than the one in Dublin (Oram, 1983). Largely because of its unionist sympathies, *The Irish Times* appealed to a small, select section of Irish society, so much so that the editor of the newspaper, Conor Brady, once said: “It used to be said that every time a name appeared in the deaths’ column of *The Irish Times*, the circulation of the paper went down by one” (Oram, 1993: 51).

The Irish Times began to turn into a liberal, independent newspaper in the 1960s, as the composition of the editorial staff began to shift, with the appointment of younger journalists and editors more in tune with changes in Irish society at the time. Not only was the news agenda opened and greater freedom allowed in the topics and styles of journalism, but also the newspaper introduced changes such as placing the bylines of reporters on stories. Bylines were a standard style convention in the modern newspaper industry, but prior to the sixties, they were uncommon.

Ownership of the newspaper remained in private hands until 1974, when The Irish Times Trust was established. The Trust was formed during the uncertain economic conditions of the mid-1970s to protect the newspaper from commercial takeover. The Trust’s charter obligates it to maintain *The Irish Times* as “an independent newspaper primarily concerned with serious issues for the benefit of the community throughout the whole of Ireland, free from any form of personal or party political, commercial, religious or other sectional control” (<http://www.Ireland.com/about/print/history.htm>, viewed on 23 July 2001).

The circulation of the newspaper has been rising steadily since the mid-1980s. For the year 2002, its readership averaged 343,000 per day (*The Irish Times*, 5 September 2001). Although *The Irish Times* was not Ireland’s biggest selling daily newspaper (the *Irish Independent*’s readership averaged 591,000 per day), 85% of its readers came from the affluent and influential ABC1 readership group – professionals and business people. *The Irish Times*, therefore, is regarded as an extremely influential media organ in the Republic of Ireland.

6.2.2: Background to Ireland.com

According to one *Ireland.com* employee, the decision for The Irish Times Group to begin developing a digital media content innovation was down to “a combination of luck and vision, and a lot more luck than vision” (Pope, *Ireland.com*, 2001). In describing it as such, the employee was being consistent with social shaping theory on the arbitrariness of the emergence of innovations. The emergence, or development path, of *Ireland.com* as a digital media content innovation was not inevitable; it was down to a number of factors, conditions and influences, too many to make the process predictable with any great degree of certainty. Almost to emphasise the arbitrariness of the process, one could argue that the origins of *Ireland.com* are grounded in a chance occurrence while The Irish Times Group was seeking to innovate the print newspaper.

In 1994, executives from The Irish Times Group were on a tour of the United States to try to find a suitable new printing press for the newspaper. They visited the printing operations of a number of US newspapers. The last newspaper they visited was the *San Jose Mercury News*, which was the first newspaper in the world to begin publishing an online edition. Before the executives left, the editor of the *San Jose Mercury News* showed them the newspaper’s website. And from that, the executives left the United States without having bought a printing press, but with the idea of putting *The Irish Times* on the web.

The Irish Times first appeared on the web in September 1994. It had a limited amount of content from the print newspaper and was purely text-based, due to the technical limitations of the dominant web browsers of the time, Lynx and Mosaic. (Lynx was a purely text-based browser; Mosaic allowed some basic graphical content. It wasn’t until the development of the Netscape browser that graphics could be incorporated into websites on a significant scale.) It would be nearly two years before graphics and photographs would be added to the website in any substantial form. Although *The Irish Times* undertook no advertising to support the early website, it quickly began to attract 1,000 visitors a month. This, according to deputy editor Conor Pope, demonstrated to the company’s management that the web offered the potential to open a much broader base for *The Irish Times*, in terms of potential audiences, sources of revenue and channels for delivering content.

For the first year of its existence, *The Irish Times on the Web* (as it was then called) was posted on the web by a number of technical operators based in Trinity College Dublin. At the time, *The Irish Times* organisation didn't possess the necessary technical competencies to publish the web edition itself. The technical people, who had no editorial background or training, took copy from the print *Irish Times* files, slotted it into a webpage template, and posted it on the web. By late 1995, management at the newspaper had decided that, if it were going to produce a serious, professional electronic media artefact, it had to have trained journalists working exclusively on the website. Four journalists began working on the website in early 1996; their remit was to provide the necessary editorial and content creation competencies. Also employed were people with the necessary technical competencies, so *The Irish Times* organisation had begun to achieve a balance between the content creation and technical competencies necessary to produce a digital media content innovation.

Around 1995/1996, a number of commentators (mainly from a technological determinist perspective, such as Negroponte, 1995) were predicting the demise of the print newspaper, to be replaced by online newspapers. (Such technological determinist claims are critiqued elsewhere in the thesis.) Many newspaper organisations were worried about how to respond to this perceived new threat. However, the emerging patterns of digital media content consumption contradicted their predictions, and were more consistent with the historical trend that the emergence of a new media form does not necessarily cause the demise of an older media form. While, at first, they may seem competitive, the relationship changes as the new medium matures, and they slip into uncompetitive, often complementary, roles. *Irish Times* management realised early on that the newspaper's print content on the web was being consumed abroad, by people who couldn't access the physical print edition. In Ireland, the print newspaper was still being bought and read, in preference to consuming the content online. Print and digital media are different media, appealing to different audiences and serving different roles. They can be complementary rather than competitive, as evidenced by the fact that, since the establishment of the website in 1994, the usership of the website and the circulation of the newspaper have both been rising. (Usership of the website has been rising rapidly abroad, but even within Ireland itself, circulation and usership have both been rising steadily.) In 1996, 88% of the website's traffic came from abroad. Because of the

website's heavy reliance on content from the print newspaper, traffic remained disproportionately high from abroad for a number of years. In March 1999, the website was relaunched as *Ireland.com*; it offered content from the print *Irish Times*, but also content on ancillary websites, which contained general and tourist information about Ireland. Such content was aimed at users outside the state. It established a breaking news service, which was aimed primarily at users within the state. It began to offer web services such as free email to appeal to both groups. (These wouldn't be the patterns of consumption for every user, but according to *Ireland.com*'s own (mainly quantitative) research and perceptions of usership, they would be the typical, general trends.)

Under the *Ireland.com* label, the balance of usership shifted; in 2001, 60% of traffic came from outside the Republic of Ireland, and 40% from within. Usership for the year 2000 rose to 24.6 million page impressions and 1.5 unique users per month. In March 1999, at the time of the relaunch as *Ireland.com*, the website was registering 6.5 million page impressions per month and had 585,000 users. (Its number of users just over doubled in a year, while its page impressions quadrupled, which would suggest that those who did use the website stayed on it for longer. At *Ireland.com*, this was believed to be a result of the more varied types of content on the website.) Its impression and usership figures for 1998 and 1999 were similar, which suggested that an element of stagnation had set in. So the relaunch as *Ireland.com* was well timed, because between 1999 and 2000, the website was expanding rapidly again, with traffic more than doubling. Traffic figures for 2000 and 2001 (I gathered the latter figures from internal documents on impression rates) were also similar, but in 2001 a planned website redesign was regarded as necessary to stimulate further traffic increases. In 1998, the website recorded an average of just under six million page impressions per month and had 620,623 users. In 1997, it had 4.25 million page impressions per month and 396,131 individual users. *The Irish Times on the Web* was the first Irish website to have independently certified figures for usership, and it began doing so in 1996. The principal reason for this was to carry more authority when the website approached advertisers, to demonstrate that it could deliver a sizeable audience.

Itronics Ltd, the wholly owned subsidiary that ran *Ireland.com*, employed 53 full-time people in 2001 across the editorial, technical, commercial and administrative areas of the organisation. (As will be outlined later, significant job cuts were

implemented between my research placement in August 2001 and the renewal of contact in August 2002.) The company employed nineteen staff journalists, as well as offering shift work to a number of freelance journalists. This is consistent with the practice in the traditional media, in which it is common to employ the services of freelance journalists and sub-editors. However, workers on the managerial, commercial and administrative areas of the business tend to be contracted or permanent. The employment figure for *Ireland.com* was slightly misleading, however, because it took into account only the people who worked directly for *Ireland.com*. The journalists and sub-editors who worked for the print *Irish Times* could be regarded as working indirectly for *Ireland.com*. The stories they wrote for the print newspaper formed much of the content on the website. This will be discussed further in the section on competencies.

6.3: Evolution of *Ireland.com* as a content innovation

6.3.1: Overview

After completing my three week research placement in August 2001, I argued that *Ireland.com* had undergone three significant phases of innovative development as a content innovation, and was about to enter a fourth phase. Based on my research at the time, it was a valid argument. When I renewed contact, however, circumstances had changed at The Irish Times Group. Financial difficulties had forced the Group to cut costs across all areas of its organisation, and it began to scale-down the *Ireland.com* organisation. The website was moved more quickly than originally planned to a subscription model, in an attempt to raise revenues.

First, based on my August 2001 research, I will outline the three phases of innovative development that *Ireland.com* had gone through, and outline what was planned as its next phase. Then, I will outline the changed circumstances at the Group and how they shifted *Ireland.com* as a content innovation onto a different development path.

As stated, by August 2001, *Ireland.com* had undergone three significant phases of innovative development and was about to enter a fourth. However, this is not to argue that innovation within *Ireland.com* occurred only in sudden, distinct phases – minor,

process innovations are on-going and continuous, as they are in the majority of digital media content innovations. However, there are certain periods of *Ireland.com*'s existence which are marked by intense change to the content innovation – in the aims and presentation of the website, and the competencies, knowledge and infrastructures required to produce it. These phases, in the context of innovation at *Ireland.com*, represent significant steps forward in the evolution of the website as a content innovation. During each phase, the website slid further away from the print newspaper, to being a more distinct, independent content innovation.

In some respects, the four phases represents an approximate model, because not everything associated with a phase of innovation took place within a distinct, neat timeframe, and it perhaps suggests a greater level of linearity to the process than was the case. The implementation of plans from one phase of innovation sometimes overlapped with the beginning of the next phase. Plans to implement new innovative practices could have been formed long before it was attempted to implement them in practice. Or some plans for innovation may have been implemented on a small-scale first, to assess their feasibility and their potential value to the content innovation, before the risk was taken to implement them more fully. For example, in 1998, *The Irish Times on the Web* began forming plans to integrate audio and video into the website: three years later, in June 2001, there was only a small amount of audio and video on the website, mainly in the ancillary websites which provided general information about Ireland. It was expected to be another month (September 2001) before audio broadcasts were incorporated into the breaking news section, and this would have been regarded as the beginning of the deeper integration of audio into the website. The planned next step was to integrate video broadcasts into the breaking news service.

The integration of audio and video into the website was the expected fourth phase of innovative development, and it was in August 2001 the one that *Ireland.com* seemed on the verge of entering. Yet the idea for integrating audio and video had been formed before even the third phase was implemented, which was the relaunch of the website as *Ireland.com*. Despite such temporal weaknesses, the four phase model remains a useful tool for tracing *Ireland.com*'s evolution as a content innovation, and for noting (generally) how The Irish Times Group has integrated a digital media element into its organisational structure, and how the larger organisation influences the processes of innovation within *Ireland.com*.

6.3.2: *The first phase (September 1994 – late 1995)*

When I interviewed deputy editor Conor Pope on 14th June 2001, I asked him to assess the website's progress since it was established. He replied: "In the space of seven years, we've gone from a state of complete and abject nothingness into having 1.5 million different people accessing the site every month" (Pope, *Ireland.com*, 2001). The first phase could be seen as going from a state of complete and abject nothingness to having something – establishing a presence on the web, even if by today's standards of the website, it was a primitive presence. The background to the establishment of the website was already outlined, but it is worthwhile to restate that The Irish Times Group was seeking to innovate the print newspaper when it came across the idea to develop a digital media content innovation.

As discussed in the literature review chapters, new media borrow from the traditional media in order to make unfamiliar concepts and practices familiar (Marvin, 1988). This is partly the reason why "online newspaper" gained currency as a term to describe the websites of newspapers. Print newspapers and online newspapers provide a rare example of a close and direct relationship between a traditional media form and a new media form. When *The Irish Times on the Web* was first established, it carried the weight of history of its traditional media predecessor, something a content innovation produced by a digital media start-up company doesn't experience. There are certain values, traditions, standards and practices that the website has inherited from the print *Irish Times*, and in many instances, these values, traditions, standards and practices are not consistent with (or suitable to) how a digital media venture should operate. Of course, some of them in a general application are suitable, such as the fundamentals of good journalism, but their precise application doesn't suit the website: what has worked for decades in print isn't necessarily going to work on the web. Although in the early days, the thinking was that it would. There was a renegotiation process whereby the website adapted, changed or dropped the values it inherited from the newspaper, as part of its evolution as a digital media content innovation. However, most of this did not take place in the first phase.

The first year of the website could be seen as a period of gentle experimentation, with *The Irish Times* organisation growing increasingly familiar with an unfamiliar medium, gaining a sense of what would and what wouldn't work on the website, and

assessing the feasibility of a newspaper company developing a digital media content innovation. It was also a period of assessing the competencies required to produce a successful digital media content innovation, and engaging in an active search to acquire the competencies lacking within *The Irish Times* organisation. In the early days, it couched the website in familiar, print media terms. It described the website as an online newspaper, called it *The Irish Times on the Web*, and tried to fashion it as a digital media reflection of the print newspaper. Because the content of the website was entirely text-based, it suited the traditional competencies of the newspaper – the production of content in words. All of the content on the website had been originally generated for the newspaper, so the production of content for the early website relied entirely on the techniques, codes and grammars of the print media. Only in the publication of the content did the two differ; it was found that, within *The Irish Times* organisation, there was not sufficient technical competencies to publish the content online, so the company had to go outside the organisation, to the technical operators at Trinity College Dublin. I spoke to one of the Trinity people approached by *The Irish Times* to work in this capacity. He said the main competencies being sought by the organisation were a knowledge of HTML and some experience in graphics (although this didn't have as high a priority as HTML). They were not asked if they had a background in content creation, writing or journalism (Christopher Power, email, 26 July 2001).

This thesis argues that innovations rarely arrive as completed artefacts – they are constructs of meanings and uses, with a social context of production and consumption, open to the influences of many actors and capable of being interpreted, appropriated and negotiated in different ways. *The Irish Times on the Web* was not a completed artefact when it was first published. It was subjected to a series of on-going process innovations, as the people involved in publishing it appraised what worked and what didn't work, and began a process of competency and knowledge accumulation, which as argued in the literature review is crucial to the development of innovations. They decided that the technical competencies to publish the website should be brought within the organisation. They also realised that, even though *Irish Times* newspaper journalists had content competencies, they were too far removed from the production of the website for their content competencies to have a telling effect. The technical people who worked directly on the website lacked content competencies. Although the website, then, was based almost entirely on content from

the print newspaper, problems arose with the prioritisation of news-stories and the rewriting of stories that, in their original print form, weren't suitable for the website. Not all of the content from the newspaper was published online, so choices had to be made about what to include and exclude. And as much of the traffic to the website originated from abroad, there was the question of whether to prioritise stories that might be of more interest to foreign users. To make such judgements professionally required what journalists called news-sense. Many journalists themselves have a vague, unclear understanding of what news-sense is; it is regarded almost as a received knowledge, and explanations of it are usually reduced to journalists claiming they have an instinctive knowledge of what is and is not news. Numerous studies (Manof, 1986) have shown that it is not an instinctive knowledge, but a pattern of thinking into which journalists are socialised according to the prevailing culture and values of the media organisation in which they work. Such studies suggest that news-sense follows strict patterns of what is likely to be considered news: power is news, for example, so the actions of an authority figure are more likely to be considered news than those of a person who does not wield significant power in society. It is not the purpose of this thesis to critique the conventions of journalism, but it is important to note them, because they are an intangible cultural influence on the innovation process that in a standard application of the systems of innovation concept would be accorded negligible importance. The content creation competencies required to produce *Ireland.com* do not just relate to the direct production of content, but also to the choices made about what to produce and publish; therefore, news-sense has a crucial influence on the final form of the website.

The early website contained no graphics or photographs because the dominant web browsers of the time could not accommodate them. However, even as a text-based website, it was a significant content innovation for a traditional newspaper company. It demonstrated that there were other channels through which The Irish Times Group could deliver its print content. As visitors to the site increased, it convinced the Group's management that the website justified the risk associated with further innovation and further investment. It had made its initial entry into the digital media content industry, and the website had undergone some process innovations (graphics had begun to creep into it by the end of the first phase). The Irish Times Group had gained a sense of the limitations of the original, text-only format, and what needed to be done to open up the website's potential. Crucially, during the first phase,

The Irish Times Group learned that the techniques of the print media could not be grafted whole onto a digital media format, and that the website required content competencies to be applied directly to it. This, in turn, led to the second phase. People with content competencies were employed to work directly on the website, and they initiated a process of learning and innovation that would help *The Irish Times* organisation produce a content innovation better suited to the emerging medium. This showed the beginnings of innovation through interactive learning, as outlined in Lundvall's model (1992), with competency accumulation growing, increasing complexity of the innovation, the elimination of unsuccessful elements, and a greater emphasis on successful elements, based loosely on Lundvall's model of learning by doing, using and interacting.

6.3.3: *The second phase (late 1995 – March 1999)*

The second stage of the evolution began at the end of 1995, when the then editor of the website, Seamus Martin, contacted four journalists with a view to working on the website. Control of the technical production of the website had been taken back from the technical operators in Trinity College and the necessary technical competencies were brought in-house. By this stage, The Irish Times Group had taken a significant step forward in terms of organisational innovation, in that it was incorporating new competencies into its structure, and also had begun to expand its technical infrastructure for producing the website. During the second phase, the website began to incorporate photographs and graphics, but this did not go too far beyond the traditional print competencies of the organisation. However, the organisation was becoming increasingly aware that, as the website developed and matured, the competencies required to produce it would become further divorced from those required for the production of the newspaper.

The website was still lacking in original, web-exclusive content; it was known as *The Irish Times on the Web* and the majority of its content was originally created for the newspaper. Content creation competencies were employed mainly in the selection and editing of content to make it more suited to the website. Application software had, by this stage, developed to such an extent that a deep knowledge of HTML was not required to create a webpage, which reduced the burden of technical competencies required for the publication of content. Stories from the print *Irish Times* would be

sent via a direct computer feed to the websites's computer system between 4pm and midnight. *Irish Times on the Web* journalists would take stories from the queue, re-write the copy and the headlines if necessary, and convert the text into HTML using Microsoft Word. They would layout the webpage in the template house-style of *The Irish Times on the Web*. Deputy editor Conor Pope acknowledged that, during this time, there was "a lot of fairly dull cutting and pasting on behalf of all the editorial staff" (Pope, *Ireland.com*, 2001). In its prioritisation of stories, the website tried to mirror the newspaper as closely as possible, to maintain consistency between the two. By this time, the website had begun to publish photographs, but published fewer than the newspaper, because the layout of the webpages was not designed to accommodate a large number of pictures. Also, the technical limitations of Internet speed meant that pictures could take a long time to download, which would undermine the website's aim of allowing users quick access to information. This phase highlighted influences on the content innovation that were external to the organisation: the requirement, imposed by The Irish Times Group, on *Ireland.com* to maintain consistency with the newspaper (the ethos of *Irish Times* journalism meant that news values were shared between newsrooms, so even without daily contact between the two, the news agendas of both should have broadly accorded). Also, there were the restrictions of the technological infrastructure across which *Ireland.com* content was delivered.

Towards the end of the second phase, the website began to test to a greater extent the content competencies of the journalists by introducing a rolling news-sections, which posted up-dates of major stories that broke during the day. This was one of the first examples of the website producing web-exclusive content. It also, according to Conor Pope, was the first indication that *The Irish Times* organisation had begun to break out of the print mentality that fresh news couldn't be published until the next day's edition of the newspaper. However, in comparison to the current breaking news section in *Ireland.com*, the rolling news section in *The Irish Times on the Web* was limited; many of the stories were based on copy from news agency feed, such as Reuters, and therefore was generated externally to The Irish Times Group. This meant there was less stress on the website's journalists to employ their abilities in original reporting, and the section didn't cover the range of news topics that the later one did. The initial rolling news-section of *The Irish Times on the Web* was a period in which the organisation was assessing the feasibility and value of such an innovation. It wasn't until the third phase (the relaunch as *Ireland.com*) that further investment and

innovation were implemented to expand the section and make it a more fully integrated, innovative element of the website.

Here, we see a slow increase in the level and complexity of the content competencies that were being applied to the website, necessitated by the increasing complexity of the content innovation itself as it developed to a greater level of maturity. During this phase, the team working on the website developed a sharper sense of what worked and what didn't work on the web, and the potential of it. They had moved beyond many of the early misconceptions of the medium and its form – it was a different medium to print, and so the website shouldn't have settled for being just an 'online newspaper'. This informed, in March 1999, the third phase in the website's evolution as a content innovation. During the second phase, *The Irish Times on the Web* was accumulating the competencies and knowledge (the know-how of Lundvall's model of innovation through interactive learning) necessary for the next stage of the website's innovative development. It was also assembling a team of employees large enough to service the expansion that would be necessary for the next phase of innovation, and developing the organisational and technological infrastructures to allow them to work. (By the time of the relaunch as *Ireland.com*, it employed 35 people. In 2001, it employed 53 people full-time, not including the freelance journalists who supplemented the editorial team.) Also, during the second phase, the plan for the fourth phase – the incorporation of audio and video – was circulating around the office of the website.

This phase is notable more so for the accumulation of new technical competencies within *The Irish Times* organisation than for the development of new content creation competencies. The format of the website during this phase still followed the lead of the print newspaper and didn't place great demands on the content competencies of the people working on it. Usually, only a light-touch sub-editing job was necessary to make print *Irish Times* content suitable for publication on the web. (The content had, of course, already been sub-edited in the newspaper offices on D'Olier Street.) However, the technical competencies necessary to host, design and publish the website were brought within the overall *Irish Times* organisation. A computer system, based on Microsoft software applications, was installed (*The Irish Times*, in contrast, continued to use the Atex computer system, installed in 1991), and new technical competencies were necessary to install and maintain the system and plan the underlying technological architecture of the website. Again, employing Lundvall's

model, the competency and infrastructure accumulation had grown as the complexity of the overall innovation had increased.

6.3.4: *The third phase (March 1999 – May 2002)*

The third phase marked the most significant step forward for the website as a content innovation, as it began to offer a greater variety of content that required the application of more complex content and technical competencies. As well as the print content, the website began to offer a substantial amount of web-exclusive content which required the application of new competencies. This content was created purely to suit the website; with print content, publication on the website was a secondary concern. The website began to offer online services, such as an email facility, which were outside the “traditional franchise area” of the newspaper as a supplier of news content (<http://www.Ireland.com/about/web/webhistory.htm>, viewed on 23 July 2001). The technical competencies and resources to establish and fully maintain an email service were beyond *The Irish Times* organisation, so the competencies of an actor from the international system of innovation had to be employed, an Israeli company called Commtouch.

It was at this time that the website stopped describing itself as an online newspaper; it began to describe itself as a site for “news and services for the Irish Internet user and those interested in Ireland in general”. (This message appears as the heading on the browser window when a user logs onto the *Ireland.com* homepage.) In terms of its design, aims, content, services and the competencies required to produce it, the website had taken its most significant step away from the newspaper and towards becoming something distinct, something more than just a digital media reflection of the print newspaper. This was signified by changing the name of the website from *The Irish Times on the Web* to *Ireland.com*.

The thinking behind the *Ireland.com* label was to give the website more freedom to offer services that traditionally wouldn't have been associated with *The Irish Times* newspaper, or would have been outside its traditional franchise area. The title *The Irish Times on the Web* suggested just that: it was *The Irish Times* newspaper on the web. *Ireland.com* suggested there was more, and this enabled the organisation to better serve what it viewed as its two main markets: breaking news to the domestic market, under *The Irish Times* name and reputation, and print news and general

information and services to its users abroad under the *Ireland.com* brand. The new title was an attempt to give the website a separate, marketable identity. A mission statement on the website referred to *Ireland.com* as the “definitive brand of quality information and services for Ireland aimed at Irish Internet users and the rapidly expanding 'Irish interest' market” (<http://www.Ireland.com/about/web/webcontent.htm>, viewed on 23 July 2001).

The breaking news section, especially, imposed demands on the content competencies of *Ireland.com* journalists; during a newsday, *The Irish Times* newspaper did not file copy to the website, and the website did not file copy to the newspaper. Therefore, all the content in the breaking news section had to be generated by *Ireland.com* – some was taken and rewritten from news agency feed (a common and standard practice among newspapers, who paid a fee to the news agencies to subscribe to their services). The rest was generated by *Ireland.com* journalists exclusively for the website. To run the section, *Ireland.com* had to establish its own information gathering structures and routines. (The know-what of Lundvall’s model, although in his conception information was necessary to produce an innovation; here, information was part of the final innovation.)

During this phase, the content, which Conor Pope described as “enormously valuable”, began to be delivered across other platforms. The content had to be adapted to suit the particular platform, which required the development of new competencies, both technical and content. These platforms included Wireless Application Protocol (WAP) mobile phones (*Ireland.com* supplied content to Eircell’s WAP service, E-Merge), and SMS text messages of news up-dates to mobile phones. During my research placement, the company was discussing plans to deliver content to palmtop computers. *Ireland.com*, at this time, operated according to the emerging business model of maximising revenue from digital media content through sending it across as many platforms as possible.

Ireland.com had, in 2001, been evolving as a content innovation for seven years. The experience accumulated at that stage was being written into a style-book on good practice in digital media publishing. However, the book was far from finished. The recommendations and directions in it were regarded as tentative, because no one was sure how digital media would evolve and what would constitute good practice for digital media content creation in the coming years. Stylebooks, however, were a tradition within the print media, and they seemed to be carrying through to the new

media. Using Lundvall's model, the next phase of innovation – the integration of audio and video – would have required a new process of competency, knowledge and infrastructure accumulation within the organisation.

6.3.5: *The expected fourth phase*

Ireland.com was, in August 2001, at an important juncture of its evolution as a content innovation. It was still heavily reliant on an old media form – the newspaper – for its content. But, increasingly, it was generating its own, original content, employing competencies not traditionally associated with the newspaper, and it was providing services that were not available through the newspaper. This suggested that while the newspaper and the website were bonded, with the website borrowing practices from the newspaper, the relationship was beginning to weaken, as the website matured and became something distinct. That was certainly the belief among the staff of *Ireland.com*, who viewed themselves as creating something original and not just a web reflection of *The Irish Times* newspaper. The next stage of its evolution as a content innovation was expected to be the incorporation of audio and video, which would have pushed it further beyond the traditional print competencies of *The Irish Times*, and required the *Ireland.com* organisation to embrace competencies more traditionally associated with the broadcast media.

Senior editorial staff at the website was aware as early as 1998 that audio and video offered innovative possibilities to the website. In an interview in July 1998, Conor Pope said:

“I would like to get to a situation where, at a major news conference in two years time, you would have...an Irish Times on the Web microphone. We could record the conference digitally and put it on the web live. The potential for growth is enormous, and we have to start embracing sound and video. The problem is that at the moment people's software and hardware makes it grindingly slow to download sound or video. But that problem will lessen as the technology improves” (Pope, *Irish Times on the Web*, 1998).

A recurring issue in my research is the limitations placed on content innovation by the technological infrastructure and delivery systems. The problem had lessened

considerably since July 1998, especially in relation to audio. In June 2001, audio on the website (as a substantial part of the breaking news service) was still a projected six months away. The timeframe for the integration of video was dependent largely on the success of the audio integration. However, *Ireland.com* was aware of the risks associated with such innovation and of the unpredictability of the process. In reference to the audio broadcasts on breaking news, Conor Pope said: “They’re a trial; they mightn’t work. They might prove impossible to do” (Pope, *Ireland.com*, 2001).

The website, in August 2001, already had some audio and video elements to it, mainly in the ancillary websites. It had provided some video news, such as the video interviews with a Government Minister and an opposition politician arguing the case for and against the Nice Treaty in the referendum in 2001. (*Ireland.com* sought the technical competencies and infrastructures of an external actor, The Yard studio, to film and compress the audio and video content.) But these were relatively small scale samples of audio and video content. They were not immediate, live news, and could be seen as experiments to assess the feasibility of audio and video on the website before taking the innovative risk of integrating them on a more significant scale. Such a move would have required *The Irish Times* organisation to integrate new competencies and infrastructures, both content and technical, more traditionally associated with the broadcast media.

After my research placement ended in mid-August 2001, *Ireland.com* continued to build the competency base and infrastructures necessary for the launch of audio news broadcasts. The organisation screen-tested people for the role of broadcasters, and was on the point of launching the audio news-service when the Group announced the scale of its financial difficulties. Savings were sought across all areas of The Irish Times Group – newspaper and website – so the addition of audio broadcasts to the breaking news-service was cancelled. Conor Pope said: “All the new products and new ideas we were going to implement this year and next year have been put on hold. It costs an awful lot of money to host audio and video content. We don’t have that money. And a lot of products that we could have implemented in the past have had to be scrapped because they don’t follow our commercial imperative, to reduce costs and make money” (Pope, *Ireland.com*, 2002).

He also suggested a shift in attitude from July 1998, and August 2001, when he argued that The Irish Times Group would be better served focusing on its core media competencies instead of branching into audio and video, which previously were

regarded as important elements of the Group's overall digital media strategy. He also suggested that rather than there being a deepening convergence of media, a trend of deconvergence was emerging (or that predictions of convergence were overstated), especially in relation to people's content consumption patterns. He said: "I'm not sure if there's any great interest in having audio and video products online. If someone wants to watch television, they'll generally speaking watch television" (Pope, *Ireland.com*, 2002). Deconvergence in people's content consumption patterns is outside the scope of this project, but could prove a useful area for future research.

Investment in building the website's technological infrastructure was cut, and 40% of the *Ireland.com*'s full-time employees were made redundant. This not only undermined the organisation's ability to add innovative elements to the website, but also its ability to maintain its level of service. Peripheral services and ancillary websites (which weren't generating revenues) were cut. The website shifted to a core service of providing *Irish Times* content, breaking-news, a searchable archive, and a subscription email service. Elements of the website that were cut had previously justified their continuance through serving a public interest, but they were no longer justified under the company's commercial imperative. Pope said that cut-backs had to be balanced against the need to maintain a quality of service, "within limited resources", otherwise people wouldn't subscribe to the website.

6.3.6: Innovation at *Ireland.com*

Each phase of *Ireland.com*'s development has involved innovation. Innovation often involved negotiations between various actors within the *Ireland.com* organisation, with each trying to push the website in a direction that would best serve their interests. In August 2001, *Ireland.com* was in the process of planning a website redesign. A core group of people within the organisation carried the responsibility for leading the redesign. This group was made up of two people from editorial (the editor and deputy editor), two people from technical, one person from commercial and one from design. Each gave their views on how the site should be redesigned; each group represented specific interests within the *Ireland.com* organisation, and so argued a case best suited to the interests of their area. The meetings tried to move forward through consensus, with the aim of achieving a balance between what the editorial people and the commercial people wanted, and what the technical people believed was feasible.

However, people from different areas brought different agendas to redesign meetings. Conor Pope said: “Obviously, the people who are behind the property site want to be given as much prominence as possible; the people behind jobs want jobs to be given as much prominence as possible; the editorial people want content to be given as much prominence as possible” (Pope, *Ireland.com*, 2001).

Ireland.com outsourced some of its redesign work to a Dublin company called Windmill Lane. An *Ireland.com* designer went to their office and they worked together on various redesigns, taking on board comments made at redesign meetings. Windmill Lane’s sample designs were submitted to the core group, and they adopted the design they believed was best suited to the future direction and innovation of the website. The final redesign was quite small-scale: a new-look homepage and a new portal for navigating the site. Breaking-news and *Irish Times* news-stories remained largely the same, because an automated system had been implemented for publishing, and changing it would have required a substantial overhaul of the underlying technological architecture.

Innovation at *Ireland.com* was influenced by many factors, including cost. They weighed the cost of an innovation against the risk: if an innovation was believed to be too costly or risky, it would be dropped. *Ireland.com*’s innovative capacity operated within budgetary constraints (which tightened in 2002), so they had to achieve a balance, weighing the risks and costs of an innovation against the potential benefits to the website. Marketing executive Brendan Marrinan, who was involved in the research of new innovations for the website, said: “We might love to have it [an innovation], but if it’s going to be a [financial] drain on us, what’s the point?” (Marrinan, *Ireland.com*, 2001). Overall, *Ireland.com* was a financial drain on The Irish Times Group’s finances. Tighter finances constrained further innovation of the website, and the Group was not prepared to cover the costs associated with integrating audio and video.

Although much of the innovative effort in *Ireland.com* was based on achieving consensus despite actors’ differing goals (mechanisms to resolve conflicts were a feature of systems of innovation), the majority of it was based on co-operation. For example, one journalist, Fiona McCann, stressed the importance of the close relationship between the technical and editorial staff when innovating the production system for the website. The purpose of the technical staff was to service the needs of the editorial staff. The two sets of actors liaised to develop a production system most

sensitive to the needs of the editorial staff. This culture of co-operation between editorial and technical staff stemmed, partly, from *Ireland.com* being part of a traditional media company. Fred Moody noted the high level of friction that existed at Microsoft between content and technical staff during the development of the digital media content artefact *Exploropedia* (Moody, 1995). This was because Microsoft was a technical company, and some technical workers felt their positions and status were being diminished by having to work on content projects.

Essentially, within *Ireland.com*, innovation occurred through a series of negotiations between actors with conflicting interests, which at a micro-level is consistent with the theory on innovation within a system of innovation. Not everything within the *Ireland.com* organisation facilitated innovation, but innovation still occurred.

6.4: Competencies within the *Ireland.com* organisation

There is a dichotomy in the competencies employed to create content for *Ireland.com*, in that there are two independent sets of actors creating content for the website: one set directly creating content for it, the other set indirectly creating content for it. There is little interaction between the two sets, and although they work to fundamentally similar news agendas (set by the traditional tone of the newspaper), they employ different techniques in the way they create content and the aims they have for it. The journalists in *The Irish Times* newsroom create content for a traditional medium and employ conventional print media techniques. The content, when finished, is sent across to *Ireland.com*, which makes the necessary adjustments (but does not create new content), and it is published on the web. At *Ireland.com*, when they create content, they do so with the website in mind, and create it to the specifications that they believe are suited to the website – that the content be legible and it be short and the user should be able to consume it quickly.

Ireland.com believes it is important to have a set of journalists working exclusively to service the needs of the website, who fully appreciated what is required for it and will put its interests before those of the newspaper. This leads to a duplication of resources, whereby two journalists from *The Irish Times* organisation cover the same story, but for different outlets – print and the website. In the case of the print journalists, the story could end up being published in both the newspaper and

the website. This could be seen as economically inefficient within an organisation, but the thinking within The Irish Times Group is that the benefits (in terms of the quality of the print and web content innovations, and the speed at which content was produced for the website) out-weigh the additional costs. However, by August 2002, changed financial circumstances had forced a revision and restriction of this strategy, with the Group reducing the number of *Ireland.com* journalists as a cost-saving measure. The move reduced the volume of content produced for the website and the frequency of news up-dates.

Although most of the journalists in *Ireland.com* have never worked for the newspaper and have no direct experience of working in its newsroom (however, the different 'atmosphere' of the *Ireland.com* newsroom was emphasised on more than one occasion), the fundamentals of *Irish Times* journalism are the same for the website: unbiased, quality, serious reportage.

In terms of writing competencies, the fundamentals of good writing and of *Irish Times* house-style remain the same for the website. House-style refers to the way in which language is used, not to the information that is conveyed. This refers to the preferred means of expression; for example, *Irish Times* sentences tend to be longer and more complex than, say, tabloid sentences, which tend to be shorter and simpler. There has to be consistency in matters such as the use of official titles (Mr, Dr). These are matters of great importance to newspapers, because house-style is an integral part of their identity. The house-style of *The Irish Times* is extended to the website. However, *Ireland.com* staff recognises that they are writing for a different medium, and it has different requirements. What is suitable for one may not be suitable for the other. Items written exclusively for the website tend to be shorter than those written for the newspaper, because it is believed that reading long passages of text is unwieldy on a computer screen. Also, the emerging patterns of news consumption on the web (short bursts of attention, not much time spent on each page, not read leisurely) do not lend themselves to long passages of text. But here, *Ireland.com* betrays the origin of much of its content, the newspaper. The majority of the news written, originally, for print is longer than, ideally, it should be on a website. Access to the print content is viewed as one of the key strengths of the website; however, this system is not without flaws, and in many respects it highlights the shortcomings of publishing content on a medium for which it was not originally created.

Because the website has to maintain consistency with the newspaper, *Ireland.com* can adapt house-style only in small respects. News-stories on *Ireland.com* tend to be shorter than those in *The Irish Times*. In an *Ireland.com* story of ideal length, the text will fit on one computer screen, to save the user from having to scroll up or down to fully read the text. However, if a story can not properly be told in this frame, the journalists will write it longer. Sub-editor Jason Michaels said: "We do not want to be a slave to length at the sacrifice of the content" (Michaels, *Ireland.com*, 2001). He referred to some house-style conventions, carried over from the print newspaper, that are not suited to the web and look "anachronistic". For instance, *Ireland.com* is obliged to follow Irish Times house-style for the use of titles before each name, such as Mr, Ms and Mrs. Michaels, along with many *Ireland.com* journalists, believed this looks stilted on the web. Such titles have been dropped from content delivered across WAP mobile phones. The maximum length of a WAP news-story is 90 words. To save space, the writing is as stripped down as it can be without losing meaning or coherency; therefore, the titles of Mr, Ms and Mrs are omitted before names. *Ireland.com* is working towards being allowed the same discretion with stories on the website, but this involves negotiating with senior editorial executives at the newspaper, who insist that the traditional newspaper convention be maintained.

The integration of audio and video would have placed demands for new competencies, both technical and content. It would have placed new demands on the writing competencies of the journalists. Writing a script for a broadcast package requires different techniques to those required to write a print or web news-story. Print (web) news-stories are written in an inverted pyramid structure, with the most important information at the top and the least important at the bottom. The structure of broadcast package scripts is to have a gentler introduction, building to the most important information. A print/web story is meant to be read, so the language and sentence structures are formal. Scripts are meant to be heard, so the language is less formal and more conversational.

In August 2001, there seemed a lot of uncertainty among the editorial staff towards audio and video news. They were enthusiastic about it and what it could add to the website, and were eager to learn the new competencies associated with it, but they were unsure as to how and when it would be implemented. The previous experience of *Ireland.com* journalists was rooted more in print media than broadcast, so learning the necessary audio and video competencies would have presented stern

challenges. Conor Pope acknowledged the challenges, saying: “Learning how to do audio broadcasts and learning how to do video, they’re not things you know instinctively – you have to learn how to do them, you have to practice” (Pope, *Ireland.com*, 2001). He stressed that because the medium of digital media was in flux, so too were the content competencies required of those creating content for it.

In August 2001, *Ireland.com* was outsourcing its audio and video work to The Yard studio in Sheriff Street, Dublin. In so doing, it availed of the competencies and infrastructures of another actor in the industrial system of innovation. At this time, *Ireland.com* planned to bring or develop more audio and video competencies in-house over the coming year, and install the necessary infrastructure by building a small recording studio in its office. The recording studio would primarily have been used for breaking news audio webcasts and would have had a direct line to The Yard. *Ireland.com* intended to maintain its relationship with The Yard, which had already invested in the necessary software, hardware and infrastructures for web broadcast, and had accumulated the appropriate competencies. It also had the necessary facilities to store the archived audio and video content of *Ireland.com*. The incorporation of audio and video into *Ireland.com* would have involved not just an evolution to the website itself, but also an evolution in the manner in which web audio and video content was produced. A studio engineer at The Yard, Adrian Legg, commented that current video content on the web amounted to “chucking TV on the web. It isn’t really suited. We won’t really see it being done properly until we have video produced with web production values rather than television values” (Legg, The Yard, 2001).

In August 2001, audio and video on *Ireland.com* was still an aspiration. In the first draft of this chapter, after the completion of the research placement, I wrote the following: “There is no guarantee that *Ireland.com* will successfully integrate the requisite competencies into its organisation or the audio and video content into its website.” The planned innovation was eliminated before it was made public, not due to the feasibility of the innovation itself, but because of macro-level (economic slowdown) and meso-level (deteriorating Group finances) factors. It highlights how innovation is an uncertain process, open to influences at many levels.

Content is not the only area in which the *Ireland.com* organisation has had to accumulate new competencies. Many of the technical operators have had to learn competencies. As the website evolved, so too did the technical architecture underlying it. When *Ireland.com* launched, the website ran on a Microsoft NT system. However,

because the website was growing in size and complexity, *Ireland.com* had to bring in greater levels of technical competency to operate the NT system. Database Administrator John McMahon was one of the people with the necessary competencies who was hired. He explained: “It [NT] was being used by developers with very little experience and there would be stages when they would be hitting manuals just to do things on the fly. Once *Ireland.com* was up, they wanted to do things more seriously, so they had to hire someone in” (McMahon, *Ireland.com*, 2001).

In mid-2000, the Microsoft NT infrastructure was replaced with a system based on Unix, Oracle and Sun/Solaris. At that stage, the technical developers believed that the NT system could no longer handle the volume of content amassed within the *Ireland.com* system, especially the dynamic (interactive) content such as the world football system. Few of the *Ireland.com* technical operators had previous experience of working with Unix or Oracle, which were substantially different to Microsoft NT to operate, so a new process of competency accumulation, to accompany the infrastructure accumulation, had to begin. The new system was installed and running by Christmas 2000, after *Ireland.com* technical operators had attended a number of training courses organised by the software developer Oracle. John McMahon said: “It was a big change for me personally because I had no experience of Unix or anything outside the Windows infrastructure... The first thing we had to do was figure out how to use Oracle, because we had basically zero competencies in-house” (McMahon, *Ireland.com*, 2001). He described NT as an intuitive system, whereas Unix and Oracle were more powerful systems but required more complex and precise technical knowledge to operate. McMahon predicted that the current (August 2001) infrastructure would need to be upgraded in two years, at which time new technical competencies would also have to be brought and developed in-house.

6.5: The Irish Times Group as an organisational innovator

The Irish Times Group has, since its establishment in 1859, been a traditional newspaper company. Therefore, historically, it was a significant shift in the direction and nature of the company that it began to re-align itself as a more open-ended publishing company, capable of delivering content across the print and electronic media. In many respects, the organisational innovation taking place at The Irish Times Group shows it to be a system of innovation in microcosm – there are many different

actors within the organisation, some with differing or conflicting goals, but the overall affect of their actions is to produce print and digital media content. I argue, based on my research, that The Irish Times Group is at an early stage of the process of evolving from being, purely, a newspaper company into being a more open-ended publishing company. An indication of the early stage of the process lies in how the company, essentially, still operates a two-tiered structure: the more rigid organisation of the print newspaper, and the newer, more flexible organisation of the digital media division.

Becoming a digital media company was still an aspiration for The Irish Times Group in August 2001, and an aspiration it had begun to back away from by August 2002, to protect its core business. At the core of its business activity, it is still very much a traditional media company. Although the digital media division has become an important part of The Irish Times Group, its activities remain on the periphery of the core business. In August 2001, senior *Ireland.com* staff argued that the core business would not be enough to sustain the Group in the future, and the importance of the new media division would grow. In light of these comments, it is ironic that diminishing revenues from the core business motivated management to scale-down the digital media division.

In August 2001, The Irish Times Group was in transition; first, the overall Group organisation was in transition as it tried to incorporate two content innovations, and accumulate and develop the infrastructures, bureaucracies, competencies and resources necessary to support and produce them. But second, the specific infrastructures at *The Irish Times* newspaper and *Ireland.com* were undergoing organisational innovation, in order to support and produce the changing content innovations. The newspaper organisation was undergoing a modernisation process which involved a significant restructuring, the elimination of certain infrastructures, practices and competencies, and the introduction of new infrastructures, practices and competencies.

The newspaper had been expanding rapidly since the mid-1990s, and it was the expansion strategy that led the Group into financial difficulties by 2002 and caused it to implement cost savings across all areas of its organisation. In effect, this meant cutting organisational and infrastructure advancements, and through staff redundancies, cutting many of the competencies and knowledge that had been accumulated. The expansion had been financed mainly through using retained

earnings from increased circulation and advertising revenue. The first public suggestions that the Group's financial status had deteriorated came in April 2001, when the then managing director stated that further expansion could not be financed through cash reserves, and borrowing might be necessary (*The Irish Times*, 25 April 2001). However, before this announcement, the Group had spent several years aggressively expanding both its print and digital media interests. In the late 1990s, the company bought an inserting machine for its printing press that allowed it to print more sections. The first section to benefit directly from this was *Business this Week*, which was published on Fridays. It expanded into two sections, *Business this Week One* and *Business this Week Two*: the first section concentrated on business news, and second on recruitment advertising. It was launched in mid-1997, when the boom in the Irish economy was still in the ascent. The launch of the bigger business sections was a response to the increased interest in the country in business affairs (social influence on a content innovation). The Group bought a property on Burgh Quay, Dublin – the building was formerly the offices of the Irish Press Group – with the intention of moving its operation there. It abandoned the plan in 2000 and sold the property for £6.8 million in 2001. The managing director described the Burgh Quay property as “unsuitable” to accommodate the Group's expansion plans. However, he added that the current premises on D'Olier Street was no longer adequate for the expansion and modernisation of the newspaper, and the Group was, at that time, still looking at the possibility of acquiring a new premises or engaging in a significant renovation of the D'Olier Street building (*The Irish Times*, 19 February 2000). The company spent £22 million on its expansion programme in 2000, and £46 million in 2001 (*The Irish Times*, 25 April 2001). The Group committed large amounts of its financial resources to investing in new editorial and commercial systems and a new printing facility. The new printing facility, located in City West in Dublin, was operational by the end of 2001 and had double the print capacity of the previous printing press. The Group intended to transfer production of the newspaper to a more modern computer system. Such a transition required the development and accumulation of new (mainly technical) competencies to produce a traditional media product.

The organisation, in this instance, could have been viewed as a check to innovation. However, as discussed in the literature review, organisations have a role in facilitating and stimulating innovation, although not every actor within an

organisation works towards this goal. Innovation was still occurring within The Irish Times Group, but perhaps at a slower, considered pace. There was a contrast within the two-tier organisational structure of The Irish Times Group: the bigger, more rigid organisation of the print *Irish Times* was relatively slow at introducing and integrating new technologies and innovative practices, whereas the smaller, more flexible organisation of *Ireland.com* could accommodate them quite quickly. Negotiations between various sets of actors first had to take place within *The Irish Times* before new innovative practices to the newspaper could be implemented. For instance, the company's former managing director Nick Chapman noted the importance of having reached agreement with the trade unions before embarking on the Group's four-year, £75 million investment programme (*The Irish Times*, 25 April 2001). This was necessary because there were actors within the organisation with differing goals (the stoneroom workers desire to retain their jobs versus management's desire to implement more efficient production practices). This suggests that The Irish Times Group is a system of innovation in microcosm – comprised of different groups, often with opposing goals, but the culmination of their actions is to, eventually, produce content innovations. The Irish Times Group was in a period of intense innovation, both to its content innovations and to its organisational structure, which made it ripe as a case-study for this thesis. It also suggests that *The Irish Times* newspaper – although it was a traditional media form – is not static; it continues to change, innovate and evolve.

That was the state of organisational innovation when I completed my research placement in August 2001. By the same month in 2002, the situation had changed, through a combination of the management's expansion strategy and changed economic circumstances external to the organisation. The company had spent all of its cash reserves on the expansion programme, in particular the printing press. With no reserves, the company was vulnerable to drops in profitability. Rising overheads and declining advertising revenues put the company on track for a £2 million loss in 2001, and a £17 million loss in 2002. In November 2001, the company announced that, excluding the *Ireland.com* organisation, it was seeking 250 redundancies from among its staff of 710. (In December, the redundancy programme was expanded to *Ireland.com*. The job cuts were expected to save £500,000, out of a total saving being sought of £1.8 from the *Ireland.com* organisation.) The job cuts were to be proportional across all areas of the organisation, so fundamentally the Group retained

the organisational structure that emerged during the expansion programme, but on a reduced scale. (Although the proportion of job cuts was higher at *Ireland.com*, where 40% of the full-time staff were made redundant.) However, with fewer people, the organisation's ability to produce content was diminished. The paper began to be printed with fewer pages and supplements. This reduced the volume of content flowing into *Ireland.com* from two sources: first, the newspaper, and second, from the *Ireland.com* organisation, which also suffered redundancies and a diminished capacity to produce web-exclusive content. The Irish Times Group intended to save £10 million through redundancies, and a further £7.5 million through cost-saving practices. Expansion programmes not already in place or underway were, in many cases, postponed or eliminated. For *Ireland.com*, this meant cancelling audio and video content, because of the cost involved in building the necessary technical and production infrastructures, and accumulating the necessary competencies among its staff.

The organisation of the newsroom in *The Irish Times*, even after the redundancy programme was implemented, has remained conventional: editor – deputy-editor – news-editor – section editors – reporters/photographers – sub-editors – layout and design. This, over the years, has emerged as the standard structure of newsrooms in the print media, and there is a rigid degree of demarcation. In part, this is at the insistence of trade unions, to protect employee's positions; also, the company wants to maintain quality in the specific tasks necessary to produce a newspaper, by directing people's talents and abilities appropriately. A good reporter will not necessarily be able to take a good photograph; a photographer might not be able to write clean copy. In *The Irish Times*, with its lines of demarcation, a reporter would under normal circumstances not be allowed to take photographs, as this would impinge on the duties and tasks of a separate set of workers. *Ireland.com* is newer and there hasn't been time for rigid lines of demarcation and layers of bureaucracy to form. In the print *Irish Times*, there is a strict division between the role of reporters, sub-editors, photographers, layout and design people, and rarely are workers allowed to transgress these lines of demarcation. In *Ireland.com*, the reporters take photographs, sub-edit, and have a greater variety of competencies. At the website, there is a greater emphasis on journalists being multi-skilled and adaptable. The *Ireland.com* news operation works with less resources than *The Irish Times* one and can not afford to be as rigid with its demarcation of tasks.

The organisational structure of *The Irish Times* is closer than *Ireland.com* to a mechanistic model (as discussed in chapter three), with journalists, photographers, and sub-editors each concerned with their specialised tasks and rarely extending the parameters of their responsibility beyond them. However, there are elements of the systems school of organisation inherent in this. The work of one group can depend on the work of another. Sub-editors cannot work until journalists supply them with copy. Sub-editors do not have responsibility for producing copy, but they cannot work until the journalists in the organisation have fulfilled their responsibilities. However, mechanistic organisation models are not, in a pure theoretical form, suited to media or content creating organisations; rather, it is more suited to industrial, Fordist factories of mechanical production and reproduction. Although media organisations are, indeed, comprised of interdependent elements, the notion of highly restricted autonomy poses problems. Media content creation requires a people centred organisational theory, because the competencies invested in people are crucial to the quality of the content innovation. A printing press would not print a quality newspaper unless there were skilled editors, reporters and sub-editors to assemble, write, rewrite and layout the content. Also, journalist traditionally feel an attachment and loyalty to their newspaper and to having their work published. Therefore, organic organisational elements must be regarded as important. Therefore, the organisation of *The Irish Times* newsroom is best viewed as lying between Burns and Stalker's bipolar model of organic and mechanistic organisation. Burns and Stalker regard such an intermediary organisation as dysfunction. However, it has not hindered *The Irish Times* in its goal of producing news.

Ireland.com could also be viewed as lying between an organic and mechanistic organisational structure. But, this thesis argues, the mechanistic element is not as strong as in *The Irish Times* newsroom, and there is a greater dependency on the organic model. *Ireland.com*'s quality as a content innovation is dependent, crucially, on the competencies of the people employed on it. Also, the digital media content market is subject to more rapid technological and commercial change than the newspaper market, and *Ireland.com* must maintain a flexible organisation that can respond to such changes. The system in place in the newsroom of *Ireland.com* is similar to the structure of *The Irish Times* newsroom, and is as follows: editor – deputy editor – breaking news editor – journalists – sub-editors – technical operators. In eight years, the lines of demarcation and the layers of bureaucracy have not formed

to the extent they have in *The Irish Times* newsroom. As Conor Pope said, the structure of the newsroom in *Ireland.com* is “as flexible as it possibly could be”. This is partly because of the size of the respective news operations. *The Irish Times* editorial meetings, of which there are three each day (morning, late afternoon and evening), are gatherings of the editors of the various sections of the newspaper: the editor, the duty news-editor, foreign editor, sports editor. Each of these editors have prior editorial meetings with the reporters or photographers under their charge and have already assigned markings. The agenda for each section has been provisionally set by the time of the main editorial meetings (although, the agendas are open to change as stories break). The main editorial meetings are formal affairs, with the various editors informing their colleagues of their respective news agendas, for example, on the home news and foreign news pages. A journalist from *Ireland.com* is present at each of these meetings to ensure that the newspaper and the website (in the breaking news section) are following broadly similar news agendas, and to make the website aware of the content to expect when print stories begin appearing on its computer queue. However, *Ireland.com* journalists attend the meetings on the condition that the website will not, in its immediate breaking news section, scoop the newspaper on an exclusive story it has planned for the following day. I attended *Irish Times* editorial meetings for 15 August 2001; on the news agenda circulated at the meeting, an exclusive *Irish Times* story on Dublin Corporation was labelled “not for breaking-news”.

In contrast to such formal gatherings of editors, the editorial meetings at *Ireland.com* are smaller and informal (but still business-like). The duty news-editor and a number of journalists (usually seven or eight) discuss the news agenda for the day. The journalists at *Ireland.com* are keen to emphasise how the ‘atmosphere’ in the *Ireland.com* newsroom is different to that in *The Irish Times* newsroom. The *Ireland.com* newsroom has a less rigid system, more suited to the immediacy of web news. The flexibility in organisation reflects, in part, the flexibility of competencies that are required of *Ireland.com* journalists.

The *Ireland.com* office is grouped loosely into sections. It is open-plan, with commercial employees at the front of the office, technical operators in the middle, and editorial in a separate room at the back, which gives them a relative degree of privacy and isolation. However, there is a spill-over of journalists at desks in the main office.

As *The Irish Times* organisation has evolved, so too has its relationship with its employees. The same is true of *Ireland.com* and its employees. Within The Irish Times Group, *Ireland.com* journalists are not accorded parity of status with *Irish Times* journalists. This is symptomatic of the newness of the *Ireland.com* venture. Most *Ireland.com* workers have not been with the company as long as *Irish Times* journalists, and so have not built up the same service record and entitlements. In August 2001, Conor Pope said that, hopefully, one day *Ireland.com* journalists will have the same status within the organisation as *Irish Times* journalists. This will involve intense negotiation within the organisation between various sets of actors; also a new framework (regulatory framework to govern web employees' status, rights and entitlements) will have had to be drawn up. This is an indication of the on-going innovation and negotiations that take place within an innovative organisation such as The Irish Times Group. For example, the *Ireland.com* branch of the National Union of Journalists was, in the summer of 2001, in pay negotiations with company management, and union members were being asked to attend a chapel meeting to vote on the outcome. Also, as a result of negotiations between unions and management, a number of contract positions at *Ireland.com* were being turned into staff positions, and applications were being invited from suitable candidates. In addition, the union was negotiating a pension scheme for *Ireland.com* employees. This highlights some of the conflicting interests between actors within an organisation – management and employees. As shall be outlined in the finance section, *Ireland.com* is still a loss making venture. In August 2001, before the company's financial troubles were made public, management was striving to cut costs and budgets. Increasing labour costs and commitments were not in management's interest, but they were in the interests of the employees.

The financial situation had intensified by December 2001, and much of the progress in securing the positions of *Ireland.com* employees was stripped away by the cost cutting and redundancy programmes. Parts of the programme were implemented through coercion. According to an *Ireland.com* source, management suggested that, if voluntary redundancy was not accepted, compulsory redundancy packages would not be as generous. Through the redundancies, the *Ireland.com* organisation was stripped of many of the competencies and knowledge that it had accumulated over the years. And reduced personnel and financial support from The Irish Times Group reduced its ability to further innovate the website.

6.6: *Ireland.com* as an actor within a system of innovation

Ireland.com is an actor within industrial, national and international systems of innovation in two broad respects: first, in the sense that it does not house all of the competencies (mainly technical) required for digital media content creation within its own organisation and has to seek them from external actors; second, in that it is in competition with other digital media content creators. *Ireland.com* is an offensive innovator, being the first commercial Irish news and portal website, but became a subject of defensive innovation by other actors in the sector.

There is numerous examples of *Ireland.com* seeking the competencies of outside actors. For example, the website, using flash applications, had in 2001 an interactive table football game which was developed by an Irish digital media company called The Webfactory. The company is a core Irish digital media content creator, and one of the companies included in the quantitative study in chapter five. The rule within *Ireland.com* is that if a desired innovation is too costly or too technical to produce in-house it will be sent outside. Apart from the hire of freelancers to supplement its editorial team, *Ireland.com* usually seeks technical competencies from the outside. *Ireland.com* employed a campus company in University College Dublin, called Changing Worlds (www.changingworlds.com), to develop the application behind its MyTV personalised television programme listings service.

It is an indication of how small the system of innovation is for the Irish digital media content industry, and the linkages and competency transfer between companies, that both The Webfactory and Changing Worlds have also undertaken work for the online venture of Independent News and Media, which is The Irish Times Group's main rival in the Irish broadsheet daily newspaper industry. Another indication of the small size of the industry is *Ireland.com*'s use of The Yard for its audio and video work. The Yard was involved in the production of *Enter*, which will be the subject of a later case-study chapter.

The email service, because of the technical resources and complexity involved in maintaining it, is run in conjunction with an actor from the international system of innovation, an Israeli company called Commtouch.

Ireland.com will also outsource a technical job if the resources of its own development team are being concentrated on other projects. The *Ireland.com*

development team was, in August 2001, working on a content management project to produce a more efficient system of storing and retrieving the growing volume of content in the website's archive. (This was especially important after the switch in May 2002 to a subscription model, when the archive was expanded from 1998 back to 1996 and promoted as a selling point for the website.) With in-house development resources being concentrated on this project, *Ireland.com* outsourced elements of the development work for its recruitment and property ancillary websites.

That side of the system of innovation involves co-operation between *Ireland.com* and external actors. Other traditional media companies in Ireland, such as the Examiner Group, the Independent News and Media Group, and RTE, have also established digital media ventures, but none have done so as early or as successfully as The Irish Times Group. (Successfully, not in commercial terms, because none of them are turning a profit, but in terms of the size of the audience gathered and the quality of the content innovation.) In its mission statement, *Ireland.com* outlines the following as its purpose and interests:

"Ireland.com's mission is to consolidate its position as the definitive source for home news, international, sports, technology and business news, from an Irish perspective. The site's strategy is to be the definitive destination new media Irish site, providing authoritative information and services for the island of Ireland, and the 'Irish interest' market which encompasses anybody who has an interest in, or is seeking information on, the island of Ireland. Ireland.com aims to be at the forefront of delivering information and services through the use of innovative processes, technologies and delivery methods"
(<http://www.Ireland.com/about/web/webmission.htm>, viewed on 23 July 2001).

The emphasis on being an 'Irish interest website' illustrates how, more so than for a technological innovation, national social and cultural influences affect the style of content innovation. Essentially, *Ireland.com* is pitching towards an audience that will be interested in Irish society and culture. It is also interesting that *Ireland.com* states its intention to "consolidate" its position, because as the first traditional media organisation in Ireland to publish a digital media content innovation, it was initially an offensive innovator. With other traditional media companies establishing defensive innovations, *Ireland.com* has had to consolidate its position by improving its own content innovation. However, the defensive innovations do not merely imitate

Ireland.com; as argued in the literature review, the protection of copyright prevents imitative innovation in the content industry. But consistent with the literature, newer entrants to a system add their own distinguishing innovations to set them apart from previous innovations by other actors. The RTE and *Examiner* websites, although they incorporate elements that may have appeared first in similar form in *Ireland.com*, also have their own distinctive elements, such as video news clips on the RTE website. *Ireland.com* marketing executive Brendan Marrinan acknowledged that although *Ireland.com*, in the main, tries to be an offensive innovator it does not always succeed. He said: "We'd like to see ourselves as being the innovator...the first mover...instead of following someone else, even though that does happen. We want people to say, 'look at what *Ireland.com* have done', rather than 'look at what RTE have done'" (Marrinan, *Ireland.com*, 2001).

Ireland.com has a leading position to maintain, and to do so, it continually strives to improve and redesign the website, add new features and be sensitive to changes that are taking place to the medium, to emerging trends and to decide when they could be usefully added or adapted to the website. But this is done within the financial constraints imposed by The Irish Times Group. As would be consistent with the literature on systems of innovation, *Ireland.com* has to be a constant innovator. Had, as intended, *Ireland.com* moved onto the next stage of its emergence - the fuller integration of audio and, later, video content - it would have moved from the position of offensive innovator to defensive. RTE's revamped its website in the summers of 2001 and 2002, including the deeper integration of audio and video into its news-service. RTE seems to have a natural advantage, because its core content output is audio and video broadcast content, which can easily be converted into web audio and video content. (However, it is web audio and video produced with television production values.) Also, RTE has accumulated high levels of competencies within its organisation to create such content. *Ireland.com* had not, and the investment in infrastructure and human competencies, were regarded as unfeasible by The Irish Times Group.

Ireland.com is not just concerned with the innovative capacity of other actors within the Irish industry, but is also keeping a keen eye on the innovative activities of many within the international industry, such as Yahoo, Hotmail, Excite, *The Guardian*, *The Electronic Telegraph* and *The New York Times*.

6.7: Platforms

Content generated by The Irish Times Group is delivered across a number of platforms: print, web, text messaging on mobile phones, and WAP, also on mobile phones. The author has worked as a researcher on a project for the COMTEC Research Centre in Dublin City University in January 2001 and 2002. The project studied the attitudes within the digital media industry on emerging business models for generating revenue from digital media content (COMTEC, 2002). The study showed that there was a great deal of uncertainty surrounding business models, as many models that people believed would work for digital media content were losing money. One of the emerging models was to deliver content across as many platforms as possible. The study indicated that the most expensive part of the process was creating the actual content; delivering it was, comparatively, cheap, and so should be delivered across as many platforms as possible. The Irish Times Group could refashion its basic news content for delivery across a number of platforms without a great deal of expense. Traditionally, *The Irish Times* would be paid for its news content once (when a newspaper was purchased), but with digital media it had the opportunity to be paid several times for what was, essentially, the same content. It supplied WAP content to Eircell (now Vodafone) mobile phones, and also sent news updates via text messages, each of which was charged for. Conor Pope explained the model as follows: “The thing is to spread the content, which is enormously valuable, across as many platforms as you possibly can...You use the content in as many diffuse ways as possible to try to maximise the revenue” (Pope, *Ireland.com*, 2001).

New content (writing) competencies are necessary to create WAP content. The display screen on mobile phones is small, so *Ireland.com* has to cut the length of news stories and adapt writing house-style to suit the medium. For example, the maximum length of a WAP story is 90 words. To save on wordage, titles such as Mr, Ms and Mrs are dropped from WAP stories, although their use in front of proper names is house-style for both the newspaper and the website. This is a small, but significant adaptation of house-style, because use of full titles has been the formal writing style of *The Irish Times* for decades. The writing for WAP has to be pared as much as it could be without the story losing sense or coherency. WAP, in the case of *Ireland.com* news, is a reductive medium, giving only the basic details of a story. However, writing a WAP story is not simply a matter of taking the first couple of

paragraphs from an *Ireland.com* web news-story. An internal memo told journalists: “No matter how tight the story [on the website] it will always have to be rewritten for WAP. Using the first couple of paragraphs will never work” (Internal memo, 2001).

The style for SMS updates is to encapsulate the news in the form of a short headline, accompanied by the date and time. For example: 17/09/01, 5: 45: Government to build new hospital in Tallaght.” Three such news headlines are contained in each message, three of which are sent out each day, unless a major news story breaks and a message is sent out as a newflash. Subscription to the service is available through the website, and the user is charged for each message received. Before the introduction of the subscription model, SMS was the only *Ireland.com* content form for which people were charged directly. (Users paid Vodafone for access to WAP content.) In the summer of 2001, over one million messages were being delivered by *Ireland.com* each month.

Ireland.com also plans to begin supplying content to palmtop computers (PDAs), which will also require the adaptation of content competencies to suit that particular content outlet.

6.8: Finances

In the first draft of this chapter, produced in September 2001, I based the finance section on the latest set of publicly released accounts for the Group. On the 25 April 2001, The Irish Times Group reported its annual financial results for the year 2000. Pre-tax profits at the Group had increased by 34.4 percent to £14.7 million, which the Group claimed was a healthy financial performance for the year. However, the report noted that *Ireland.com* had cost the Group £3.5 million for the year, including a trading loss of £2.7 million and capital expenditure. At the time, The Irish Times Group had the ability to absorb such losses through revenue generated by other commercial activities of the organisation. In the report, the Group made clear its commitment to continue investing in and developing the website. Interestingly, the Group did not emphasise content as the means of turning *Ireland.com*'s losses into profits. Instead, it stated its intention of “focusing on developing revenue in the key recruitment and property areas” (*The Irish Times*, 25 April 2001).

There was, at this stage, no public declaration to move to a subscription model. In the initial draft, I made the following comment on how The Irish Times Group

finances affected the website: “One of the key arguments of this thesis is that the processes of innovation are uncertain. As *Ireland.com* is still a substantial loss-making venture, its future success and existence as a content innovation are by no means certain. Factors within the overall *Irish Times* organisation are favourable to the website venture at the moment. The activities and profits of the main newspaper business allow the organisation to absorb losses, and allows the website space and time to develop into a profitable venture. However, The Irish Times Group is a commercial company, not a public service broadcaster, so *Ireland.com* will, eventually, have to justify itself by turning in a profit. If conditions not directly related to the website were not favourable, they could have a detrimental effect on the website’s development as a content innovation. If the newspaper were less profitable or loss making, funds might not be available to absorb the losses incurred in establishing and further innovating the website. Or a more conservative management, working to tighter budget constraints, might not have been willing to support the investment and innovation necessary to develop the website.”

This came to pass in December 2001. Even before this, there were suggestions within *Ireland.com* that The Irish Times Group was losing patience with the losses being mounted by the website. A source in the company said: “I think a year and a half ago [early 2000] there was an awful lot more patience among corporations [for digital media content ventures], because they knew the market was young. With the dotcom downturn, companies have inevitably got slightly more concerned about the lack of revenue that websites are generating.” An *Ireland.com* source told me that after the Group’s finances were announced, a rushed decision was taken to implement a subscription model for the website, and there was a lot of unease within *Ireland.com* about the move. If it failed to generate the revenues necessary to make the website viable, there was no possibility of returning to a free service funded by advertising, and there was no substantial alternative model in reserve. In chapter eight, a case-study of Rondonondo, Eircom closed the loss making venture to remove a financial burden from the core business, which was generating diminished revenues. *Ireland.com*, although a loss making subsidiary, is an extension of the core news business and so there is a greater reluctance to eliminate it, because such a move would reduce the status of the Group, especially in an international media context. My research suggests, between 2001 and 2002, a growing acceptance among content companies that the model of advertising funded websites was not viable. Online

advertising, in 2001, accounted for only 1% of total advertising spend across all media (www.newmedialine.ie, viewed 4 March 2002). Subscription models were implemented in the mid-1990s and, in the main, failed to generate sufficient revenues to make websites viable. Advertising models also struggled, so there is a growing trend of revisiting the subscription model. Companies do so under the assumption that people will consider their content valuable enough to pay for, and that people's online behaviour has matured since the mid-1990s and they will be willing to pay for online content.

Ireland.com was the first Irish content website to charge. This is a trend among content websites produced by traditional media companies, such as *The Financial Times* and *The New York Times*. Marketing manager Aisling McCabe said: "It is becoming increasingly self-evident that a business model dependent solely on advertising revenue is not sustainable in today's difficult marketplace" (www.ireland.com/about/money/, viewed 23 March 2002). Although I could not obtain exact figures, I was told during my research placement that advertising revenues for the year to August 2001 were down on the figures for the previous year.

The subscription rates are euro79 per year, euro14 per month and euro7 per week, and permit access to *The Irish Times* content, the searchable archive, the breaking news section and the majority of the remaining ancillary websites. The website experienced a large drop in traffic (although audited traffic figures have yet to be released), so the subscription model first has to compensate for the loss of advertising revenue. (In the early years of the website, it had 6,000 subscribers to a free email news-service. When it tried to charge for the service (a subscription fee of approximately \$40 a year), the number of subscribers dropped to 350.)

In August 2002, the website's subscription base was 8,500. I was not told the number of subscribers the website needed to break even or enter profitability, because it was regarded as commercially sensitive information. But it was expected to be at least a year before *Ireland.com* would know if the subscription model was working. It was also expected to be a year before *Ireland.com* decided whether it had achieved the correct balance between free and paid content (accumulation of knowledge and experience). Access to *Irish Times* content, the breaking news-service and the searchable archive requires payment. The balance of free to paid content emerged through a series of meetings (negotiations) between the editorial and the commercial

departments. The free content is necessary to entice people to the website, but could not be so generous that people wouldn't pay for access to premium content.

6.9: Conclusion

Ireland.com shows how the innovative process is uncertain (how initial visions for the website did not materialise) and multi-dimensional, influenced by macro-level factors (economic slowdown and falling revenues of the core business), and micro-level processes within the firm (editorial discussion, creativity and interactions). It also emphasises the importance of cultural and social influences and how they can affect the style of innovation that emerges. It shows also the importance of competency accumulation and, similar to Lundvall's model, the importance of innovation through interactive learning, learning by doing, using and interacting. However, some of these competencies, knowledge and infrastructures were stripped from the organisation through the redundancy programme, which suggests that within a system of innovation, whether at the international, national or industrial level, there is not a simple linear accumulation of competencies, knowledge and infrastructures.

Chapter 7: Case-study: *Enter* CD-ROM magazine

Chapter 7: Case-study: *Enter* CD-ROM magazine

7.0: Overview

This chapter contains a qualitative case-study of an Irish digital media content company called Pure Communications, which for 17 months from December 1999 published an interactive entertainment magazine on CD-ROM format. The magazine, *Enter*, contained many of the traditional elements of a print entertainment magazine – celebrity interviews, features, film and music reviews – but the content was presented in an interactive form suited to digital media. For example, interviews with musicians contained an option to listen to samples of their music, and the CD-ROM often had live, acoustic performances recorded exclusively to accompany interviews. The aims of the case-study are to examine the influences (macro, meso and micro) on the development of *Enter*, and to assess how Pure Communications accumulated the necessary competencies and infrastructures (content, production and technical). The chapter will also try to assess the value of a systems of innovation concept, especially as it relates to innovation through interactive learning, to studying the emergence and production of *Enter*. This will include an examination of how Pure Communications interacted with other actors in its industrial system of innovation (for example, the company availed of the facilities and competencies of a post-production studio called The Yard to record and edit its video content), the national system of innovation (advertisers and venture capitalists) and the international system of innovation (the company released a similar interactive magazine in Britain in February 2001).

The chapter shall also draw on aspects and concepts of prior research, such as the work of Carolyn Marvin, who studied how the techniques, codes and grammars of older technologies are grafted onto new technologies to allow people to make sense of them and to render them suitable for consumption (Marvin, 1988). *Enter* provides a valuable example of this – it grafted the techniques, codes and grammars of a print magazine onto a digital media format to try to render it an object for consumption. It tried to render the (relatively) unfamiliar medium of digital media in a familiar way, through presenting it as a kind of digital magazine. This suggests that digital media is not a fundamental break with the past (as many technological determinists in the

literature review chapters claim), but has continuities with it. However, these traditional techniques are often adapted to better suit the digital media format, or new techniques have to be fashioned to work in the new setting.

7.1: Methodology and justification for the *Enter* case-study

Chapter four outlines the strengths of in-depth qualitative research, so they shall not be repeated here. However, the research is often weakened by being influenced or affected by circumstances beyond the researcher's control. Such is the case with this chapter.

The case-study of *Ireland.com* employed the following qualitative research techniques: document analysis (mainly of the *Ireland.com* website), semi-structured in-depth interviews with actors within the *Ireland.com* organisation, and observation during a three week research placement at the company's office. I had originally intended to apply similar methodologies to the *Enter* case-study, having received initial indications that such access would be possible. I first contacted Pure Communications by telephone in late November 2000, to ascertain whether it would be interested in participating in my research. The company's response was positive, and it supplied a number of back-issues of *Enter* as a goodwill gesture. It was agreed during this conversation that I would renew contact in late January 2001, to arrange a series of interviews and discuss the possibility of spending time observing the actors within the organisation as they produced an edition of *Enter*.

However, by January 2001, circumstances at the company had become less favourable to my request for access. In the time since the original contact, the company had announced a substantial venture capital investment, was preparing to move into the British digital media content market and was re-designing *Enter* to suit. Although the researcher did not receive an outright refusal for access, the company had become less positive towards being researched, due to the commercial sensitivity of the re-design and market shift. Production of the Irish edition of *Enter* ceased in February 2001, with the company shifting its focus to the production of the British edition¹. Pure Communications had, by this stage, transferred the majority of its

¹ For clarity, I shall, when necessary, distinguish between the Irish and British editions of *Enter*. The Irish edition consisted of the first fifteen issues, sold only on the Irish market; the British edition was the final two issues, designed primarily for and sold on the British market.

content production to offices and studios in London, England. The first issue of the British edition, released in March 2001, was sold on the Irish market; the second issue, however, was not. Pure Communications ceased production of the British edition after the second issue. (As argued elsewhere in this thesis, innovation carries risks.) Therefore, I was unable to implement the qualitative methodology originally intended, and the scope of the research on *Enter* had to be scaled down.

In January 2002, when concerns over commercial sensitivity had been removed, I secured semi-structured in-depth interviews with the former editor of the CD-ROM, the creative designer (who was also one of the founders of the company and the co-creator of the CD-ROM), and the technical designer, who was responsible for the technical tasks of putting the content on the CD-ROM. Although *Enter* was no longer being produced, Pure Communications was still active. It had scaled down its interests in digital media content generation, and had begun to focus more on the advertising and marketing strand of its business. This marked a return to the core competencies of the two founders, whose previous careers had been in marketing. However, the people who had played pivotal roles in the production of *Enter* were still employed by the company, and during my three visits to its office, they were able to show me the editorial and technical structures that existed while the CD-ROM was still in production.

Although I was unable to observe the real time production of *Enter*, I believe it remains a valuable and worthy case-study for this thesis. The relative failure of *Enter* in the commercial market should not preclude it from being examined as a case-study. As in other innovation studies, there are lessons to be learned from failure as well as success. The conceptual framework underpinning the research argues that, in any system of innovation, there are successful and unsuccessful innovators, whose combined efforts are necessary to produce a system in which innovation occurs. Although *Enter* ultimately proved unsuccessful in commercial terms, it demonstrated a number of important innovations (especially in an Irish context). It also provided a valuable example of a digital media innovation that defined itself largely in terms of the traditional media, yet was still engaged in a struggle to establish itself as a content innovation distinct from the traditional media. As such, it provided a useful Irish example of the early emergence of digital media as a content form.

Also, the quantitative study of the Irish digital media content industry (in chapter five) highlights some of the difficulties facing digital media content companies

producing Irish content for the small domestic market. The experience of Pure Communications and *Enter* would seem to confirm many of those findings: this will be outlined in greater detail in a later section of this chapter.

As well as semi-structured interviews, my methodology included document analysis, which consisted mainly of an in-depth examination of the *Enter* CD-ROMs. During this phase of research, I assessed the media techniques used in the presentation of the content, and examined which of these techniques were adopted from the traditional media, which were adapted to suit the digital media format, and which techniques were emerging as new and exclusive to *Enter*. The CD-ROM was published monthly, and over the span of its seventeen issue life, I tried to assess its evolution and development as a content innovation. I also conducted document analysis of the *Enter* website. I supplemented the in-depth interviews and the examination of the CD-ROMs with information gathered from a number of secondary sources, such as news-reports in the business and technology sections of mainstream media publications.

7.2: Pure Communications as an organisation and the background to *Enter*

Enter magazine was published by Pure Communications, an average sized (in Irish terms) digital media content start-up company, which employed 16 full-time staff and 4 part-time. The company was founded in September 1999, and it had two strands of commercial activity. The first was based on the career background of two of the three founders: advertising and marketing. The second was a new area in which they had no previous experience: digital media content generation. The co-creators of the CD-ROM, Niall Austin and Ben Linehan, worked for the same advertising agency in Dublin. They left together to establish Pure Communications with Jeanne Heery, whose background was in accounting. She became the company's financial controller.

The first edition of *Enter* was published in December of 1999. By the end of its first year of publication, it had achieved average monthly sales of over 20,000 copies, and the company claimed the CD-ROM had achieved a moderate level of profitability. *Enter* bucked the trend of resource and finance shortages in the industry by securing a £2 million venture capital investment, which was announced in November 2000. It enabled the company to begin forming plans to release a British edition of *Enter*. Of this investment, about £500,000 was invested by Pat McDonagh,

who was an influential figure in the rise of Smartforce and Riverdeep, two of the few Irish digital media companies to successfully sell content artefacts in foreign markets. The remaining money was supplied by Netvest.co, a British company that specialised in technology and media products (*Business Plus*, 1/11/2000). Netvest.co was viewed as a suitable strategic partner to assist the company's move from the small Irish digital media content market to the bigger British market.

Pure Communications had its office on the Mount Pleasant Industrial Estate in Ranelagh, Dublin. For the first four issues of *Enter*, it used the recording studio of Midas Productions, on Baggot Street, Dublin. For later issues, it availed of the recording facilities at The Yard studio on Sheriff Street, Dublin, which offered competencies in design, authoring and compression for CD-ROM production. The Yard also undertook audio and video content work for *Ireland.com* during my research placement there in August 2001, which is an indication of the small size of the Irish digital media content industry.

By February 2001, Pure Communications had acquired offices in London, England, in preparation for the launch of the British edition. The move into the British market turned out to be a quick but costly failure, and it forced a significant restructuring of the company. It began to consolidate its operations back at its Dublin office. Although the primary impetus behind the founding of the company was the generation and publication of original digital media content, it was no longer in a financial position to do so. It switched emphasis to the advertising and marketing strand of its business (contracted work included designing advertisements for clients such as SuperValu and Club Orange). While other digital media content companies were closing during the economic slowdown that began to hit in 2001, revenue from the advertising and marketing strand kept Pure Communications in existence.

By early 2002, the content strand had started becoming more active, although the company was still not in a position to attempt a move back into the risk-laden and costly arena of content generation. It was in the process of creating a subsidiary called DSM Sport, which would act as a third-party host for the online content of sporting federations across the world. Also, it had a camera crew in the United States filming a sports programme for an American network television channel². The company was

² Pure Communications tried to diversify by moving into television content production. It owned a 3.5 percent stake in TV Ireland, which was a broadband television service aimed at the Diaspora (*Sunday Business Post*, 26 August 2001).

holding preliminary discussions with a number of partners and advertisers about a possible re-launch of the *Enter* title. However, it admitted that it would be at least a year, or possibly two, before it had formed a solid basis from which to re-enter the market as a generator of original digital media content.

The flurry of innovation in the technology industry in recent years has led to many failures; rather than closing, some of these companies have withdrawn temporarily from the market, reassessed their innovative efforts and direction, and re-entered the market. If Pure Communications succeeds in re-entering the market, it will be an Irish example of this. As a digital media content creator, it could be viewed not as a start-up company but as a 'start-up again' company, whereby it draws on the initial experience (accumulated knowledge) of producing and marketing a digital media content innovation, analyses the weaknesses of the original innovation (whether failure was down to the innovation itself, flawed marketing strategy or business model, or a combination of factors), and tries to produce a more successful innovation the second time around. The company said that any future incarnation of the CD-ROM would be more focused than the general arts and entertainment artefact of the original. A music or film artefact was suggested as a possibility. In January 2002, the company had maintained the editorial and technical structures that existed during the production of *Enter*; it continued to employ people with the necessary content and technical competencies, had maintained its production infrastructure, and had added technical competencies, such as the ability to compress content in-house.

Pure Communications had a small but flexible organisational structure. There were no strict lines of demarcation, as in larger traditional media companies. Although people had a core set of responsibilities and duties within the company, they could be called on to work on tasks outside their specific areas. As in many digital media start-ups, the people were expected to possess an array of competencies and undertake a variety of tasks. Roisin Carroll, the technical director of the CD-ROM, also supplied content to certain sections. In general, the managing director was in charge of the general business direction of the company, securing investment and seeking opportunities for growth. The creative director had responsibility for designing the look of the CD-ROM, of the city and the rooms. The technical director was in charge of rendering the designs on the CD-ROM. The editor was in-charge of securing content and conducting interviews. Most of the recording and video production was conducted outside the company, by Midas Productions for the first

four issues, and The Yard thereafter. The webmaster was in charge of posting the website and transcribing, in text form, interviews that were recorded for the CD-ROM. The people involved in the content strand of the business also worked for the advertising side. Ben Linehan, as well as designing *Enter*, also designed advertisements for the company's clients. Roisin Carroll's background was television graphic design – *Enter* was the first digital media artefact she worked on – and these competencies were used in the production of advertisements. The interviewees said that time pressure made it difficult to implement significant design changes to *Enter*. This was, in large part, due to the limited personnel, financial and technical resources available, and also because these resources had also to service the advertising strand. Technical designer Roisin Carroll said: “We had an awful lot of extra ideas that we never really got round to doing” (Carroll, *Enter*, 2002). The limited resources of the company would appear to have been a brake on the further development of the original concept. As my quantitative study suggested, limited resources was a general characteristic of Irish start-up digital media companies, which diminished the innovative potential of the industry.

7.3: *Enter*: the original vision and the technical reality

The original vision for *Enter*, according to co-creator Ben Linehan, was to produce content that “the Internet promised but couldn't deliver, due to technological restraints” (Linehan, *Enter*, 2002). The intention was to create digital media content with high quality audio and video that would offer deeper interactivity than was possible with online content. One of the earliest decisions was to produce *Enter* as an offline source of content. In the absence of an accessible, countrywide broadband network in Ireland, CD-ROM offered the only platform across which high quality audio and video could be delivered. While planning *Enter's* creation in mid-1999, Linehan and co-creator Niall Austin anticipated the roll-out of a broadband network by 2002. Once broadband allowed them to deliver online audio and video content to the same quality as the CD-ROM, they would transfer *Enter* to the web. They had planned, by then, to have established *Enter* as a brand of digital media content, in the expectation that the people who had bought the CD-ROM over the previous two to three years would follow it online. Crucial to this model was the assumption that users who had paid a coverprice in newsagents for access to *Enter* content would, instead,

be willing to pay subscription charges for online access. However, the timeframe for this business model fell on two fronts: the artefact did not survive till 2002, and even if it had, the broadband network had not been rolled-out to the extent that transferring it would have been viable.

Enter was an imitative innovation of sports and music CD-ROMs that Niall Austin saw while travelling in the United States. Austin and Linehan, while still working together for a Dublin-based advertising agency, began discussing the possibilities for similar CD-ROMs in the Irish market. An incentive to their planning was that they had not seen any similar CD-ROMs in Ireland or Europe, and they wanted to produce theirs before anyone else entered the market with such an artefact. They believed the sports and music CD-ROMs were too narrowly focused on a specific target audience (later experience would see them revise their opinion), and an Irish CD-ROM should have a broader appeal, to reach a large enough audience to make production viable. They decided that it should be a general arts and entertainment artefact, aimed at the age group they believed would be most likely to purchase digital media content artefacts (15 to 35 year olds).

The artefact was defined in terms of a magazine from the first edition to the last. Even in the early planning stage, it was framed in the language of a magazine. Linehan said: "It was going to be everything...it was going to be like a *Hotpress*, plus an *Empire*, plus an *FHM*, plus an arts page from *The Times*" (Linehan, *Enter*, 2002). Carolyn Marvin (1988) has written about the tendency to frame new media (or technologies) in the familiar terms of the old, to shape them as objects for consumption. Shaping *Enter* as an object for consumption was a constant problem for the company. Despite using the familiar reference of a magazine, the company still encountered difficulty explaining the concept of the CD-ROM magazine to advertisers, interviewees and the public. Often, the magazine analogy led to confusion and acted as a barrier to people understanding. Linehan offered two examples: some people thought the CD-ROM contained desktop publishing software that would allow them to design a magazine; others opened the cardboard cover which contained the CD-ROM and asked where the pages were.

There were limits to how closely a digital media CD-ROM artefact could be a 'magazine', in the traditional sense of what constitutes the characteristics of a print magazine as a content form. Indeed, there were limits to how closely *Enter*'s creators wanted to replicate a print magazine. They decided not to place an index on the front

(home) page of the CD-ROM, because it would have looked unimaginative in a digital media magazine and would have been an example of an old media technique that simply wouldn't have been suited to a new media format. Therefore, they had to fashion something new. What they needed was something that would perform the same basic function as an index – a central portal that would allow quick and easy access to content – but would be consistent with the interactivity and look of a digital media artefact. They developed the concept of a virtual city, called Nighttown, in which the user travelled to different locations to access different content³. For example, the user travelled to Nighttown's virtual cinema to access information about films, or to Nighttown's virtual music bar for interviews with musicians and to see clips from music videos. In practice, all this entailed was dragging the mouse until the cursor was over a highlighted area, such as the building for the movie theatre, clicking on it, and the user would enter the virtual location. If they wished to leave, they clicked the back button, and they would return to Nighttown. The user could then drag the cursor across to the music bar if they wished to listen to music interviews.

Fred Moody's research at Microsoft's Multimedia Publishing Division in the early-1990s documented how developing a central concept for a digital media content innovation could be a difficult and time-consuming process. The success of the final innovation depended crucially on developing a suitable central concept to act as an interface between the user and the information contained on the CD-ROM. For the children's interactive encyclopaedia *Explorapedia*, Moody noted the importance of "designing the encyclopaedia's interface, trying to come up with an aesthetically appealing design so coherent that people could figure out how to use the encyclopaedia simply by looking at the screen and intuitively understanding what all

³ Although Lenihan didn't claim it influenced the development of the city metaphor, the earlier Amsterdam Digital City (DDS) project echoed many of aspects of Nighttown. DDS, which began in 1994, was subsidised by the local government to act as a facility for the citizens of Amsterdam to gain access to official local authority and government information and to facilitate public debate. It was a network, which subscribers accessed through telephone lines and modems. DDS had an elaborate virtual city structure, with subscribers able to access information at different locations, e.g. in the metro section, subscribers could enter chat-rooms (cafes) for leisure. At other locations they could access minutes of city council meetings. Public debate among Amsterdam's citizens flourished on DDS. It moved from depending on local government subsidies to non-subsidy, not-for-profit funding (through the sale of advertisements and the 'renting' of virtual space). DDS was criticised for becoming increasingly commercialised and losing focus on its original role of democratising public debate in Amsterdam. In 2000, DDS began to divest itself of content strands that were unprofitable (DDS, press release, 5 October 2000; Besselaar and Beckers, 1998).

of its words, menus, and commands would do when activated” (Moody, 1995: 8). Nighttown had to serve a similar function for *Enter*.

According to Linehan, he and Austin hit on the idea of the city early in the planning stage of the artefact. Although a number of alternatives were considered, none came close to replacing the city. A crucial factor in opting for the city concept was that it offered greater advertising potential than the alternatives. The city was an environment into which a high level of advertising could be integrated without looking out of place, contrived, or intruding on the consumption of the content. As in a real city, advertising billboards could be scattered at various points around Nighttown (on the CD-ROM, these billboards had video footage from television advertisements running on a loop). Locations in the city could be named after sponsors, such as the Heineken Red Star Bar. One of the early alternatives to the city was a stately home. The creators were unable to devise a means of integrating advertising into a stately home without it looking out of place and contrived; it was more credible to name locations in a city than rooms in a stately home after a sponsor. Linehan said of choosing the city concept over the stately home: “It was a bit of a trade off from something that was high-brow to something that is getting sponsors in, advertising, which we had to do to supplement the small revenues we had in the beginning” (Linehan, *Enter*, 2002). As a study for COMTEC has indicated, advertising is a crucial source of revenue for the digital media content industry in Ireland and abroad (COMTEC, 2002). The economic slowdown since 2001 has squeezed the advertising revenues of digital media content ventures. Many organisations have begun reducing their investment in digital media content and have scaled down their operations. Advertisers, as a layer of the system of innovation, had a crucial influence not just on the design of *Enter* but also on the level and nature of its content. This will be discussed in more detail later in the chapter.

Another reason for choosing the city concept was to allow the creators to include a wide diversity of content while maintaining a logic to its inclusion. In keeping with the concept of the virtual city, all of the content in *Enter* was found at certain locations within the city: sports content was found at the virtual gym, film reviews at the virtual cinema, music at the virtual music bar, theatre interviews at the city’s virtual theatre, and interviews with authors took place at the virtual library. The basic principle of this mirrored the practice of print magazines, to group related content together in sections. It was not a practice that was determined by the technology of

digital media, but a culturally and socially shaped practice, shaped out of traditional media practice and the necessity to create a technique that worked on a digital media format.

A large part of *Enter's* design went into creating the feel of actually being in a city, into creating an environment for the user that was not only interactive but also immersive⁴. For interviews with guests, each background was designed to look like the interior of its location within Nighttown. With interviews in the library, the background comprised bookshelves, reading lamps and study desks. When clips of films were shown in the virtual cinema, the background was designed to look like an auditorium. Also, in an effort to make Nighttown seem a real, three-dimensional town in which the user was a visitor, the windows of certain rooms looked out over the city and, in the distance, the user could see other locations, such as the virtual theatre or gallery. For instance, an interview took place with RTE presenter Bianca Lukyx in issue six; in that room, in *Enter's* virtual television centre, the user could look out the window and see the buildings of other locations in the city, such as the music bar. This was also a subtle way of promoting the other content on the CD-ROM.

The creators claimed that they had little difficulty turning their initial vision into a technical reality. One of their principal goals was to avoid the technical constraints of publishing content online – the poor quality of video and audio content and the long download times required. However, their chosen platform, the CD-ROM, imposed limitations of its own. Each CD-ROM could hold only 650 megs of material, and for technical reasons, 20 megs had to be left free. Each CD-ROM was filled almost to capacity, which forced editorial choices on the production team: in each edition, content had to be dropped or held over for the next edition because there was not enough memory to store it. Storage capacity often created tension between the production team and advertisers: advertisers wanted a certain level of content in the location they were sponsoring, yet there was often not enough room to run all of the

⁴ Immersion was an emerging facet that was crossing different genres of digital media content, but had emerged most strongly in interactive games. Andrew Darley, in *Visual Digital Culture*, wrote how “the ideas of interaction, participation, immersion” were particularly important for computer games as “emergent expressions of mass visual culture” (Darley, 2000: 148). Interactivity and immersion in games were vital to the sensory experience of the player being a participant in the computer game, rather than a passive consumer of content, as in the traditional media. The intention was to create the impression that the player had a role in (and influence over) unfolding the narrative of the game. Similarly, *Enter* stressed the importance of interaction with its users, with the aim of immersing them in the Nighttown concept, to make them more active participants in the consumption of the CD-ROM's content.

content they wanted. The closer the CD-ROM ran to capacity, the poorer the quality of the video content. The Yard studio used compression software to reduce the amount of space taken up on the CD-ROM by audio and video, but compressing the content down too far affected the quality. Video could come out as blurry, or as black and white, or certain colours could be off. The production team had to achieve a balance between maintaining the technical quality of the CD-ROM and including sufficient content to keep advertisers satisfied.

The CD-ROM's limited capacity forced the creators to abandon their plans to introduce Virtual Reality Modeling Language (VRML) to the artefact. The city and all of the locations within it were based on two-dimensional screens. VRML would have added a three-dimensional effect. The user could have entered the room and viewed it from different angles. Also, they wanted to film interviewees from three camera angles, to give users a greater choice of perspective while watching an interview. These plans were never implemented because of memory constraints imposed by the CD-ROM platform. The long term plan was to integrate them into the online version of *Enter* after the roll-out of broadband had allowed it to transfer to the web and it wasn't under such memory constraints.

Enter worked with a small production team and limited resources. The team, some of whom also had to service the advertising strand of the business, was under time pressure to produce the artefact each month and so found it difficult to introduce significant innovations to the original design. However, the team was wary of allowing the format and design to go stale. The format of the city was changed in issue eight. The original city was based on two separate screens, the Quay and the Plaza. The user clicked on an icon button to move between the two. The process innovation involved dropping the divide and presenting the city as one unified location. It was created out of four Photoshop screens stitched together. The user could scroll left or right across the screens; when the scrolling brought the user to the end of the fourth screen, the city would loop and return to the beginning of the first screen. This gave the illusion of the city being 360 degrees, even though it was comprised of four flat screens. The screens were formatted in Multimedia Director to allow the user scroll left and right. Other changes to the CD-ROM involved the introduction of new locations (and, correspondingly, new genres of content) and the elimination of others, depending on how successful the creators believed they were. Another consideration was whether an advertiser was willing to continue sponsoring a

location. A core group of locations stayed, relatively unchanged, in the Irish edition for its fifteen issue span. (The British edition incorporated significant changes to the tone, nature and presentation of the content, and advertising levels dropped.) These locations included the comedy cellar, the music bar, the television centre, the theatre, the sports centre, the café, the library, the gallery, the style centre, the movie theatre and the restaurant. They encompassed many sections that would be found in a traditional print entertainment magazine – comedy, music and television personality interviews, theatre, restaurant, book and film reviews, as well as sport, art and fashion sections.

The influence of advertisers over *Enter* was significant. They had greater input into the editorial process than would have been acceptable in other media organisations, where a higher value would have been placed on preserving editorial freedom from outside, commercial influences. This stemmed, in part, from the background of the founders, whose careers in marketing were based on servicing the needs of advertisers. (If their background had been in journalism, or in similar media careers, they might have been more reluctant to allow advertisers to actively influence the editorial process.) Pure Communications was in the rare position of being both a creator of advertising campaigns for clients and a publishing outlet for advertisers. Interviews were conducted in rooms in Nighttown's various locations. The rooms were first sketched on card by Ben Linehan; they would be converted into Photoshop screens by Roisin Carroll, who would then email them to an advertising client for approval. For example, rooms in the Red Star Bar would be emailed to the advertising representatives of Heineken. Changes would be made based on the advertiser's suggestions, such as to put more content in a location or to feature the company's labels more prominently. Ben Linehan outlined how deep the influence of advertisers ran when he said: "If we were approaching a new client, we would try to create an environment for them that would complement their produce. For example, when HB [manufacturer of ice-cream confectionery] came on board in the summer of 2000, we created a whole section for them that was based on lifestyle...that would fit in with their products" (Linehan, *Enter*, 2002). The genres of content on the CD-ROM were often defined by what would fit with the general theme of an advertiser's products.

Once the room design was approved by the advertiser (usually a couple of weeks in advance of publication), the video footage of the interview would be inserted. The interviews were filmed by a post-production studio called The Yard. The editor of

Enter, Ken Sweeney, would view the raw footage and designate edits. The Yard would cut the film in their editing suite, compress the footage using Quicktime software, and return it to Pure Communications. The technical director, Roisin Carroll, would insert the interview into the appropriate room.

Amassing the content and designing it technically for the CD-ROM was a learning process (the 'learning by doing' of innovation studies). This became most apparent when production of *Enter* was taken from the Irish operation and transferred to a new team in England. Irish editor Ken Sweeney said: "Something I think is quite important, the English magazine learned from our mistakes. They looked at our magazine and thought: oh, maybe there's too much content. They looked at the city and thought, we can simplify this. They learned from what we had done and used that to make their magazine" (Sweeney, *Enter*, 2002). This suggests the interactive innovation of Lundvall's model, where knowledge and experience are accumulated within the organisation through the production over time of the artefact. In this case, the knowledge accumulated during production of the Irish edition was used as the basis for a new production team to implement the next stage of innovative development, so the accumulated knowledge circulated within the expanded organisation.

It is important to note that although the Irish and British editions of *Enter* were published by the same company, and produced around the same basic concept, they were regarded as being two separate products. The Irish production team held the British edition responsible for closing the Irish one. Ken Sweeney stressed how it was "their failure" [the English team's] that caused the end of the Irish magazine. The British edition had a separate editorial and production team, and a different focus to the Irish magazine. According to Sweeney, the Irish magazine tried to blend fun entertainment content with serious art and culture, such as interviews with authors on what had influenced their writing. The British edition, in contrast, was pure entertainment. Sweeney said: "The blokes who did the English one were the blokes out of *Loaded*. They wouldn't have known too much about Irish culture, or culture in general. That's how it changed. There was a little bit of pressure on me to make the last couple [of Irish editions] more like the English one" (Sweeney, *Enter*, 2002). He said that although the production of the British edition was technically superior, the content was of a poorer quality, and this was a contributing factor to its quick failure in the British market. He said that the first couple of Irish issues were *Enter* in its

purest form, until he came under pressure to dumb-down the content to reach a wider audience.

7.4: The content for *Enter*

Pure Communications promoted *Enter* as being about the content, not the technology, and all three interviewees for this case-study stressed how, ultimately, it was the quality of the content on the CD-ROM that induced people to purchase it. *Enter* had a small editorial team, and the main responsibility for supplying content rested with the editor, Ken Sweeney. Before becoming editor, he worked six years for the BBC film archive in London. He began writing The Diary column in *The Evening Herald* newspaper soon after becoming editor of *Enter*, and he used the material gathered for the CD-ROM as the basis of his columns. In return, *The Evening Herald* would promote the forthcoming issue of *Enter*.

He emphasised the importance of always having “great names” (celebrities who would be immediately recognisable as popular culture icons) to attract people to the CD-ROM. Having “names” also made it easier to persuade other celebrities to agree to be interviewed. The production team didn’t have formal editorial meetings, as in a newspaper or television newsroom. However, he did delegate editorial responsibility in areas he had little knowledge of, sport and fashion. The sports content was gathered by a print sports journalist who later began working for *The Times* in London. Fashion was the responsibility of Roisin Carroll, who was also the CD-ROM’s technical director.

According to Sweeney, the biggest problem he faced in gathering content was explaining the concept of *Enter* to interviewees. (This was a problem Pure Communications faced on all fronts when engaging with outside actors: advertisers, investors, interviewees and the public.) Often, he would have to send an interviewee a previous edition of the CD-ROM before they would agree to an interview. He said: “Names are wary about what they’ll do and won’t do. Getting them to go in blindly into something there isn’t an existing example of is difficult” (Sweeney, *Enter*, 2002). In the beginning, an informal network of contacts helped him secure interviews for the CD-ROM. Similar to how Austin and Linehan used contacts to win advertisers, Sweeney used his contacts in the music and television business. Initially, the structures of press publicity in Ireland were reluctant to allow *Enter* access to

celebrities. For example, popstars had only a limited time for press interviews while visiting Dublin, and their record companies preferred them to concentrate on the traditional round of television, radio and newspaper interviews, because these were regarded as channels to the greatest amount of publicity. However, as *Enter* established itself, publicity representatives became more amenable to having their clients feature in the magazine. Universal was the first record company that allowed *Enter* access to its artists. When the other record companies saw that Universal artists were gaining publicity on the CD-ROM, they too began to promote their artists to Sweeney. A similar pattern emerged with film distributors and book publishers; once the artefact gained a certain level of recognition and familiarity, it was incorporated into the structures and routines of public relations for entertainers.

Complicating matters was that interviews, although recorded using standard television camera equipment, had to be filmed in front of a specialised blue screen, to allow a room background to be superimposed later. In the early editions, interviewees were taken to a special blue-room studio on Baggot Street, Dublin. Then the company invested in a portable blue screen, which, with the addition of special lighting, allowed interviews to take place at remote locations, such as a guest's hotel room, or at the back of a concert. Sweeney said that most guests were experienced in giving interviews to television, and being interviewed in front of a blue screen did not affect them.

He said that his role in the magazine was to gather content that would make it popular, and in doing so he tried to tap into popular culture icons established in traditional media and try to win a share of their audience. Similar to Marvin's concept, he opted for familiar references, in this case popular culture. For instance, he said: "Because it was hugely popular, we tried to get the Fair City⁵ people into the magazine and they would bring their audience" (Sweeney, *Enter*, 2002). He was conscious of the need to portray the magazine as a general entertainment artefact rather than a specialised, technological one. He said: "My basic direction was to make it popular...I was afraid of it becoming a bit too technical, it would intimidate people" (Sweeney, *Enter*, 2002).

One of the problems with the content was that the CD-ROM could not handle movement easily. Sweeney said that expressive people, such as the musician David

⁵ Fair City was a popular soap opera on RTE television.

Gray, were difficult to film because they moved their hands and arms as part of the rhythms of their speech. Also, some of the stand-up comedians were restricted, because the Irish *Enter* could not handle stand-up, walkabout shots. (The production team behind the British edition of *Enter* overcame this problem.)

The findings of my quantitative study suggests that the majority of digital media content artefacts, produced by Irish start-up companies, are aimed at a niche market; for example, CD-ROMs on a topic of niche interest, such as the CD-ROM on the *Book of Kells* or *The Cathach* manuscript. *Enter* aimed at a mainstream market. It tried to have something for everybody, even if it adhered to popular stereotypical assumptions on what constitutes male and female interests: sport for men, fashion for women, films for both. It is similar to the mainstream traditional media, trying to appeal to the largest audience possible. Most of the digital media artefacts in Ireland that have a wide audience appeal are usually developed by traditional media companies, such as the websites of The Irish Times Group and RTE, which draw on content produced by the traditional media activities of their respective organisations. Pure Communications was one of the few examples of an Irish digital media start-up company that tried to launch a mainstream digital media artefact, certainly in terms of offline content. Even though, in commercial terms, it failed to survive, it is important to note its innovative effort. The majority of innovations, especially in a newly emerging industry, prove unsuccessful. *Enter*, in both its guises, survived only a year and a half on the market. The majority of innovations fail to make even the market stage. There was an example of this within Pure Communications. It had planned to launch a CD-ROM artefact called *Enter Business*. It would have been an interactive business magazine similar in concept to the original *Enter*. The central concept was to be an office; the user would click on various areas of the office to access different kinds of content. This planned innovation, due to be released in January 2001, was never brought to market.

Each edition of *Enter* contained a substantial amount of content; it claimed to be the equivalent of 1,150 pages of a standard print magazine, although Pure Communications could present no evidence to support this claim. It seems an anomaly that the majority of content on *Enter* was audio and video, yet its content levels were measured in terms of the predominantly text-based magazine. If, as this thesis argues, *Enter* was a magazine by analogy only (see chapter two, section ten), the analogy was particularly imprecise and clumsy in this context. I tested three

editions of the CD-ROM from its first year of publication, to measure the amount of content in each edition and to arrive at an average. I examined an early edition, a middle edition and a late edition. After the early editions, the magazine began to achieve a remarkable level of consistency in the amount of content it contained, although the reason for this was that the producers were working under tight limits as to the amount of content they could fit on the CD-ROM. The first edition examined (vol 2) took 2 hours and 39 minutes to view, read and listen to all the content. The second edition (vol 7) took 3 hours exactly, while the third edition took 3 hours and 5 minutes. This was a simplistic, quantitative study that was intended only to give an indication of the amount of content in *Enter* and gave no insight into the quality or nature of the content (as a qualitative study would).

I took the same three editions and counted how many of the guests were Irish. Again, this was a crude quantitative measure, and took no account of the subjects people were actually interviewed about. But it gave an indication of how deeply the content of *Enter* was sunk into what the creators believed were Irish social and cultural preferences. (And how, more so than in a technological innovation, social and cultural values are reflected in a content innovation, and how this study had to be more sensitive to them than would have been normal in a traditional application of the systems of innovation concept.) For this short study, I defined an Irish guest as someone who either lived, worked or was born in Ireland. Volume two had 26 guests, of whom 25 were Irish and one was non-Irish. Volume seven had 32 guests, of whom 26 were Irish and six were non-Irish. The total for volume twelve was 36 guests, of whom 32 were Irish and four were non-Irish. This was a deliberate editorial policy, because *Enter* was framing its content to appeal to the perceived content preferences of the Irish domestic market. Niall Austin said: "Another aspect of the Internet is that it has led, in a sense, to an Americanisation of culture and we were very keen with *Enter* to have a close on 100 percent Irish content" (*The Irish Times*, 11/11/1999). He was speaking around the time of *Enter*'s launch in November 1999. His attitude changed within a year, when the company began preparing the British edition and began framing the content to suit perceived British content preferences. The first British edition of *Enter* had 23 guests, two of whom were Irish. The two Irish guests had a sufficient international profile to be recognisable to a British audience, and their interviews were based on content that was re-used from the original Irish editions of *Enter*.

The quantitative study in chapter five argues that content doesn't always travel well between nations and regions, due to language and cultural variances. Content is often culturally specific. The chapter also argues that this is a factor of development that is overlooked by technology-centred accounts of innovation, but it has real and profound implications for Irish digital media content producers producing Irish content. My quantitative study found that the few examples of Irish digital media content artefacts that have proved successful in foreign markets tend not to be based on content that is specifically rooted in Irish society or culture. Such trends influenced the business development of *Enter*, which prioritised the larger market over the smaller market when it began to move into the British digital media content market. This hinted, also, at the unpredictability of how *Enter* would evolve as a content innovation. It was originally intended as an Irish digital media content innovation, but market conditions made it more enticing for Pure Communications to convert it into a British digital media content innovation.

As well as text (print) and video (television) content, *Enter* also had radio content at its virtual radio centre location. One of the regular guests in the later Irish editions was the host of a phone-in show on a popular Dublin station. (According to the editor of the CD-ROM, the basic reason for including this section was to try to tap into the audience of the radio show.) When the user listened to a clip from the radio show, an icon of a radio lit up in the corner of the screen. It was a meshing of old and new media. While consuming old media content through a new media technology (the personal computer), the CD-ROM framed the content as emanating from an old media technology – a virtual radio set. Again, *Enter* was overt in its references to traditional media content and technologies.

The influence of the traditional media on *Enter* was apparent in many instances, but there were also differences, especially from the “magazine” that *Enter* claimed to be. With the slogan “watch, listen, control” for both the Irish and British editions, Pure Communications promoted the digital media magazine as a visual, sensory experience⁶. With traditional forms of media, such as television, the user watches and

⁶ Similar to the traits of interactivity and immersion, an emerging facet of digital media content was to create a sensation in the user. Again, this was most apparent in interactive games, where depending on the genre of the game, the intended sensations could be of fun, fear, or excitement. This was attendant on the user feeling a part of (or immersed in) the game. Non-digital media forms also tried to create sensations of immersion. Imax cinema, Andrew Darley noted, tried to create “a sensation of proximity and engulfment” for the viewer (2000: 32). It achieved this by having a screen so large that the viewer could not see its edges in their peripheral vision. The content of Imax cinemas were particularly

listens to the content, but generally consumes it in the linear manner that the creator intended. (Although if one were to conduct a semiotic study, it could be found that the viewer does not always interpret or decode the content in the ways the creator had intended.) With *Enter*, the CD-ROM claimed to be interactive, allowing the user control over the order in which the content was consumed. But it was a limited interactivity and control, which fell within certain parameters. The user was still guided in certain ways and had limited choices on offer. As Martin Reiser argued when writing about digital media games, the interactivity offers only “the illusion of control” (Rieser, 1997, cited in Kerr, 2001). The user did not have the freedom to jump immediately between any two points in the city. They had, first, to go through the main Nighttown screen, into a location, and then into a specific interview room. With the ‘control’ element of the slogan, the creators were promoting *Enter* as a more active medium to consume than, say, television, when the viewer was generally passive. However, to qualify that statement, a consumer of traditional media content is not totally passive because they are subject to a number of thought processes in trying to make sense of the content (for example, the thought processes necessary to follow the storyline of a film). Also, with the slogan on issue eleven – the magazine that comes alive – *Enter*, again, was emphasising how it was more of a sensory experience. It seemed a contradiction that *Enter*, keen to define itself as a magazine, flagged itself with the slogan “watch, control, listen”, which omitted the one activity that was of fundamental importance to consuming the content of magazines: reading. This gave an indication of how *Enter* could be considered a magazine by analogy only, and how its attempts to define itself in terms of a traditional media form were often clumsy and imprecise.

7.5: The *Enter* website

The CD-ROM incarnation of *Enter* was viewed as the initial stage in the innovation’s development, with the long-term goal being, when broadband allowed, to transfer it entirely to the web. Pure Communications, in the intervening time, intended to build and accumulate competencies and infrastructures for the production of online content. It developed a website to complement the content on the CD-ROM. This was, partly,

designed to achieve sensations of movement, such as docu-films on mountain climbing. *Enter* tried, in particular, to create a sense of immersion in its city concept.

to begin phasing in the transition from being a CD-ROM artefact to being an online artefact: as network speeds increased, the company would have placed a greater volume of content online, and more ambitious forms of content such as interactive audio and video, until it was in a position to publish all of its content online. The website was also necessary to demonstrate to users that the web was an important element of the overall *Enter* content package. The company was trying, in the words of Linehan, to build “a loyal and satisfied customer base” which would continue to consume *Enter* content after the move online (Linehan, *Enter*, 2002). The early website was a tentative step towards increasing their familiarity with *Enter* content online. (However, the company would later leave its loyal customer base when it moved into the British market.)

Linehan and Austin believed the two platforms were complementary, rather than competitive, sources of content, which allowed them to take advantage of the relative strengths of online and offline platforms. The CD-ROM could load large amounts of video and audio content quickly while maintaining quality (download times would have been prohibitively long on the web and the quality would have been poor), whereas the web could handle ‘live data’. Content on the CD-ROM could not be updated once the disk was pressed, so the only way *Enter* could offer up-to-date information was by encouraging users to interact with the website. For example, in the film reviews section of *Enter* was an option to connect to the web to view up-to-date cinema listings on the website. The impression to the user was that to make full use of the content of one platform, you had to use the other.

The researcher monitored the website for a year prior to *Enter* being discontinued, and the content on it expanded greatly over that period. It delivered content that was generally not found on the CD-ROM, or expanded on the CD-ROM material. For example, many of the video interviews on the CD-ROM were continued in expanded text form on the Internet. In August 2000, the company claimed to be the first to have launched an interactive online TV station in Ireland (*The Sunday Business Post*, 13 August 2000). This was the first move towards publishing audio and video content online, and as such, it representative a tentative, small scale experiment for what was intended to be a more comprehensive innovation at a later stage. The online TV station encountered the very problems that Austin and Linehan had tried to avoid by publishing on CD-ROM: download times were long, especially for people using domestic Internet connections, and the sound and picture quality was poor. One of the

strategies for the CD-ROM was to try to tap into the audiences of programmes or personalities established in traditional media, and Pure Communications repeated the strategy for the online TV station. The main programme was hosted by RTE presenter Dave Fanning, who had a large following among teenagers and young adults (*Enter's* target audience) for his radio and television shows. The online TV station was another attempt to frame the new media artefact in terms of the traditional media, to give users some degree of familiarity. The content was downloaded via streaming technology, and it contained the usual elements of an entertainment television programme, such as celebrity interviews, reviews and performances. It was a spurious claim by Pure to describe it as a television station, as it consisted of only three to four programmes, updated each month to coincide with the release of the *Enter* CD-ROM.

The online TV station provided a typical example of the language that was used by actors within *Enter*: they used hyped, technologically determinist language such as “*Enter* TV will revolutionise the way people watch television” (a quote attributed to Niall Austin on the *Enter* website). They seemed to have the pioneering, gung-ho attitude and promotional rhetoric of many technological determinists, of riding the wave of technology. In a *Sunday Business Post* article (13 August 2000), Niall Austin was quoted as saying: “TV in Ireland will never be the same again.” His approach to digital media seemed conceptually inconsistent and confused – that quote was pure technological determinism, yet the website claimed that *Enter* emphasised the content, not the technology, which would be closer to the social shaping approach. And while always emphasising that what they were producing was new, they framed it in the language of the old. And as with most revolutionary technological determinist claims, they did not come to pass: television in Ireland was largely the same after *Enter* TV.

The website was closer in structure than the CD-ROM to a magazine. (The website contained an index and sections; however, it was still “a magazine by analogy”). The sections of the *Enter* website were as follows: home, regulars, guests, features, music, interact, shop. Each section contained sub-sections. For example, on the home page were sub-sections such as listings, games, Online TV, Movies, Links and Lotto.

The CD-ROM's failure undercut plans to build the website as a comprehensive source of online audio and video content. The website remained online for five months after the final issue of *Enter* was published (it was taken offline in late October 2001), and continued to receive hits for most of this period. The company

was reassessing its content strategy, and investigating a possible re-launch of *Enter*. But, at the time of my interviews in January 2002, it seemed most likely that any future artefact would remain, primarily, CD-ROM based. The broadband network was not yet in place to deliver audio and video content to the same quality as the CD-ROM. Also, the initial inclination of the company was that a future *Enter* would have a different tone – it would not be a general arts and entertainment artefact. This, combined with a lengthy absence from the marketplace, meant Pure Communications would again have to start the process of building a “loyal and satisfied customer base” to follow it online.

7.6: *Enter* as an offensive innovator and the move into the British market

Pure Communications continually emphasised how it had produced Ireland’s and, later, Britain’s first interactive digital media magazine on CD-ROM. However, despite fashioning itself as an offensive innovator, the company witnessed no emergence of direct competitors, and so never had to assume the position of trying to protect market share. The literature review on systems of innovation holds that successful innovations usually give rise to defensive innovations, as actors within the system try to claim some of the ground created by the successful innovation. The lack of defensive innovators of *Enter* was linked to its commercial failure in the market, especially in the British market. The content innovation was launched at a time when wider conditions in the system of innovation were less favourable towards entrepreneurs and companies taking risks, because the technology sector was beginning to slowdown after a sustained period of boom.

The company framed the CD-ROM as a magazine, it was sold alongside magazines in newsagents, and magazines were the closest it had to direct competition. (The company intended to keep the magazine analogy even if the artefact had transferred online. Their reasoning was that they could describe it as a magazine in the same way that television had ‘magazine’ programmes.) However, the company had been expecting another, similar CD-ROM magazine to emerge as competition, and were surprised when one didn’t. Linehan said he and Austin, in the early planning stage, were fearful that someone would beat them to market, and during the seventeen issue life of the artefact, they were monitoring the market, waiting for a competitor to emerge. He tried to explain the lack of defensive innovators by suggesting that other

companies believed they couldn't compete with *Enter* in terms of content and production quality. He also made a claim that went against the orthodoxy of innovation studies theory – that a lack of defensive innovations was one of the reasons behind the failure of the original content innovation. He claimed that if other similar artefacts had come on the market, it would have created a distinct genre in the marketplace and would have allowed *Enter* to reach a wider audience. Throughout the life of the artefact, the company had difficulties explaining to advertisers, interviewees and the public what exactly *Enter* was, and this undermined its ability to reach an audience. He reasoned that, with more artefacts on the market, a market segment would have been created, which would have enabled the artefact to achieve a deeper market penetration. This is an indication of the difficulty of successfully introducing a new innovation. Unless it readily falls into one of the established market segments, it is difficult to define a market for it (and goes against technology-push arguments that innovations create markets). *Enter* was classified in a traditional market segment because it had no distinct segment of its own to fall into. The CD-ROM was stocked with magazines in newsagents, and Linehan claimed that the CD-ROM never truly distinguished itself from print magazines in the view of the public.

The company viewed itself as an offensive innovator in entering the British market when it did, before the large print magazine publishing houses began producing similar artefacts. Again, like the Irish launch, they singled out traditional print publishers as their potential innovative competitors, but the expected competition never emerged. Niall Austin said: “The likes of EMAP and IPC [British magazine publishers] are professional but also conservative and would be slow to introduce anything like this” (www.enter.ie/enterweb/regulars/new.cfm, 06/03/2001).

Despite the level of venture capital invested in the project and the confidence within the company that the experience of producing the original Irish *Enter* would make the transition to the British market a smoother and successful task, the British edition lasted for only two issues. Before the UK launch, Nail Austin, said: “The UK market is very competitive, but there is a capacity to succeed within it” (www.enter.ie/enterweb/regulars/new.cfm, 06/03/2001). The competitiveness of the market proved to be the main reason for the failure. The UK *Enter* was costlier than the Irish one to produce, and according to Irish editor Ken Sweeney, it got

“swamped” in the bigger market by rival publications from the print magazine industry.

The impetus behind the move was the belief that, based on its experience of establishing a moderately profitable digital media content artefact in Ireland, Pure Communications could take the concept to the Britain. The market there was larger and carried potentially greater risks, but offered the potential of greater rewards if the innovation proved successful. The company commissioned a London-based market research firm to gauge how receptive the British market would be to an artefact such as *Enter*. The firm reported back that a British version of the Irish *Enter* would not work in the new market. Ireland, being a smaller country, was more open to informal networks of contacts being used to secure interviews (content), and this would not be so in the larger, more formally structured publicity organisations in Britain. The CD-ROM might not be able to secure as many ‘names’ as the Irish edition had. Although Pure Communications tried to make the original CD-ROM appeal to both males and females, it was bought mostly by males. Roisin Carroll, technical designer on the Irish *Enter* and responsible for gathering content for the CD-ROM’s fashion section, said: “I think boys would buy it mostly. I am interested in technical stuff, but I’d never watch a CD-ROM, so I’m not really sure. I did the fashion shows, and I felt there was no girls buying it, and I know the boys didn’t watch it [the fashion section]” (Carroll, interview, 2002). The marketing and promotion of the original *Enter* was gender neutral, but the marketing of the British one was, on the advice of market research, aimed specifically at males. A constant task of the original production team was explaining that using the CD-ROM required no deep technical knowledge. In the experience of Pure Communications, males did not understand the concept of *Enter* any better or quicker than females, but males were more likely to experiment with it and grow familiar through use, because they tended to have a greater interest in computer and technical matters. The fact that the British edition, essentially, dropped women from its audience raised questions about the gendering of digital media content: that males were perceived as being more receptive to digital media, both as a technological and content artefact. (Cynthia Cockburn (in Silverstone and Hirsch, 1992) has conducted valuable work on the relative technological competencies of males and females, and how this has affected usage.) This could have implications for future digital media content production and for how women will consume digital media content, but such issues are outside the scope of this thesis. However, a number

of important studies have been conducted on the genderisation of ICT technologies and content in favour of males, such as Spilker and Sørensen (2000)⁷. *Enter*, in this context, provided an example of a digital media content artefact that tried, initially, to appeal to both sexes, but eventually re-shaped itself to appeal more to males.

Market research indicated that the same pattern of males dominating the audience could be expected to emerge in Britain. However, in the larger British market, there was less pressure to create an artefact with general appeal. In the Irish market, a special interest audience would not have been large enough to sustain the CD-ROM. However, in the British market, a special interest audience could, potentially, be large enough to sustain it. The market research indicated that men's lifestyle magazines offered the greatest potential to establish a version of *Enter* in the British market, because the print magazines were purchased mostly by young males, the very grouping that had purchased the original artefact on the Irish market.

Investment in the British edition was heavy, and its collapse was quick. Pure Communications didn't have the necessary financial resources to subsidise a loss-making innovation while it tried to establish itself in the market. Two editions of the CD-ROM were published; a third was put together, but never released.

As an isolated occurrence, it was an indication of the company's ambition that, after enjoying a degree of success with its initial innovation, it tried to move into a larger market where the potential rewards were greater. However, when viewed through a systems of innovation perspective, it is worrying that *Enter*, as a source of Irish digital media content, was lost to the British content market in such a fashion. When set against the findings of chapter five – that digital media content start-up companies are less likely than companies in other industries to go beyond the limited domestic market – Pure Communications bucked the trend by making a concerted effort to bring its innovation to a foreign market. Commentators such as Vivien Walsh argue that innovative firms within small systems of innovation are characterised by a struggle to break out of the limited domestic market. The findings of my study

⁷ Spilker and Sørensen's work focused on the production of a digital media content artefact that was aimed specifically at a female audience. The CD-ROM, called *JenteROM*, was aimed at girls aged between fifteen and thirty. The producers of the CD-ROM believed digital media as a technology and content form was gendered in favour of males. *JenteROM* represented a deliberate attempt to inscribe feminine attributes into the technology and content to reach a female audience. The attributes were based on what the producers believed were feminine characteristics, and included calmness, convenience and co-operation. The distribution system of *JenteROM* and *Enter* differed. *Enter* was sold as an individual artefact; *JenteROM* was bundled with a print magazine that was bought mostly by women in the fifteen to thirty years age bracket.

suggest that statement isn't as applicable to Irish digital media content companies, which tend to produce for the Irish market and receive commissions for work from Irish clients. This relative isolation from the world economy seems to have the effect of blunting the innovative edge of Irish digital media content creators, who often engage in imitative innovations of artefacts that larger foreign digital media companies do not produce or localise for the small Irish market. However, *Enter* was an exception to this general trend, even if ultimately it failed to successfully move beyond the domestic market. Pure Communications, in this instance, provides a specific example of general problems facing the Irish digital media content industry: that Irish content tend not to sell well in foreign markets, the cost of adapting a company's core content innovation is high, and the risk of failure in the new market is even higher.

The small size of the Irish market makes the larger UK market more attractive. Finance to fund innovation and expansion is crucial within any system of innovation. Pure Communications overcame a problem undermining the innovative efforts of many Irish digital media content creators: acquiring the venture capital investment necessary to bring an innovation to a new market. As part of this process, the larger market assumed priority for Pure Communications. The company discontinued the Irish edition of *Enter* in February 2001, because the high cost of content creation and the finances of the company didn't allow it to produce separate Irish and British editions. On the launch of the British edition, a largely British produced and British content-orientated digital media artefact was being sold in Ireland, whereas prior to this, an Irish produced and Irish content-orientated digital media artefact was being sold on the Irish market. A characteristic of the system of innovation, in this case the small size of the domestic Irish market, had a decisive influence on the production and final form of the digital media artefact.

There was nothing radically new to the design of the British *Enter* – the central concept remained a virtual city, but a more futuristic city than Nighttown. Related content was still grouped together in locations in this futuristic city, so the British *Enter* could be regarded only as a process innovation to the overall concept of the artefact as a digital media magazine. And whereas *Enter* used to describe itself as Ireland's first interactive magazine, for the British market it changed this claim to: "The UK's first interactive magazine." It is interesting to note that although *Enter* was almost a year and a half old at this stage, and attempting to establish itself in a

different market, it still defined itself in terms of a traditional media content form – the magazine – in order to fashion itself as an object for consumption.

The Guardian newspaper noted that the launch of *Enter* as a digital media men's lifestyle artefact followed a "dismal" set of audited circulation figures for the men's lifestyle print magazine industry in Britain, with for example *Esquire's* circulation falling by 39% in the preceding year (*The Guardian*, 20 February 2001). So overtly did the British *Enter* define itself in terms of the print media that *The Guardian* linked its chances of success to trends in the print magazine industry.

The British edition was viewed by the Irish production team as being technically superior to the Irish one, but inferior as regards content. (It had less content which allowed it to look better than the Irish version.) One of the technical limitations that the British magazine overcame was that it could accommodate movement more easily – because it contained less content, and more memory was left free on the CD-ROM, the compression of video footage was less severe, and therefore the picture quality was higher. Also, when filming against the blue screen, it could have people standing up and walking around, which was a technical limitation that the Irish edition did not overcome.

The failure of the British edition had significant effects on the company. It was held responsible for shelving production of the Irish edition. It drained the finances of the company and forced it to restructure the content strand of the business, which essentially resulted in a withdrawal from the generation of original digital media content. It was revenue from the advertising and marketing strand of the company that kept Pure Communications in existence.

7.7: Content creation competencies employed in the production of *Enter*

This thesis argues that digital media is at an early stage of its emergence as a content form and has borrowed production techniques and competencies from traditional media forms. However, digital media is beginning to adapt these techniques to suit its own format and develop new techniques of its own. Such was the case with *Enter*, which in its presentation of audio, video and text content borrowed techniques from television, radio and print media, but had to adapt these techniques.

For recording of its video interviews with guests, *Enter* used traditional television camera shots, the film technique of shooting against a blue screen and superimposing

a background later, and it used cut-edits for interviews with guests, to string quotes together to allow guests to make points coherently. That technique was often used in radio. If an interviewee spoke three sentences, but the middle sentence was not relevant to the subject of the interview, the radio journalist could cut it out and run the interview as if the third sentence had been spoken naturally after the first. This is a common radio technique, permissible as long as the edit does not distort the interviewee's meaning. It is also a technique used in television, but because television shows footage of the person speaking, the edit becomes more difficult to disguise. If a second or two of interview were cut, the interviewee's body position and facial expression would change dramatically and unnaturally. For example, there could be a dramatic jump in a hand movement while a guest is speaking. In television, the following technique has emerged to disguise the edits: at the point of the cut, the shot moves to background footage or to the interviewer, while the interviewee's voice continues to be heard. The voice cut can be made here, while the screen isn't showing the speaker, and so a careful voice edit can create the impression that the person had continued speaking without any alteration. In this way, the edit appears seamless. The shot can, then, turn back to the interviewee, who will be shown speaking normally. This is a common technique for television news interviews and interviews for entertainment programmes.

This traditional television technique did not work well on *Enter*, because the format of the interviews did not allow it to disguise the edits. The camera remained focused on the interviewee all the time (the interviewer was never shown). Because the design format chosen for the interview allowed no facility to move the interviewee out of the shot when an edit was made, a jump in the interviewee's facial expression and body position was apparent at the point of the edit. After the first two editions of *Enter*, it slowly began to phase out cut-edits as a technique. Because the creators were not able to seamlessly edit a quote which had strayed off the point, they tended to end quotes quicker. Shorter quotes meant guests had less room to develop points, and most quotes were reduced to sound-bytes. It was an instance of *Enter* sacrificing content for aesthetics, or substance for style – the interviews looked more polished, but they were shorter and the guests were given less time to speak. This reduced the interviewee's ability to critically engage in-depth with the topic they were discussing. The fuller text transcripts available on the website showed that guests had often made more detailed and cogent points than were presented on the CD-ROM. However, in

keeping with the general tone of entertainment media, *Enter* tended not to be critical of guests (whose co-operation it required to make the artefact appealing to consumers). The interviews tended to be laudatory, and there was little critical analysis of people's work. Often, artists, musicians and writers were allowed to showcase their work without criticism.

7.8: A traditional business model for a new media artefact

Pure Communications claimed that, at its peak, the Irish edition had achieved sales of 20,000 copies per issue, and the company was moderately profitable (*Ireland on Sunday*, 5 November 2000). However, these circulation figures were not presented as being independently audited, and the company offered no details on its moderate profitability. As argued elsewhere in this thesis, digital media as a content form is emerging, and so too are the business models for generating revenue from digital media content. *Enter* adopted a traditional print media model to generate revenue from its artefact – a combination of cover-price paid by the consumer at newsagents, and revenue from advertisements on the CD-ROM. This model is dependent, crucially, on circulation figures. The higher the circulation figures, the higher the level of revenue generated from cover-price. High circulation also allows a company to charge higher rates to advertisers, for delivering to them a larger audience. This, however, was not to be the long-term business model, or the one which the company believed would ultimately bring most financial return to *Enter*. Once the artefact had transferred to the web, the company would have begun charging subscriptions fees for access to the content, while at the same time continuing to receive revenue from advertising. Subscriptions fees were characteristic of many commercial websites in the late 1990s. As a business model it was largely abandoned, because not enough users were willing to pay the fees, and low traffic figures prevented websites from charging high rates to advertisers. A model emerged that allowed free access to websites, which increased traffic rates and, in turn, the rates that could be charged to advertisers. However, only a small minority of commercial websites were able to survive on advertising revenue alone, because of the high costs involved in the production of content. (In 2001, my research indicated that many commercial websites were revisiting the model of subscription fees.) The situation was exacerbated by the economic slowdown that emerged in the United States and most of

Europe in 2001 and arrived in Ireland in 2002. A COMTEC study, in which I was engaged as a researcher, monitored a wide spread of digital media industry publications in 2000 and 2001, to note the general trends that were emerging. The results of the study suggest that, as the economic slowdown hit and companies were reducing their advertising budgets, the monies allocated to online advertising were the first to be cut (COMTEC, 2002). Television, which is regarded as the most important advertising medium, especially in America, was the last to experience advertising cuts. Advertising revenue, which in boom times had generally not been sufficient to sustain websites, declined to the point where digital media content ventures were forced to consider alternative strategies to generate revenue. Part of this process was to revisit strategies that had failed in the past, in the hope that they could be more successfully adapted or would work in the current context of the Internet, which is at a more mature stage of development than it was three or four years ago. Part of the thinking underlying the return to the subscription model is that online payments are more secure than they were in the late 1990s, and online transactions, such as the purchase of goods through Amazon.com, have become a common experience for many web users. This, many companies believe, will make web users amenable to paying subscription charges. However, the COMTEC study suggests that, globally, the industry is still generally at a discussion stage over revisiting this model, and there are as yet no indicators as to the likelihood of it succeeding a second time around. Pure Communications had the intention of building *Enter* as a brand of content that would attract a loyal consumer base, which would then follow it online and be willing to pay subscription charges for access. However, this intention was contradicted by the company's later actions, when it abandoned its consumer base in Ireland to move into the British market.

As outlined earlier, the design of *Enter* was influenced crucially by the need to integrate a high level of advertising into the artefact. The company had difficulty explaining the concept of the CD-ROM magazine to advertisers. Often Ben Linehan would have to present a mock-up sketch of a location or a room to a potential advertiser before they would commit. Pure Communications had to develop a different system for charging advertisers. Their format wasn't conducive to using the systems employed in traditional media: they couldn't charge for airtime, as in television and radio, and they couldn't use the rate card system employed in print (which measured circulation against advertising space on a page). Instead, they

developed the system of charging advertisers a fee to sponsor a location in the city. Pure Communications stressed to advertisers that, although *Enter's* audience was not large, it was concentrated in a particular market. Similarly, in the print media, *The Sunday Business Post* has a relatively small circulation but charges high rates to advertisers, because the majority of its readers fall into the ABC1 category, which traditionally has the highest purchasing power. The market research for *Enter* indicated that its audience was adolescents/young males who traditionally would have a reasonable amount of disposable income and would have bought the consumer, lifestyle products advertised on the CD-ROM.

One of the limitations of *Enter's* revenue model was that, during the fifteen issues of the Irish edition, it was dependent on a small, core group of advertisers: Heineken, Mars, Toyota, Tia Maria. The company added only a small number of new advertisers as the editions progressed – ESB, HB ice cream and Jameson Whiskey. (Advertising was won either through the personal contacts of Linehan and Austin or cold calling clients.) Advertising provided another example of how *Enter* drew on traditional media techniques and content; the most prominent advertisements, such as for Heineken, were simply advertisement footage taken from television and run continuously on a small display in the centre of the PC screen. With the transition to the British market, there was significantly less advertising on the CD-ROM: it lost many of the exclusive Irish market advertisers that stuck with it during the Irish *Enter*, such as ESB, Network 2, and Bus Eireann, but it added no new advertisers from the British market. It ceased production after the second issue, which wasn't enough time to build up an advertising client base in the United Kingdom. (A factor here was that Linehan and Austin did not have the same number of personal contacts with advertisers in Britain as they had in Ireland.)

Pure Communications did not have the cushion of profitable, non-digital media activities to absorb financial losses incurred by its digital media activities. It, therefore, had less time, freedom and flexibility to experiment with business models until it developed a successful one. It needed a successful model quickly, to produce a return on the investment to which it had committed its financial resources.

7.9: Conclusion

The aim of this chapter is to provide a qualitative study of an Irish digital media content innovation produced by a start-up digital media content company. This allows me to discuss in a grounded manner some of the more abstract theoretical concepts and trends analysed in the literature review chapters. The *Enter* case-study provides a valuable opportunity to examine how an individual digital media content company conformed to or differed from the general trends in the industry, as outlined in the quantitative study in chapter five.

Enter proved to be an unsuccessful innovation, surviving only seventeen months after its launch in September 1999. However, it demonstrated a number of important innovations which are noted in this chapter. The case-study demonstrates how *Enter* evolved as a content innovation, undergoing process innovations to the central concept, and adapting traditional content creation techniques to better suit the requirements of the digital media format. It also shows how other actors within the system of innovation acted as brakes on or accelerators to *Enter's* development as a content innovation, and macro, meso and micro influences on it. Macro influences included Irish social and cultural values, which were reflected in the artefact's content, and the small size of the domestic market. Meso influences include the importance of venture capitalists and advertisers to the expansion and viability of the artefact, and the restrictions imposed on it by the technological delivery infrastructures. Micro-level influences and dynamics within the organisation included the editorial decisions of the production team and the design direction taken by the two creators. The accumulation of knowledge, competencies and infrastructures was less apparent in Pure Communications than in *Ireland.com*. Pure didn't gradually build up its knowledge, competencies and infrastructures as its content innovation developed and matured. As a start-up the company put them in place at the beginning and didn't expand on them significantly in the artefact's seventeen month span (although the company did establish a similar set-up in London for the British edition). *Enter* was subject only to minor, process innovations, and so didn't expand greatly on the established knowledge, competencies and infrastructures of the organisation. However, the accumulated knowledge did assist the British editorial team in improving certain aspects of technical production, such as the ability to have walkabout guests, and did as is suggested by Lundvall's interactive learning model.

The organisational structure conformed to that of the other qualitative case-studies – small and flexible, with an emphasis on individual creativity, and closer to the organic model than the mechanistic of organisational theorising. As an actor within an industrial system of innovation, Pure Communications was more self-contained than *Ireland.com* or Rondonondo (see next chapter). The competencies and infrastructures it sought most from an external actor came from The Yard, which recorded and compressed much of its audio and video footage. Apart from this, the main external interactions were with venture capitalists and advertisers. The company did not receive institutional support from agencies such as Enterprise Ireland.

Paschal Preston (cited in Kerr, 2001) offers the following as a list of economic characteristics for media and cultural industries: high first copy costs and relatively low reproduction costs, high risk factor and low chance of success, the importance of distribution, advertising and a relatively large home market. Such characteristics were common to *Enter*, and in general terms, the experience of Pure Communications was similar to that of many actors in the media industry (both in traditional media and digital media industries). However, in an Irish context, Pure Communications was unusual; it was a rare example of an Irish start-up company that tried to launch a mainstream digital media content artefact in the domestic market and then secured sufficient venture capital to attempt to establish it in a foreign market. Preston's list of economic characteristics applied to *Enter* as follows: the pressing and reproduction of CD-ROMs was relatively inexpensive after the content had been amassed. Bringing such an innovation to market carried a high-risk factor, and its withdrawal from the market was testimony to the difficulty of succeeding. Its development was impeded by a small domestic market, and so it tried to break into a larger foreign market. When doing so, it tried to re-model itself (in the tone of its content) as an indigenous British digital media artefact. (The British CD-ROM, and the accompanying website, never mentioned that *Enter* originated in Ireland.) Its distribution was through newsagents' (the traditional distribution system of print media), but failure to generate sufficient advertising revenue, particularly after the shift to the British market, was a factor in its withdrawal from the market.

Pure Communications had tentative plans to re-launch the *Enter* title in 2003 or 2004. It intended to draw upon its initial experience of developing a digital media content innovation to produce a more robust and successful innovation the second time around. For a number of reasons, *Enter* failed as an innovation the first time.

This thesis argues that the processes of innovation are risk-laden and unpredictable; there are no certainties and, therefore, no guarantees that *Enter* would be a successful innovation in any future form. The downturn in the technology sector, and the global economy generally, may affect the company's ability to bring a new digital media content innovation to market. However, Pure Communications and *Enter* demonstrated a number of important innovations in the context of the Irish digital media content industry, and it is important for this thesis to note such innovative effort.

Chapter 8: Case-study: Rondonondo

Chapter 8: Case-study: Rondonondo

8.0: Overview

This case-study, Rondonondo, was established as a business unit within Eircom, which is Ireland's largest telecommunications company. Eircom owns and operates the means of delivery for digital media content in Ireland – the telephone network. Like many telecommunications companies around the world in the late 1990s, it believed it would not be exploiting the full commercial potential of its own technological infrastructure if it settled for being just a deliverer of other companies' content. It believed it had also to become a producer of content. In the mid to late-1990s, content was regarded as offering huge potential for profit, and Eircom did not want to watch as other companies made large profits from content delivered across its network.

Eircom built up a diverse portfolio of investments in the digital media content industry, either establishing ventures in partnership with other companies, or buying into previously established ventures. Rondonondo, however, was the company's most prominent and concerted attempt to become a leading actor in the industry. As a business unit within Eircom, it was well-financed, had skilled staff, and access to high-end production technology and delivery systems. Yet it closed within two years, and in so doing, it fell into a strong global trend of content innovators emerging from technology companies and failing.

The aims of this case-study are to examine the processes of innovation within Rondonondo and the influences on them: organisational, technical and social. It also traces the accumulation of competencies, knowledge and infrastructures within the organisation.

8.1: Methodology and justification for case-study

Although, for reasons outlined earlier, the quantitative study of the emerging industry focuses on core companies, I believe the qualitative case-studies should contain a sample from each of the main types of companies emerging from the industry, to compare their relative processes of innovation and the influences on them, their strengths, weaknesses, successes and failures. That is not to argue that the case-studies selected are representative of all similar companies within the industry, or that general conclusions can be drawn from these particular examples, but that they will provide a useful insight into how companies of differing origins operate within the system of innovation for the content industry. I believe that examining the different types of companies will give a deeper understanding of the processes of innovation in different contexts, and of the factors that contribute to successful and unsuccessful content innovation.

As outlined in the methodology chapter, I began to monitor the development of my case-study companies in mid-2000, while the thesis was still in the literature review phase. Rondonondo, however, closed in June 2001, having begun winding down its operations in April of the same year. In an emerging industry, it is important to learn not only from what is successful but also from what is not. Failure is inherent in any system of innovation, and can often give insights to understanding better the processes of innovation within an emerging industry. Rondonondo was the most prominent Irish example of a technology company setting up a dedicated digital media content entity, and as such it warranted attention. Also, in Ireland, Eircom is the most significant actor in maintaining the technological infrastructure for delivery of digital media content – the telephone network. Through this, it exerts a strong influence on the emergence of the industry, with regard to the speed and cost of delivery and consumption of content over the Internet. All of my case-studies, at some stage, mentioned the restrictions imposed on content development by the limitations of the delivery infrastructure.

Circumstances forced this case-study to be retrospective. The weaknesses of such studies have been outlined elsewhere, but in the case of a failed innovator, such an approach is unavoidable. The methodology is based on document analysis – I catalogued elements of the company's website before it was taken offline – secondary

sources, such as media reports on Rondonondo, and original, in-depth interviews with staff who worked in key areas of the unit.

8.2: Background to Eircom and its involvement in the digital media content industry

Telecom Eireann¹ came into existence as the sole telephone operator in Ireland on 1 January 1984. Since the establishment of the Free State in 1922, the postal and telephone services in Ireland had been under the control of the Department of Posts and Telegraphs. Concerns in the late-1970s over the efficiency of both services led to a review of the activities of the department. The Dargan Report, published in 1979, recommended that the running of the services be transferred to separate statutory bodies. An Post, to run the postal service, and Telecom Eireann were established as semi-state bodies under the 1983 Postal and Telecommunications Act.

Telecom Eireann made significant improvements to the telephone service, which were acknowledged by the Minister for Communications, Ray Burke, in May 1988 (Flynn, 1998). He said the improved telephone service was a factor in the IDA's success in attracting foreign firms to the country. By 1999, the telecommunications infrastructure had become an even more important factor, to service the needs of high-end technology and digital media companies, although the slow roll-out of a broadband network was viewed as potentially diminishing Ireland's attractiveness as a location for investment (ISI, 1996); (NSD, 1997); (ISA, 1998); (Forfas, 1998); (Forfas, 1999); (Forfas, 2002).

The Act establishing Telecom Eireann placed on the company an obligation to serve the "social needs of the country for efficient telecommunications services". But, as Roddy Flynn noted (1998), social obligations were never enforced with any great rigour and the company was allowed to follow a commercial agenda from the outset. As early as 1988, the then chairman, Michael Smurfit, was describing privatisation as a matter of when, not if (Flynn, 1998: 260 – 261). The company was privatised in 1999. Irish politics since the 1980s have come under the increasing influence of neo-liberal economic policies, which favour a rolling back of state involvement in the economy. Semi-state bodies such as Aer Lingus, Aer Rianta, ESB and CIE have all, at

¹ Telecom Eireann changed its name to Eircom in 1999.

some time, been considered for privatisation. But, by 2002, Telecom Eireann was the only semi-state company to have been privatised.

It operated a monopoly in the Irish telecommunications market which began to be broken only in 1993, when Esat Telecom secured a licence to compete in the provision of long distance telephone services. Under European Union directives, the Irish telecommunications market had to be deregulated by 1998. One of the considerations influencing the decision to privatise Telecom Eireann was to allow it compete more freely in the new, open market. (In preparation for deregulation, the government appointed the country's first independent telecommunications regulator in 1997.) The statutory status of the company was such that a Dail vote was necessary to permit privatisation. The Postal and Telecommunications (Amendment) Bill 1998 was put before the Dail and approved in early 1999, which allowed the public offering of Telecom Eireann shares in July 1999.

The company changed its name to Eircom in September of the same year. At the time, it was trying to expand into foreign markets, including Britain, and wanted an international corporate identity. By 2002, it had retreated from foreign markets and was consolidating its business around the domestic market.

Eircom expanded beyond its core fixed-line telephony business in two directions: mobile telecommunications and digital media (content, applications, technology, delivery).

It established a mobile phone subsidiary, Eircell, in 1985. At a shareholders meeting in 2001, Eircell was separated from Eircom and sold to British company Vodafone (www.eircom.ie, viewed 15 May 2002).

In April 2001, declining revenues from the core telephony business forced a restructuring of the company. The chief executive officer, Alfie Kane, announced a reversal of company policy of the previous few years: instead of aggressive investment in digital media (technology, applications, content), the company would disengage almost totally from digital media and would not seek to invest in it in the future. He said Eircom was no longer willing to be a digital media "venture capitalist" (*The Irish Times*, 10 April 2001). Future investment, he stated, would be targeted at projects that would increase the profitability of the core fixed-line business. The company had built up a wide-ranging portfolio of investment in digital media ventures, but the majority of these had been failures, resulting in substantial financial losses. (Local Ireland, for example, closed owing Eircom euro5.7 million.) It closed

Randomondo, with the loss of 35 jobs, in June 2001. And it disengaged from a number of digital media projects it had invested in. It merged its two ISPs, Indigo and Eircom.net, into its fixed-line business in an attempt to reduce costs.

The company abandoned plans to offer a range of television and digital media content across a planned digital subscriber line (DSL) technology, and would instead concentrate on offering a high-speed Internet technology (Eircom high-speed). It also announced a delay to the roll-out of the DSL technology, until March 2002. It claimed that the reason behind the elimination of the television project was regulatory, because the telecommunications regulator, Etaine Doyle, had not granted it a licence for the transmission of television signals down telephone lines. Other telecommunications companies have considered the possibility of delivering content in this way. British company BT still had, in 2001, an active interest in delivering television content across its network, but industry analysts were sceptical about the costs involved and the upgrades required to the network to carry television signals (*New Media Markets*, 9 November 2001).

Eircom had placed a book value of euro125 million on its digital media assets, but revised the figure downwards in light of the closures, failed investments and restructuring. The restructuring programme reduced the number of people employed in digital media from 530 to 330.

(By 2002, all three qualitative case-studies for this thesis had repositioned themselves closer to their core competencies: Eircom to its fixed-line business; the Irish Times Group reduced investment in its online subsidiary when the core business encountered financial difficulties; and Pure Communications returned to the core competencies of its founders, advertising and marketing.)

Eircom's portfolio of digital media investments:

1: Randomondo: despite public perception, it was not a wholly owned subsidiary but a business unit within Eircom. It was launched in July 1999 and closed in June 2001.

2: Indigo Group: a wholly owned Internet service provider, which was integrated into the company's other ISP service, Eircom.net, under the restructuring plan.

3: Nua: this was the leading light among the early Irish digital media content companies. *Fortune* magazine in the United States named it as one of the top ten web development companies in the world. Eircom held a 20% stake when it closed in April 2001.

4: Local Ireland: Nua, and its chairman Gerry McGovern, was heavily involved in the Local Ireland project, which attempted to build a portal website of information on Ireland in general, and establish a network of websites maintained by local communities to provide information about their own areas. Eircom held an 86% stake in the project, and lost euro5.7 million when it closed.

5: Golden Pages: a web directory of Irish businesses, based on the print directory of the same name. Eircom owned 63% of it, which was later sold.

6: Accuris: originally a joint venture by Eircom and Dutch telecommunications company KPN. It was in 2002 wholly owned by Eircom. It provided telecommunications software solutions to fixed line and mobile phones, and to Internet service providers.

7: Flexicom: it provided card payment solutions. Eircom held a 30% stake, which was later sold.

8: Beacon Integrated Solutions: a consulting firm for business systems. Eircom owned a 49% stake in it.

9: Onemade: an online arts and crafts auction website, in which Eircom had a 20% share. It was based in the US, but planned to expand into Britain and Ireland. The expansion never happened, but Eircom would have had a 50% share in the British and Irish operation.

10: Broadcom: an information technology and telecommunications research company, in which Eircom had a 45% holding.

11: Viasec: provided Internet security solutions. Eircom had a 30% stake, and lost £3 million when it closed.

(Source: *The Sunday Business Post*, 21 January 2001)

8.3: Background to Rondonondo

Rondonondo was not Eircom's first involvement in the creation of digital media content, but it represented the culmination of the company's efforts to move from being a deliverer of content to also being a producer. Since 1994, Eircom had steadily added content strands to its ISP Eircom.net (or Telecom Internet, as it was known before the company changed its name). In July 1999, the same month the parent company was privatised, these content strands were separated from Eircom.net and were brought together in Rondonondo, a dedicated business unit that was to be the new media publishing division of Eircom. (Press reports, and even some official Eircom documentation, mistakenly referred to it as a wholly owned subsidiary.) Management for both Eircom and the newly formed Rondonondo outlined their intention to turn the business unit into one of the leading content producers in Ireland. The head of Rondonondo, Barry O'Neill, said: "This move is the culmination of three years of planning. Rondonondo will build brands and content that will transcend the limitations of print, tv and internet, leading to dynamic convergent titles, applicable to all media" (www.rondonondo.com/rondonondo-launch.html, viewed on 8 June 2000).

The original concept for Rondonondo was that it would develop content across a number of platforms, for both new media and old. The Internet was its main publishing outlet, but it also supplied content to mobile phones, and was developing content for interactive television. As part of the Fuse FM consortium, it applied – unsuccessfully – for a radio licence. It also planned to develop content for new media devices as they diffused into popular use. This model of multiple platform content has been employed by a number of companies, but the more successful of them have tended to emerge from a solid base in content creation, or have had a previously established presence in the traditional media – television or print – before they began spreading the delivery of content across multiple platforms. Sky Sports, in Britain, broadcasts its sports content across satellite and digital television, and refashions this content for delivery across its website and through WAP mobile phones and SMS text

messaging. *Ireland.com* follows a similar plan, by refashioning its core newspaper content for publication on the web. It also delivers news content across WAP and SMS. Both organisations have an established, branded content product from which to base their delivery to other platforms. Rondonondo had no such pedigree.

Rondonondo described itself as being “about the things people see and do with digital technology, not with the technology itself” (www.rondonondo.com, 8 June 2000). Despite this self-perception, it held a technology-driven vision of content creation. The company concentrated on installing high-end technology, an infrastructure on which to produce ambitious, sophisticated content. But its content strategy was often pinned on flawed determinist assumptions that have been critiqued elsewhere in the thesis. For example, Mark Tarbatt, sales and advertising manager, said: “To put it simply, Rondonondo is taking advantage of the rapid convergence of data and telecoms. Now comes the third dimension, which is media. *This convergence has created products that need to be filled with content*” (Author’s italics) (www.interactive-avenue.ie/intothenet/issue8/articles/digital_media.htm, viewed 21 January 2002). Publications manager Emma Kavanagh outlined the company’s strategy of “filling gaps” created by the new media technologies. The chief operations officer, Aoibheann Gibbons, noted the importance of installing an infrastructure capable of ‘driving’ the content production. She said: “You had people with soft IT skills endeavouring to create products that needed to be managed through traditional software development and management processes...not just people being creative together” (Gibbons, Rondonondo, 2002).

It would be unsafe to assume a general trend from two particular examples, but it is important to note the following. *Ireland.com*, which emerged from a traditional media company, has always been guided by people who have experience in media content creation, even if their background has been primarily in the traditional media. But Rondonondo, emerging from a technology company, appointed as its head Barry O’Neill, who had no previous experience in media content. His background lay in the technology of digital media. He said: “I have no creative background whatsoever. I am not an artist. I am not a designer. And I’m not a writer.” However, despite this, he claimed: “I know good writing when I see it. And I know what a good concept is when I see it” (*Dot.ie: Ireland on the Net*, June 2000: 21). This is a common trend among technology companies – the belief that they will have an intuitive knowledge and understanding of good content and content creation processes. Their relative

failure in the industry suggests they are assuming too much, and that content has proven harder to crack than they had anticipated. However, Eircom realised that content competencies themselves were not intuitive, and through Rondonondo, it implemented a strategy to identify the competencies – journalistic, production and technical – that were lacking within the organisation and to bring in people with the appropriate experience.

Similar to *Ireland.com*, Rondonondo was established because Eircom's management hierarchy believed that future revenues from the core business (fixed-line telephony) would diminish, and digital media content offered the potential to compensate. Mobile telecommunications were regarded as the main threat to the fixed-line business. (However, at the time, Eircom still owned a mobile subsidiary.) With this rationale for funding the Rondonondo venture, it is ironic that falling revenues from the core business persuaded Eircom management to close it. Eircom implemented cost cutting measures because it could no longer, through telephony revenues, afford to absorb the losses incurred by its various digital media ventures. In April of 2001, it announced a rationalisation and restructuring of its digital media interests. The following statement of closure was released on the Rondonondo website:

“(09.04.01) As you may be aware, Eircom issued a statement today regarding the future strategic direction for the company. As a result of this restructuring, Rondonondo is to discontinue all operations (with the exception of the Doras Directory) by June 30th 2001. All customers and suppliers are being notified of this decision and Rondonondo will enter a transition period whereby the team will work with customers and suppliers to ensure a smooth ‘winding down’ of operations.”

An early hypothesis when work began on this thesis in October 1999 was that technology companies, lacking a background and tradition in content creation, would be more likely to fail in the digital media content industry than traditional media companies. Industrial trends suggested it was more difficult to master the content creation competencies of digital media than the technical competencies. Traditional media companies, as seen in the qualitative study of *The Irish Times* and *Ireland.com*, have certain advantages: not only have they built up content competencies through

their core businesses, they also in many cases have an established brand of content. They go to the web with a reputation, such as *The New York Times* had. This hypothesis, three years on, holds up as being generally accurate, even if a trend has emerged for traditional media companies to also begin retreating from digital media content. This is partly because of economic circumstances not directly related to digital media. A general economic slowdown, especially in the technology sector, has led to declining advertising revenues across all media - print, television, radio and digital media. No traditional media company in Ireland that invested in digital media content had by 2002 made a profit from it, and in the drive to cut costs generally, digital media ventures are either being sacrificed or scaled down. RTE, in 2001, was projecting a loss of £20million unless cost cutting measures were implemented across all areas of its organisation. In tighter economic times, digital media was regarded as peripheral to the organisation's core responsibility as a public service broadcaster in television and radio. The budget for RTE's website was cut. A senior RTE online journalist, who wished to remain anonymous, said: "They're stripping the site of content, and concentrating only on the things that make money, such as text that they sell to DOL [Digifone Online, the website of a telecommunications company, which became 02 in 2001]. There's no public service agenda, and there's nothing imaginative being done." A number of RTE online journalists left the organisation because of the tightening of editorial projects; RTE was also seeking redundancies from a number of those who remained. The journalist believed that, with fewer people working on the website, it would be impossible to create original, imaginative content. He said that once the cost cuts had been implemented fully, the RTE website would consist purely of content that had been generated in other areas of the organisation, such as the newsroom, and for other media, television and radio. *Ireland.com* also reduced its staff and, consequently, its ability to generate original content for the website. The website was stripped of some of its ancillary websites, or they were updated with fresh content less frequently. It began to focus more on the core news competencies of *The Irish Times* and the breaking news service, and as a measure to reduce losses, moved to a subscription model for content and email services.

Similar to the situations at RTE Online and *Ireland.com*, Rondonondo's fortunes depended largely on those of the larger parent organisation. The climate at Eircom in 2001 - falling telephony revenues, falling shareprice and intense criticism from

members of the public who had invested in the company and lost money – did not favour it continuing to subsidise a loss-making venture that was peripheral to its core business. Publications manager Emma Kavanagh said: “Rondomondo was one of the higher profile Eircom subsidiaries – even the profile, the age, the type of person who worked there was completely different to anything Eircom had before. So in a way I think it was easier for them to get rid of us” (Kavanagh, Rondonondo, 2002). Chief operations officer Aoibheann Gibbons claimed that prominent people in Eircom’s higher management did not favour digital media in general, and content in particular, and pushed hard for the elimination of non-core activities.

However, according to a senior production employee, Rondonondo more than justified its continued existence, both in terms of the content innovations it was developing and the revenues it was generating. He said: “The main reason we’re gone is that they [Eircom] wanted to sell the company and we were a development centre, and on the books, we weren’t worth as much as the copper [the technology].” (This is another instance of how technology and applications are perceived as a safer investment than content.) Rondonondo’s innovative model was based on a mix of conservative content strands that would generate a steady income and more radical content innovations, which were more likely to fail but had potential to generate large revenues if they succeeded. Eircom established Rondonondo as a content development centre, but failed to appreciate that the development of content innovations is risk-laden – with more failures than successes – and time-consuming. Immediate returns are rare. Longevity was cited by the chief operations officer as fundamental to making content viable. She said that, on her appointment to Rondonondo six months after it was launched, she undertook a strategic review of the business, with the aim of developing a portfolio of content products that would mature over a number of years. Lundvall, writing about industrial innovation, claims: “Certain technology areas can only be developed into commercial success by agents who operate with a long-term perspective, while others might be easier to exploit with a short-term horizon” (Lundvall, 1998: 4). The publications manager also stressed the importance of being allowed time to let the content products mature and consolidate. She said: “The idea was always that it was a five year development plan, and I don’t know if they [Eircom] always fully understood everything we did...Eircom could understand the visible stuff that we did.” She added: “We were pitching, because Eircom didn’t really know what they wanted” (Kavanagh, Rondonondo, 2002). The

'visible stuff' Rondonondo produced was the more conservative content strands, mainly the publications. The more developmental innovations – which, as it was established as a development centre, should have been Rondonondo's core activity – remained hidden within the organisation and often did not translate into final (tangible) innovations. The publications manager said: "For the first six, maybe nine, months it was honeymoon to a certain extent. It was very much research and development. We were given free reign, and it was ideas, ideas, ideas, what can we do, how can we do it. We had this amazing stuff [technology], and we were given free reign creatively and implementation-wise as well" (Kavanagh, Rondonondo, 2002).

However, creative and implementation freedom applied only to projects that were approved by the business development team for further development, and projects had to be delivered within budget. All investment (in equipment, people, projects) was assessed and evaluated, and as time passed and Eircom's finances deteriorated, the evaluation of projects became, as a former employee said, "quite stringent". Budgets were an early difficulty for Rondonondo. Despite the launch publicity, and the promise of substantial financial backing, Rondonondo wasn't actually registered within the Eircom organisation for budgets. The chief operations officer said that negotiating with Eircom officials "took a lot of energy". She added: "Turning something like a publicly stated endorsement of a venture into actual cash within a corporation is a task" (Gibbons, Rondonondo, 2002). The budgets, when secured, were significant, but were allocated conservatively. She argued that the business unit didn't "burn" as much of Eircom's money as was publicly perceived. These negotiations also represented the juncture at which the majority of the interaction between the Eircom and Rondonondo organisations took place: the level of Eircom financial controllers and Rondonondo management.

In the early days of the company, former employees claimed that beyond broad, vague visions, they didn't really know what the purpose of the company was or what was expected of them by Eircom. The publications manager claimed that it wasn't until January 2001 that staff had a definite idea of what Rondonondo was and where its key interests in content production lay. But only three months later, April 2001, Eircom announced the decision to close it. Also, the decision to close it was taken by Eircom management, whose expertise lay in the technology of telecommunications and who had no direct involvement in content production at Rondonondo.

Despite Rondonondo's public pronouncements that it would deliver innovative content titles, development was conducted within quite conservative economic constraints. The chief operations officer, who negotiated budgets with Eircom and was influential in allocating them within Rondonondo, assessed project proposals on three base criteria: cost, viability, return.

This is consistent with the wider trend of companies espousing the radical innovative potential of ICTs, but marrying innovation to a conservative set of economic criteria (Preston, 2001). This echoes the attitude of the venture capital industry (see chapter five, section six), in which project proposals have to pass one basic test before they will be granted funding for further development – are they realistic? The production employee said: “You had financial controllers who were running a big company [Eircom], and they didn't care about nice colours [in this context, the interviewee meant content projects with limited commercial potential] – was it realistic?”

Rondonondo, once early funding difficulties had been settled, was granted an annual budget. Although Eircom allowed Rondonondo a high level of autonomy, the annual budget set the parameter in which the organisation functioned and development took place. Within the organisation, the business development team acted, financially, as a brake on or accelerator to innovation. (Again, important decisions about digital media content innovation were often taken by people who had little understanding of or experience in digital media content: overall control was divorced from production and experience.) Because of the costs involved in content production, project proposals were often granted or denied funding for further development on the basis of early demos and testers. After initial market research, a project would be allowed some development and demonstration time, but would have to justify itself to the business development team at an early stage. The production employee said: “If you had five or six people on the wages they were on, working on something for a couple of weeks, it soon added up.”

Unlike *Ireland.com* and Pure Communications, which concentrated on developing further a core content innovation, Rondonondo had numerous projects in production or development for numerous actors: itself, its parent organisation, on commission basis for external actors, and in co-production with external actors². It had a steady

² My interviewees were happy to talk about development projects that were known publicly and were visible, such as the online magazines and the E-TV project. However, because of confidentiality

income from advertising on its content websites, syndication of its news-service, and the hire of its studio, but the more radical innovations in development – the innovations regarded as offering the highest potential for profit – failed to ignite. Some of these projects were pure development, were never produced as final innovations and offered no return on development costs. Although not an exact match, it was a close equivalent to the R&D of an industrial innovator that never yields a final innovation (which would be the more traditional example from the systems of innovation literature).

According to the production employee, “Development was what could really hit [profitability].” He added: “We’d develop five or six things over five or six weeks. Two of them would get the go ahead. The others would be put away, and then in another six months we’d come back and do another version of it.” The revised version, of course, would not be guaranteed approval, and an approved project would not be guaranteed to turn a profit. This also shows how innovation at Rondonondo was not a linear process. It was spread over time, according to when resources (content, production, technical) were available and could be allocated to it. The brief for development was to take a project from the conceptual stage and turn it into a commercial reality. Each project had different needs, so development required the accumulation of competencies, knowledge and infrastructures (technical, production and content) that would be flexible enough to adapt. Pools of people with technical, production and content competencies were established. People were drawn from these and assigned to projects as required. One of the few solid ambitions Eircom held for Rondonondo was that it would create infrastructures to supply content (self-generated, commissioned and licenced) to its planned interactive television service. This project, despite the heavy development resources sunk into it at both Eircom and Rondonondo, never went beyond the conceptual and developmental stage, because Eircom failed to roll-out the necessary infrastructure to deliver it on a wider, public scale. Also, Eircom was not granted the necessary licences by the telecommunications regulator.

Tensions existed between Eircom management and Rondonondo management over the direction of projects. Rondonondo management regarded the unit as outward facing, capable of generating revenues in the external marketplace, whereas Eircom

agreements in their redundancy packages, they were less comfortable in giving specific details on in-house or privately commissioned projects.

wanted it to serve internal needs (such as the interactive television project). Justifying external deals to Eircom management was, according to the chief operations manager, a “struggle all the way through our genesis”. Eircom placed certain restrictions on external dealings: content could not be supplied to another telecommunications company, which in a small domestic marketplace narrowed the unit’s base of potential clients. Also, not all of the internal content needs of the overall Eircom organisation were serviced by Rdomondo. Eircell managed its content websites independently, although Rdomondo did supply content to its mobile WAP service. Like the public promise of budgets, Eircom’s private perception of Rdomondo was at odds with its public pronouncements that the unit was intended to become a leading producer of digital media content in Ireland. The chief operations officer said: “Outside seemed to be something that was marketed very strongly initially and then never delivered” (Gibbons, Rdomondo, 2002).

Many of the problems experienced by Rdomondo were similar to those in the digital media publishing division of Microsoft, another technology company that unsuccessfully tried to break into the digital media content industry in the early to mid-1990s. After mounting substantial losses, it too retreated to its core competencies, software applications development. But by 2002, it again had committed substantial investment to the content industry: it entered the games console market, as a producer of both hardware (the console) and content (interactive games). But early sales figures suggested the Microsoft X-Box console was struggling against the more popular Sony Playstation 2. Aphra Kerr found that Microsoft’s efforts to become a content creator were undermined by the core culture within the company, which understood software development but had a flawed, misdirected notion of what was required for content production (Kerr, 1999). Fred Moody, too, noted the clash of cultures between technology and content in Microsoft in the early-1990s, and how each side misunderstood and disregarded the other (Moody, 1996).

When establishing the unit, Eircom outlined its expectations of it in broad visions, with few specifics. One employee spoke of the company as being given an initial honeymoon period of six to nine months “to find out what it was”, where its key content interests lay, and how best to structure its organisation. In October 2000, fifteen months after it was launched, and following completion of the strategic review, Rdomondo announced it was restructuring its organisation around four business strands. Three of them were to develop and produce content, and the fourth was to

generate revenue from content. They were title publishing (*Muse, Pushie*), advertising sales (on its content websites), syndication services (to supply content to outside actors, such as the Internet search company Yahoo!), and digital studio production. (Similar to The Yard, Rondonondo had high-end video and audio production and post-production facilities, to fit with Eircom's early plans to position itself as a producer and deliverer of interactive television and broadband Internet content.) Rondonondo's chief executive officer, Barry O'Neill, said: "We have invested heavily in the infrastructure, the team and the technology, to evolve an organisation that is braced to capitalise on present, new and emerging mediums and platforms" (www.rondonondo.com/news_business_041000.html, viewed on 19 October 2000). The unit had, to this point, been accumulating competencies and knowledge, and building the infrastructures deemed necessary (such as equipping the studio) for fifteen months. In particular, the infrastructures were regarded as crucial, and an emphasis was placed on content delivery being "back-end driven". The unit invested heavily in a content management system, as did *Ireland.com*, to facilitate the processes it was establishing for content production across a number of platforms. The four strands were to produce the product portfolio that was regarded as necessary to stabilise Rondonondo as a long-term and flexible producer of digital media content.

8.3.1: Title publishing:

Rondonondo's most prominent external publications were online. Like the *Enter* CD-ROM artefact, they were new media artefacts that tried to frame themselves in the language of the old, as magazines. The difficulties of applying old media labels to new media artefacts were discussed in chapter seven. The editorial structure to produce the online magazines was similar to the conventional editorial structures of print magazines: weekly editorial meetings to discuss the forthcoming issue, with the editor assigning markings. Rondonondo employed only four journalists on contracts, and dipped into a pool of freelancers to produce most of the copy. After copy was submitted, it was sub-edited, re-written as deemed appropriate for the web, and posted live with the publication on a specific day each week.

Muse: *Muse* was launched in 1997 by Eircom.net, but was absorbed into Rondonondo in 1999. It was the most successful of Rondonondo's publications: as an online music magazine, it had a focused theme and an identifiable target audience. It also received the greatest promotion of the Rondonondo titles, with the *Muse* brand sponsoring music events and concerts, and kiosks being placed in music shops, which provided customers with free access to the magazine. It could also afford high-profile music writers, including John Kelly and Donal Dineen, who had established themselves in television and radio. Although *Muse* was not created by Rondonondo, it was the first of its titles to undergo a revamp, in October 1999. The redesigned magazine included a new look, a searchable archive, and audio clips from various artists.

Even though its editorial structure was traditional, *Muse* incorporated technology, especially in its design and publication, that was unfamiliar to the journalists. In the early months, they also had difficulty understanding the concept of an online magazine. The editor, Jim Carroll, wrote the following in its last edition: "When *Muse* started, few knew what it was about – and that includes the bulk of the writers and certainly the editor. We...launched it on a wing, a prayer and a load of techie stuff which still doesn't make sense. It took a few months for all working parties to get their head around the idea of a weekly online music magazine" (www.muse.ie, 23 May 2001).

Doras: *Doras* was established in 1996 by Eircom.net, and was later brought under the control of Rondonondo. It was the only entity to remain active after Rondonondo closed. Although content elements were added to *Doras* during Rondonondo's tenure, such as *Doras* News and *Doras* Movies, they had been stripped away by 2002, and the website had returned to its core activity of being a directory of Irish websites. At its peak, *Doras* received 800,000 page impressions per month, and had over 25,000 websites archived. In May 2000, Rondonondo signed a deal with Internet search company Yahoo! to provide directory listings of Irish websites to the Yahoo! Britain and Ireland website. (No monies were exchanged. It was a co-branding agreement.) Under the deal, searches for Irish information through the Yahoo! search engine would generate links to the *Doras* directory. Rondonondo also provided content to the Yahoo! website, including forty Irish related news, sport and entertainment stories each day. The deal ended with the closure of Rondonondo.

Directories were related to Eircom's core business of telecommunications (telephone directories), and the company produced a successful online directory from its GoldenPages subsidiary, which it later sold. The news and sports content for *Doras* was generated by journalists in Independent Network News (INN), which was a news service for independent and local radio stations in Ireland. Publications manager Emma Kavanagh claimed that INN was a good choice to supply news content, because radio writing was similar to web writing, short and lively, and required only light editing before publication on the web. The implications of publishing content generated originally for another medium is discussed in detail in the chapter on *Ireland.com*. Business news was supplied by *Business and Finance* magazine. Their stories required heavier editing, because in their original print form they were too long and detailed for the rolling news web-service of Rondonondo.

Doras reviewed each website it listed on its directory. The model it was working towards was as follows: once a critical number of websites had been listed and usership traffic had reached a certain volume, a listing on *Doras* would become a valuable asset to a website. *Doras*, at this juncture, would have become an authoritative online directory, and users would be directed only to websites within its archives. Therefore, according to the principal of the model, publishers would be willing to pay for a review and listing. This model was in the process of being implemented when Rondonondo was closed – it was eventually implemented by Eircom.net.

Freelancers reviewed each website against a set of criteria: aesthetics, content, functionality. *Doras* expanded quickly, to the point where it was putting too much strain on the human resources in Rondonondo. The job of maintaining *Doras* and reviewing additional websites was outsourced to a company called Webbusters, but Rondonondo retained responsibility for the business development of the site.

Aphra Kerr (1999) notes the difficulties a major multinational company, specialising in the development of software applications, had in producing digital media content for its website. After amounting substantial losses, the company changed its business plan and turned its website into a portal site to other companies' content. On a smaller scale, Eircom did the same when it announced the closure of Rondonondo. It ceased publication of its online magazines, but retained the *Doras Directory*, which as a directory of Irish websites was, essentially, a portal to other companies' content.

Pushie: *Pushie* evolved out of *Doras*. *Doras*, a directory of Irish websites, contained a sub-directory of international websites called *Global Doras*. Publications manager Emma Kavanagh believed that the editorial tone of *Global Doras* was different to that of *Doras*, and she proposed to establish it as a separate website and to add content strands to it. Her proposal was accepted by the business development team, and *Global Doras*, retitled *Pushie*, was launched in September 2000. Rondonondo described it as a “lifestyle and popculture” magazine, targeted at college students and twenty year-olds in Ireland and abroad (www.rondonondo.com/pubs.htm, viewed on 19 October 2000). In addition to the international directory, the magazine had five main sections, or content channels as they were called.

People contained interviews with celebrities and music groups.

Planet contained articles on the environment, architecture, design and travel.

Plastic was a consumer section, describing products that its target audience might like to buy.

Play was a leisure and lifestyle section.

Propaganda was a current affairs section.

The editorial structures in place to produce *Pushie* were similar to those in place to produce *Muse*.

Cumasc: *Cumasc* was launched in 1997 and was taken into the Rondonondo stable in 1999. It was a daily magazine and was produced in co-operation with organisations such as Radio Na Gaeltachta, Foinse, Gael-linn, Glór na nGael and Feile. It had sections for news, sport, opinion and arts, and had an online discussion forum.

Of the four strands, title publishing was the least profitable, and was described by the chief operations officer as “the one we were carrying all along”. Advertising on the websites did not match the costs of production, and she predicted that for a future website to achieve profitability it would require a strong content brand funded by a

transactional model with the user, possibly a subscription fee. However, title publishing was retained for the ancillary benefits it passed onto the unit. First, through interactive learning, it deepened the unit's competencies, knowledge and infrastructures for content production. Second, it was Rondonondo's main external publication arm, and helped maintain a public profile. Third, the content could be repurposed for clients, such as Eircell, which took *Pushie*'s content for its WAP service, with the aim of reaching a younger audience. The infrastructures required for title publishing could be employed on other projects. The content management system was first tested on *Pushie*. The chief operations officer said *Pushie* paid for itself by keeping the content management system project on schedule. Title publishing was the only strand of Rondonondo that published content direct to the public, yet it was the least profitable strand of the unit.

8.3.2: Broadband Studio: Similar to The Yard, which carried out audio and video work for *Enter* and *Ireland.com*, Rondonondo installed a broadband studio capable of high-end video and audio production and post-production. Eircom, through Rondonondo, was trying to position itself to produce and deliver content to interactive television and broadband Internet. It used the studio not only to develop its own content, but also for co-production projects, and the production of commissioned content. (Unlike the majority of content innovators in my quantitative study, Rondonondo produced both commissioned and uncommissioned content.) The studio, which was operated by a team of technical professionals whose previous experience was in television (RTE, TnaG, TV3), was based around a digital vision mixer. JVC broadcast cameras filmed images, which the mixer could separate from the camera signal, and allow the studio engineers to add background generated by computer graphics.

A senior production manager, who was involved in setting up and equipping the studio, claimed it was rarely idle, and was a central element of the future direction that content development was to take at Rondonondo, had it been allowed by Eircom to complete its five-year development cycle. One of the projects developed in the studio but never produced as a final innovation was E-TV (Eircom Television), which would have delivered interactive television content across the telephone network. As stated earlier, the E-TV project was eliminated as part of the company's digital media restructuring. But before this, it highlighted one of the advantages of being a content

innovator within a larger organisation: Rondonondo could undertake large-scale in-house tests, using Eircom employees. Four hundred Eircom employees took part in the E-TV test. They were given set-top boxes, which allowed them to choose programmes, videos, connect to the Internet and use email. Rondonondo recorded their consumption patterns and preferences³, and adjusted its content strategy according to the emerging trends. If video on demand, for instance, was proving a popular feature, Rondonondo would increase the volume of content available on it. Like *Ireland.com*, it hadn't accumulated substantial audio and video competencies, and the more significant content pieces would have been outsourced to external actors. The back-end infrastructure for interactive television was complex and required heavy investment, and Eircom was no longer prepared to commit funding to it. Under the model devised for E-TV, Rondonondo would produce smaller pieces of content: larger pieces – such as half hour videos and full-hour dramas – would be outsourced, depending on the costs involved and the resources required for production.

The studio was primarily installed as part of the content infrastructure for Eircom's broadband channels (and, Rondonondo management intended, to produce commissioned content for other broadband companies), but it never achieved its objective because Eircom continually pushed back the roll-out of the necessary broadband network. This highlights Eircom's influence in maintaining and installing the technological infrastructure necessary for the delivery of content in the Irish industry and, in certain cases, to undertake innovation. Its delay to the roll-out of the broadband network not only affected content development at Rondonondo but also at other companies in the industry. Rondonondo applied a substantial portion of its resources to developing content for a technological infrastructure that wasn't delivered by the parent organisation. Eircom also claimed regulatory constraints were behind the decision to drop the project. (Chapter three discusses how the regulatory

³ The production employee further outlined the advantages of Rondonondo being part of the Eircom organisation when he said: "It was an excellent position for developing, because you were part of the largest ISP in the country, 200,000 users on your own ISP. So you could see what was going on. People would say: 'Oh that will never work, and that will never happen.' You could see it happening, and you knew it wasn't just a shot in the dark." The projects approved for further development weren't selected on an arbitrary basis, but on the back of information such as usership patterns, as well as by commercial criteria set by the business development team. However, this fell more so into the quantitative tradition of monitoring usership and consumption patterns, a method which was also used by *Ireland.com*.

layer of the system of innovation stimulates and supports, but can also inhibit, innovation.)

The E-TV project further illustrated how innovation at Rondonondo was not linear, and that it could take different directions depending on industrial trends or financial circumstances at any given time. The production employee said: “I’d say a product like the E-TV one – we were only working on it two or three days a week, and then other work would be due, and it might be three months before you’d go again – building it up and up and up, and then at a point you might be able to do more.”

The studio also showed the small-scale of the overall media industry in Ireland, and how Rondonondo, despite its public commitment to becoming a leading content creator and publisher, was perceived as being outside the loop. People from traditional broadcasters would come to the studio to perform early development on projects. The production employee explained: “There were people coming in from national broadcasters with demo ideas that they didn’t want to do in their own studios. Because we were outside the city centre production area, we could do quiet projects. Within the six-rooms that were the production facility, we could develop something, and nobody would know about it, and it was inside an Eircom building. It wasn’t within one of the production houses where word might leak out. There were a couple of things in the press, and you’d remember them developing that idea. A lot of it was self-financed, to hold onto more copyright.” Confidentiality was an important consideration for the content projects and innovations in development at Rondonondo – under the terms of their employment, employees could not divulge information on any project to any outside party until it had been publicly launched. The importance of secrecy to protect innovations in development, and the procedures and scientific/technical competencies necessary to produce them, are discussed in chapter three. Also discussed is the importance of patents to protect innovative efforts, although patents usually cover industrial innovations, which are the main focus of the academic literature. Copyright, and the accompanying legal penalties for plagiarising another company’s work, is a more common protection for content innovations.

Former employees, as part of their redundancy contracts, had to sign confidentiality agreements. (One employee said the confidentiality clause took up four of the contract’s six pages.) This is consistent with the findings of research into the organisational structures and clustering of digital media firms in America and

Canada (Brail and Gertler, 1999; Pavlik, 1999; Scott, 1998; Cooke, 2002). Philip Cooke writes: "Interviewees reported little interfirm information sharing, a competitive ethic, and low-trust relationships, i.e. between firms of similar size and with similar or complementary assets. Informal knowhow sharing occurs between individuals rather than firms. Confidentiality clauses and secrecy on bid prices are normal even though there are few competitors for contracts" (Cooke, 2002: 298).

8.3.3: Syndication. Rondonondo wanted not only to create content for its own titles, but also to produce content that could be sold on to other organisations. Along with commissioned projects and advertising, syndication was one of the conservative strands of the company regarded as necessary to supply a steady income. The chief operations officer described syndication as "a valuable and valid bread and butter occupation, and a growing revenue source". Rondonondo offered syndicated content, usually text, in the following areas: news, business, sport, entertainment, share prices, weather, cinema listings, movie reviews and horoscopes. (Many of the areas overlapped with content offered by *Ireland.com*.) The main customer for Rondonondo's syndicated content was Eircell, the mobile phone subsidiary of its parent company Eircom. Rondonondo supplied SMS and WAP content to Eircell. (As an indication of how loosely integrated Rondonondo was into the overall Eircom organisation, it had to submit a tender to supply WAP content to Eircell. *Ireland.com* took over the task in 2001, after Rondonondo closed. Eircell also contracted outside companies to produce content, such as media advertisements, that could have been handled within Rondonondo.) Its most significant external client was Internet search company Yahoo!, on a co-branding, non-monetary basis. In May 2000, Rondonondo signed a deal to supply news, sport and entertainment content to Yahoo!'s website for Britain and Ireland. Much of the news content was generated by journalists at INN, refashioned from radio content, and at *Business and Finance* magazine, refashioned from print magazine content, allowing Rondonondo to avail of the competencies of two dedicated news organisations. As outlined earlier, Rondonondo journalists edited the raw copy to suit the requirements of the syndication service. The syndication service was pitched to potential clients by promising them that it would attract further customers to their websites, and would increase the likelihood of them returning. Rondonondo also promised that the content would be tailored to suit the audience profile of the particular website.

Ireland.com also used the syndication model, sending out content that had been generated within The Irish Times Group. The Group contained the necessary journalistic competencies and information gathering infrastructures and routines to produce content for the areas of *Ireland.com*'s syndication service: news, business, entertainment, sport. Eircom and Rondonondo didn't. So in Rondonondo's syndication model, it acted as an intermediary between the original producer of the content and the client who bought it. This model reduced the investment necessary in people and infrastructures, and granted the unit immediate access to well-developed competencies and infrastructures in external organisations.

8.3.4: Advertising network

Rondonondo had seventeen individual content websites in its portfolio⁴, which it described as Ireland's largest network of advertising websites. According to internal Rondonondo figures, the network at its peak recorded 10 million page impressions per month, and carried 60% of the advertising on Irish websites. However, the Irish online advertising industry in 2001 amount to only 1% (£6million) of total advertising spend across all media (www.newmedialine.ie, viewed 4 March 2002). Industrial trends suggest that this was not large enough to sustain a model of advertising funded content websites. This thesis has already discussed the importance of advertising as a source of funding for the industry, and how the presence or absence of advertising funding can act as a brake on or an accelerator to innovation. Through the qualitative case-studies of *Ireland.com* and, in particular, Pure Communications, I note how the advertising layer of the system of innovation can influence the final form of a content innovation. Neither of these innovators were viable on the advertising revenues they raised. *Enter*, which relied also on cover-price, lost advertisers when it transferred to Britain. *Ireland.com* wasn't sustainable on an advertising model and implemented a subscription model in 2002. Research for the COMTEC research centre at Dublin City University suggests that this trend carries through to the international digital media content industry, with many content websites moving towards, or revisiting, the subscription model (COMTEC, 2002). Rondonondo had also planned a subscription

⁴ The portfolio of websites was as follows: www.eircom.net, www.indigo.ie, www.softwareireland.com, www.electricnews.net, www.doras.ie, www.pushie.ie, www.cumasc.ie.

model for audio and video content delivered across interactive television and broadband Internet, but didn't survive long enough to implement it, or to move beyond the development stage of producing such content.

Randomondo was one of the earlier Irish content innovators to, in part, rely on the advertising model. It also offered to create the advertisements displayed on its websites. It offered to build online advertising campaigns for its customers across its network. Initially, the advertising network consisted of the websites in title publications, but a strategic review concluded that it had limited revenue potential, so the network expanded its reach, both internally and externally: to Eircom websites that had high external traffic figures, and to external websites such as Online.ie.

Research for COMTEC suggests that advertisers are reluctant to commit large budgets to online advertising, something which the industry seemed by 2002 to have accepted, as indicated by the shift towards subscription models. Randomondo was aware of this in 1999, but was confident of overcoming the problem. Mark Tarbett, marketing and advertising manager, said: "As the Irish online spend grows, there is a greater expectation from website owners that their properties should start to deliver revenues, either from advertising and sponsorships or from transactions. This is happening fast, and I believe the key to delivering on this expectation is to convince the advertising agencies and brand owners about the benefits of investing their budgets in this medium." ([www.interactive-avenue.ie/intothenet/issue8/articles/digital media.htm](http://www.interactive-avenue.ie/intothenet/issue8/articles/digital%20media.htm), viewed 21 January 2002).

However, from my observations of the Randomondo websites, I believe the advertising pattern resembled that at *Ireland.com*: the heaviest advertiser on the content websites was the parent organisation. Eircom advertised on Randomondo websites to promote its ISP services; *The Irish Times* advertised on *Ireland.com* to promote the newspaper, and *Ireland.com* advertised on itself to promote the content and services buried within the website.

8.5: Organisational structure and competencies

The organisational structure of Eircom and Rondonondo resembled that of The Irish Times Group and *Ireland.com*: a large, rigid organisation supporting a smaller, flexible one, and encountering difficulty integrating it into the overall organisation. Complicating matters at Eircom was Rondonondo's distance from the core business and traditions of the parent company. Publications manager Emma Kavanagh said the output of Rondonondo, the practices within it, and the type of people who worked there were unlike anything Eircom had experienced before. She believed Eircom didn't fully know what it wanted from Rondonondo or fully understand what the unit was trying to achieve as a development centre. The chief operations officer echoed the sentiment, saying Eircom's understanding of content was quite poor. It was a cultural attitude within the company, she said, and she wouldn't have ascribed it "to any one individual". The distance from the core business would become important when Eircom's revenues began to decline. In a restructuring plan designed to refocus the company's attention and resources on the core business, cutting away peripheral, loss-making ventures was regarded as a justifiable and, indeed, necessary move. In contrast, *Ireland.com* was close to the core news business of The Irish Times Group, so rather than eliminate the loss-making subsidiary, the Group scaled-down the venture and implemented a subscription model to try to raise revenues.

Eircom was a large organisation, highly unionised, and with rigid demarcation between the different departments. Rondonondo, in contrast, was a smaller, fluid organisation, in which employees worked on a wide variety of projects, using a wide range of competencies. However, the unit was careful not to over multi-task, and employed freelancers and external companies with specialised competencies, depending on what was required for a particular project. Publications manager Emma Kavanagh said: "A new customer meant a new challenge, a new project meant a new challenge, and you adapted accordingly" (Kavanagh, Rondonondo, 2002). One instance of the organisation adapting to meet a client's needs was the WAP content for Eircell, which had to be supplied on a rolling 24-hour basis, so the shift schedules of journalists had to be changed. The production employee said that he didn't work fixed hours, but made himself available as and when projects required his input. He noted that this clashed with the dominant work culture within Eircom, which tended

to have fixed nine to five hours, and work outside this timeframe was considered overtime.

Randomondo was equipped with high-end production and computer equipment, so technology was rarely regarded as a check to innovation. However, a lack of people competencies was a hindrance, especially in the first six months of the unit's operation, when it was still trying to acquire and accumulate competencies that weren't already within the Eircom organisation: content, production, technical. One of the criteria for developing a project was based on an assessment of the competencies required for production: did Randomondo have them in-house, could they be developed or brought in-house, or did it have access to them through commissioning outside actors. Former employees acknowledged that content competencies had to be nurtured over time, and technical and production competencies had to be updated as new technologies emerged. Randomondo tried to keep the competency base within the organisation ahead of those of competitors, or formed linkages with outside actors to supply competencies lacking within the organisation. The informal networks of employee's were important in this respect. Emma Kavanagh said: "We were so highly skilled, people knew people who had the skills" (Kavanagh, Randomondo, 2002).

The management at Randomondo was open to employee suggestions for project proposals, and established formal procedures through which employees at all levels could submit ideas. The proposal would undergo the routine procedure of assessment, and if approved for development, the employee would receive a percentage of future profits. Few such proposals were successful, however. An interviewee claimed he was aware of only one proposal that was approved for further development. But the act of consulting employees suggests that the organisational structure in Randomondo was closer to the organic model of organisational theorising, in which workers are not constrained in rigid routines, are allowed an intellectual and creative input into the development of innovations, and have room within the organisation to satisfy their "self-actualisation" needs (Mangham, 1979: 9). As stated earlier, once a project had been approved, Randomondo was allowed editorial independence. One employee claimed she felt "involved" with most of the projects she worked on, which would go against the machine or, to a lesser extent, the systems approach to organisational theorising, in which employees follow fixed routines in the production of innovations and they feel the final output is a thing apart from or alien to them.

The accumulation, through acquisition and development, of competencies and the refinement of production and technical infrastructures illustrates how learning is a central element of content innovation. The employees stressed how content competencies were refined – writing, filming, editing – and how technical and production competencies were updated continuously, as new technologies emerged. Rondonondo tried hard to keep its competency base, at a minimum, on a par with other companies in the industry and, where possible, ahead. And, through linkages with outside actors, the company had access to competencies that were lacking within the organisation.

The ethos in Rondonondo regarded the company as being pioneering, especially within the Irish industry. Because the industry is at such an early stage of its emergence, there are no traditional models to follow, so models, procedures and organisational structures were improvised and implemented quickly. Publications manager Emma Kavanagh said: “We were thinking on our feet. The whole industry was thinking on its feet” (Kavanagh, Rondonondo, 2002). However, Rondonondo was influenced by trends in the wider industry, adopting (and adapting) styles of innovation and business models that were in use at other content companies. Adapting to changes in the external commercial and technical environment is a trait of the organic model of organisational structuring, which this thesis argues is most relevant to digital media content companies in a newly emerging industry. Kavanagh added: “There were all these trends, and you set them as much as you followed them.” The design of webpages – minimalist, for quick downloading – and the content models – syndication model, adapted to compensate for the lack of journalistic competencies within the Eircom and Rondonondo organisations – were evident in other content organisations in the industry. As outlined earlier, content innovation is a social and cumulative process, influenced by what has gone before and what is being done in the present, and Rondonondo was influenced by this. Innovation styles diffuse within the industry.

8.6: Conclusions

The aim of this chapter is to provide a qualitative study of a digital media content venture that emerged out of a technical company. The larger technical company had a deep influence on Rondonondo: the tension between servicing internal needs and

seeking external opportunities, the negotiations over budgets, the lack of direction from Eircom, and Eircom's failure to deliver the broadband infrastructure for the E-TV project. The competencies, knowledge and infrastructures on all levels accumulated quickly at Rondonondo, yet were stripped away when it was closed. Many of the people involved with the unit moved to other digital media content companies, and so retained their competencies and knowledge within the industry. However, some of the knowledge, and in particular the infrastructures, were lost and demonstrates how the accumulation of competencies, knowledge and infrastructures within an industrial system of innovation is not a linear process.

A hypothesis of this thesis is that technology companies will experience difficulties in the industry, and people within Eircom acknowledged that it had a poor understanding of content. It highlights the importance, within a system, of linkages to external organisations, particularly as much of Rondonondo's content was produced externally and re-branded. Lacking the elaborate content production infrastructures of *Ireland.com*, the unit also had a more technology driven vision of the process. But in creating infrastructures, it also demonstrates how innovation proceeds through interactive learning, as evidenced by the re-organisation of the unit into four business strands after fifteen months. However, like the other two qualitative case-studies, it had difficulties generating revenues from digital media content, and so was eliminated when the parent organisation consolidated around the core business.

Chapter 9: Conclusions

Chapter 9: Conclusions

9.0: Introduction

The literature review, particularly on systems of innovation, argues that industries are subject to the most rapid changes when they are young, before the market matures, before a small number of companies gain monopoly status, and before the industry locks into technical standards or procedures. The Irish digital media content industry was at such a stage when my research began in 1999, and to a large degree still was by the time my research concluded in 2002. The profile of the industry changed, as new companies were established and others closed. New technologies were emerging, particularly delivery platforms, and companies had to respond to this changing environment. My case-study companies echoed some of the debates and uncertainties in the wider industry between 1999 and 2002. Would audio and video become an integral element of digital media content? What new competencies would companies and individuals have to learn to create such content? Would companies have to re-structure? When would they have access to broadband infrastructures that would allow for the delivery of audio and video content? This thesis has attempted to document the changes in the general industry, the changes in individual companies, and how the changing international and national economic environment affected both the industry and my case-study companies.

The changes in the industry provided rich material for this thesis to study, but they also changed the kind of industry I ended up studying. My research began in 1999, in a time of national economic boom and investment. It concluded in 2002, in a time of economic slowdown and investment cuts. If, during the three years of my study, the national economy had continued along a trajectory of boom and investment, the digital media content industry in 2002 could have been quite different. More new companies could have entered the industry, offering new innovative possibilities. Companies that closed could have continued in business and continued to innovate. If the national economic slowdown hadn't hit the revenues of Eircom's core telephony business, it could have maintained its investment in Rondonondo and allowed some of its developmental activities to turn to actual content products or services. If the

national economic slowdown hadn't hit Irish Times Group advertising revenues, it could have maintained investment in *Ireland.com* and allowed it to implement plans to offer audio and video content.

This is merely speculation on an alternative way the industry could have developed during my three year's research. The national economy did not continue on a trajectory of boom and investment, and neither did the Irish digital media content industry. My study had to adjust accordingly. This provided me with an opportunity to examine how a young industry responded to unfavourable conditions (which companies survived, how business models were re-assessed, the types of content that continued to be produced), but it also created difficulties. One case-study company was closed, another ceased production of digital media content, so I could not trace their development and progress through the full three year period of my research. Content that the case-study companies were planning (E-TV at Rondonondo, audio and video at *Ireland.com*) never came to fruition, so I couldn't analyse the competencies or infrastructures used to produce the content, or the success of the business models they would have implemented.

These contingencies have affected the research outcomes, but they also have affirmed one of the central arguments of this thesis: the development of an industry and the processes of innovation are uncertain. There are many influences on the development of the industry and on content innovation, and they operate at macro, meso, and micro-levels. Companies appropriate digital media technologies in certain ways, and the content they produce and deliver through them is influenced by social and cultural factors, particularly by the local (national) context in which they operate. This undermines technology-centred assumptions that innovation is a linear, predictable process, and technology is an autonomous agent for change.

The unpredictability of the development of the industry, and of the innovation process, was one of the challenges – and, indeed, attractions – of conducting a real-time study. In 1999 I did not know what shape the industry would be in by 2002. And if I were to commence another three year study now, I could not confidently predict the shape of the industry in 2005. The thesis sought to gain an understanding of how the digital media content industry and content innovations within it developed over a specific period of time (1999-2002), but not to create the basis of predicting future development. Because uncertainty is a fundamental element of an industry's development and of innovation, any attempts at prediction have to be tentative. The

value of my research lies in contributing to a fuller understanding of the complex, multi-level processes surrounding innovation in this emergent industry.

9.1: Relevance of the conceptual framework and re-evaluation of theory

9.1.1: Overview of the conceptual framework

I developed and applied a tight conceptual framework to study the industry's development at macro, meso and micro-levels. This multi-level approach was necessary to gain a sense of all the influences acting on the industry and on the conduct of innovation within it. Although the conceptual framework has limitations – outlined in previous chapters as well as the present one – it offers a more nuanced alternative to the notion of technology-driven, closed, linear industrial development and innovation that informs much academic, governmental and industrial discourses surrounding digital media.

I have distanced my conceptual framework from the determinist connotations of the theories that inform it: technological determinism, social shaping theory and systems of innovation. The multitude of influences on the industry's development and on the innovation process conflict with assumptions of a single or small number of determining forces. Also, determination would assume that innovators know, in advance, all possible outcomes to the innovation process, that they make rational choices according to principles of efficiency, and that all factors influencing the innovation process are within the control of the innovator. My empirical research suggests the opposite: that all influential factors are not within the control of the innovator, and development decisions and choices are, often, not based on criteria of rationality and efficiency but on necessity and opportunism. And far from innovators knowing all possible outcomes to the innovation process, the initial 'vision' of a content innovation often differs greatly from its final form. Many alternative established conceptual frameworks either neglect such uncertainty in the innovation process (technological determinism), or fail to emphasise the importance of social and cultural factors (systems of innovation), or place too heavy an emphasis on innovation through rational choices and principles of efficiency (social shaping theory).

However, each theory has the potential to compensate for the weaknesses of the others, and a selective synthesis offers a conceptual framework that is flexible enough

to be applied at three levels: first, a macro-level, schematic account of Ireland's NSI and the historical, political, economic and cultural influences on it. This is to set the context in which the content industry is emerging, and in which individual companies operate. The national context can influence how digital media technologies are appropriated (Williams and Slack, 1999; Williams, Slack and Stewart, 2000); it can also influence the content that is produced and delivered through them. This level of study is intended to create an awareness of the macro-level influences on the industry, companies, and content.

Second, the meso-level quantitative study examines the emergence of the industry over three years. The study, although focusing on companies, is mindful of the importance of the institutional and organisational set-up, and how the macro-level performance of the international and national economies affected the content industry.

Third, the micro-level research is sensitive to how innovation within companies is uncertain and subject to many influences: that companies depend on linkages to external actors, must accumulate competencies, infrastructures and knowledge, and are open to macro and meso-level influences. These factors greatly influence the final form of a content innovation. Only a conceptual framework that rejects determinist, linear assumptions, and stresses the importance of social and cultural factors, can be sensitive to the full scope of influences on the emerging industry and on content innovations.

9.1.2: The systems of innovation concept re-evaluated

The systems of innovation concept is a key pillar of my conceptual framework, particularly as it can be applied at the three levels of research interest: macro, meso and micro. The national system of innovation (NSI) concept provides a useful framework in which to examine the emerging industry. Each NSI has particular qualities and characteristics, and although they are not determinants of innovation, they do influence it. NSIs can show similarities, but no two are exactly the same, and neither therefore are the particular influences they exert on innovators. I applied the concept to set the environment that is particular to Irish content companies – Irish political and economic characteristics, social and cultural values, language, and geographical location on the periphery of Europe.

However, the environment is not homogenous. The same set of influences do not apply to each company active within an NSI. Much depends on the location, size and sector of the company. Within an NSI, regional, sectoral and industrial systems and clusters can set the immediate environment of influences on innovators. These influences can be different to those on companies in other regions or sectors in an NSI, or to those on companies in similar sectors in other national systems.

The NSI concept, in this thesis, moves beyond the assumption that innovators are exposed to a relatively homogenous set of influences. In the literature, the concept sometimes suffers from a related assumption that the 'territory' of the system is uniform. However, in certain regions or cities, the localised environment for innovators can be quite different from the broad national one. The main geographical emphasis of my research is on Dublin, not least because the majority of Irish digital media content companies are located there. Content companies located in and near Dublin have access to the country's most well-developed institutional support and technical infrastructures, and the largest base of clients and employees. This establishes a particular local environment which isn't spread evenly across the whole country.

It is important to stress, also, that systems of innovation – at national, sectoral or industrial level – should not be regarded as closed systems operating exclusively within rigidly defined parameters or borders (e.g., the 26 counties of the Republic of Ireland). Systems of innovation are fluid, not static, with strong linkages into and out of the system.

Although the set-up of an NSI can influence companies, their activities cannot entirely be explained within this framework. Particularly in a small NSI, the domestic market encourages companies to align themselves with actors outside the system and to seek export markets. The literature review addresses the problem of where the parameters of a system should be set. In chapter three, I criticise the NSI literature for relying too heavily on a spatial concept of a nation. A spatial concept is consistent with the general trend in the literature to emphasise material resources (such as territory) over cultural and social influences. Imposing borders as the parameters of innovative activity is too rigid. It distorts the fluid workings of a national system. Nelson, for instance, argues that because of external linkages it is difficult to isolate a nation as an object for study (Nelson, 1993).

The system of innovation concept, however, remains useful for setting the context in which an innovator operates. But, when setting the parameters, it is necessary to conceptualise them as being porous, allowing a flow of linkages into and out of the system. Digital media content – as an emerging industry and industrial system of innovation – cannot be explained within a self-contained context, without reference to the wider NSI and, on a higher level, an international system of innovation. Foreign companies are prominent in the industry – and mostly export out of Ireland – and Irish companies seek markets, competencies and strategic partners abroad. It is necessary to note the various flows in and out of the system for a fuller representation of how the industry is emerging and innovators innovate.

9.2: Themes emanating from the macro and meso-level research

9.2.1: Overview of macro and meso-level research

The development of the content industry is an open process, subject to many influences on many levels. Clearly, however, it is impossible to document every influence, especially the more subtle influences, and so the research tends to focus on the main influences.

The macro-level influences relate to the historical, political, economic and cultural characteristics of the NSI. These include the late extensive industrialisation of the country, the development of an open economy dependent on foreign investment, and social and cultural values, which can be reflected in digital media content.

The slowdown of the Irish economy filtered through to the content industry, which contracted between 2001 and 2002. Although the contraction of the industry wasn't directly proportional to the slowdown of the economy, it suggests that the industry is not insulated from trends in the macro-NSI. Also, the contraction traced by my quantitative study doesn't conform to linear conceptions of the emergence of new industries, but is closer to Schumpeter's waves of growths and contractions. The slowdown of the economy was a major factor in changing the trajectory of the industry and, therefore, the results of my research. Companies closed, or scaled-down investment, or cancelled content projects. The slowdown also cut the opportunistic investment of many non-digital media content companies, which had previously perceived the new medium as being potentially lucrative. The most prominent Irish

example was telecommunications company Eircom, which cut investment to digital media content to re-focus on its core telephony business. Even traditional media companies such as The Irish Times Group cut investment to digital media when the core business was in difficulty. The slowdown tested many companies' commitment to digital media content, and showed that, essentially, many of them regarded it as peripheral and expendable. A finding of my quantitative study was that, by 2002, the industry had consolidated around fewer but larger companies. It had also consolidated around companies whose core activity was digital media content. This was in contrast to the situation in the mid to late -1990s, when telecommunications, software and traditional media companies were investing heavily in digital media content. But these companies pulling out of content, or reducing their investment in it, reduced the sources of investment available to the digital media content industry.

Meso-level influences include the support offered by the institutional layer of a system of innovation. Such support is important, because institutions (and, more generally, services industries) can facilitate and act as agents for innovation (Metcalf and Miles, 1999; Andersen et al, 2000; Miles and Miozzo, 2002). In Ireland, the institutional support offered to technology and software industries tends to be greater than that offered to content. Industrial profiles by state agencies tend to group content companies with technology and software companies. This thesis argues that content innovation is different to technological innovation or software development, and requires different knowledge, competencies, infrastructures, business models and, therefore, different institutional support. However, there appears to be a growing acknowledgement by state agencies, particularly Enterprise Ireland, that content is a distinct industry within the digital sector.

The venture capital layer of the industrial system has the potential to act as an accelerator to innovation, but venture capitalists display a greater willingness to fund hardware or software projects over content, because hardware and software are regarded as solid, tangible investments (Enterprise Ireland/Digital Dividends, 2001). A survey by the IDA and Forbairt indicates that the most common source of funding for core-digital media content companies is founder's personal funds. This tends to be small amounts of money, so the companies tend to be small-scale and not radically innovative (IDA/Forbairt, 1999). The bigger, better funded digital media content ventures tend to emerge from larger, non-digital media organisations that can fund the ventures with profits from their core businesses, without the necessity for venture

capital investment. However, since the general economic slowdown, fewer non-digital media organisations have been willing to commit investment to digital media content. This, in addition to the venture capitalists' attitude, is squeezing tighter the sources of investment available to digital media companies. An economic upturn could help soften the attitude towards investing in digital media content, but that depends on many international and national macro-level factors. The industry could also re-attract investment if content companies begin to produce sustained profits; however, this is made more difficult by a lack of initial investment and venture capital and by companies trying to generate revenue and profit from a market economy in slowdown. Although this is speculation on future developments, and cannot be verified here, it does show the far reach the macro-level economic slowdown has had on the content industry.

9.2.2: Evaluating the emergence of the industry

The systems of innovation literature argues that the profiles of industries are in constant flux, as innovators prosper and consolidate or fail and close, or as the institutional set-up matures or withers. Much of the momentum to the innovation process is generated not by co-operative dynamics between actors but by frictional, competitive dynamics. Knowledge, competencies and infrastructures can be lost to a system of innovation when unsuccessful innovators close. In the same vein, new knowledge, competencies and infrastructures can be brought into the system by new innovators, or developed further by established innovators.

My research indicates that new companies entered the industry between 1999 and 2002 (and were usually established in Dublin, which further concentrated the cluster in the city and increased the centralisation of the industrial system of innovation). However, over the three years of my study, a greater number of companies closed. The Rondonondo case-study offers an insight into the elaborate knowledge, competencies and infrastructures that can be lost when an innovator closes (although competencies can circulate around the industry as people gain employment in other companies). There were instances of smaller digital media content companies being taken over by (absorbed into) larger organisations. Although there were fewer companies active in the industry by 2002, they were larger. Industries tend to emerge along the following pattern: in the early stages, when barriers to entry are low,

industries are characterised by many small companies, which are the main arenas of innovative activity. As the industries mature, innovation is concentrated in fewer but larger companies, often with monopolistic power. There are tentative, early traces that the digital media content industry is emerging along a similar pattern. Although, three years is too short a timeframe to test how applicable such a pattern of emergence is to the content industry, and further research will be required in this area.

I note in chapter five that at the end of the three year's research the industry was comprised of fewer but larger firms. Failure is inherent in systems of innovation, particularly in newly emerging systems. This was compounded by the general slowdown of the Irish economy. My research into the industry began in 1999, in a time of growth and optimism. It concluded in 2002, in a time of slowdown and pessimism, with failure widespread in the industry. The general economic slowdown was partly responsible, as it was for failure in other industries and sectors, but there were reasons particular to the newly emerging digital media content industry.

New industries are characterised by a large number of start-ups, which are vulnerable to swift closure. Unlike media industries such as broadcasting, there are no regulatory controls or licences limiting market entry to the digital media industry. Thus, a large number of companies were able to enter this emergent and – in comparison to traditional media markets – still small industry. There is a higher potential for companies to be edged out in the competitive process.

Media markets are not static, although mature media markets tend to have greater stability, either through regulation or the long-established workings of the market. Less regulated media markets consolidate around leaders over time. For example, the daily newspaper market in Ireland has had a stable core for decades. Although new titles appear occasionally, they rarely threaten the position of the *Irish Independent* and *The Irish Times*. In the first half of the 20th century, when the Irish newspaper industry was first beginning to reach a wide, national audience, it was characterised by a high number of short-lived titles (Horgan, 2001).

Established, traditional leaders have yet to significantly emerge in the digital media content market. Although there are certain market leaders, e.g. *Ireland.com*, there is a sense that the ground is still up for grabs, which encourages new competitors and start-ups and increases the likely number of failures. (For example, Rondonondo offered a breaking news service that was similar to *Ireland.com*'s.) A glut of digital media companies tend to enter areas that show potential for success.

In addition, this thesis argues that digital media has yet to firmly establish a dominant role within the media spectrum. Traditional media remain dominant as providers of news, entertainment and informational content. My research shows little indication that digital media is about to assume dominance in these areas. Digital media tends to be complementary not competitive to traditional media. And instead of ceding position to digital media, traditional media organisations – The Irish Times Group, RTE – are more inclined to scale down their digital media operations if the overall organisation is in financial difficulty. The majority of audiences remain with the traditional media, as does the majority of advertising spend. In this situation, the economics of content production do not favour digital media. Content production costs remain relatively the same regardless of the size of audience it reaches or the amount of advertising revenue it attracts. Media markets with access to wider audiences and higher advertising revenues will benefit; the costs of production will be a greater burden on media markets with smaller audiences and less advertising revenues, as seems to be the case with digital media.

Much of the failure in the industry centres also on the small size of the domestic market and the difficulty of finding export markets for Irish content. The early enthusiasm for digital media content was based largely on the frail assumption that the Irish Diaspora would be receptive to Irish content, and that this in turn could be translated into revenues. The assumption was that the Diaspora's appetite for Irish content could be satisfied in ways not possible with the traditional media.

This didn't give sufficient importance to the fact that the Irish Diaspora could have assimilated the values and norms of its emigrant culture, to the extent that Irishness is an emigrant's secondary or lower cultural identity. This is particularly so for those who were born outside Ireland, or have been living outside the country for many years. It undermines the assumption that the Diaspora will, on a significant scale, be receptive to Irish content. Most of the content strategies for reaching the Diasporic market are based on providing news, tourist information, history and entertainment content, rooted in Irish social and cultural values. But other forms of content have had greater success in export markets. Certainly, in the Irish context, utilitarian informational or educational content, such as Smartforce's training artefacts, have enjoyed greater prominence in export markets than media and entertainment content. This could prove an appealing avenue for exporting content.

Also, this avenue isn't as readily available to traditional media. The difficulties of exporting content out of Ireland has a long history in the traditional media, particularly in television, as evidenced by RTE's involvement in the failed Tara TV station in Britain, and the general failure of RTE to export Irish programming to foreign television markets. This highlights that the Irish Diaspora cannot be assumed to represent a relatively homogenous market receptive to Irish content. They may have internalised the cultural values of their emigrant society, which could lessen the appeal and importance to them of Irish content.

The companies selected for my qualitative case-studies produced media and entertainment content, and were reliant mainly on the domestic market. *Enter* failed in a foreign market. Rondonondo supplied news content to Yahoo! in the UK, but on a co-branding, non-payment basis. And in *Ireland.com* the balance of traffic had shifted over the years so that most of it was coming from inside Ireland. Of the three case-studies, *Ireland.com* was the most successful at exporting content, even if it failed to achieve profitability.

To properly examine the problems of export, future research will need a sophisticated conceptualisation of content, to distinguish between media (news, current affairs) and entertainment content *and* utilitarian informational content (such as information supplied to professionals and industry, and educational training artefacts). This thesis, examining the emergence of the industry, has a broad conceptualisation of content; future research could benefit from a sharper distinction.

9.3: Themes emanating from the micro-level research

9.3.1: Overview of micro-level research

My three case-study companies have three different origins – a traditional media company, a telecommunications company, and a start-up company. They share characteristics and display differences. This thesis does not argue that the three case-studies are necessarily representative of all companies from similar origins within the industry, so any general points drawn from these particular examples must be regarded as tentative.

As noted, the slowdown of the Irish economy was a significant macro-influence on the case-studies. In particular, the slowdown affected the core, non-digital media

businesses of the parent companies of two of the three case-studies. Falling revenues from Eircom's core fixed-line telephony business motivated management to restructure the company and eliminate non-core activities, including digital media content production at Rondonondo. Similar circumstances – falling revenues, particularly from advertising – forced a restructuring of The Irish Times Group, which could no longer afford to absorb the losses accumulated by *Ireland.com*. Investment in the website was reduced, staff numbers were cut, and it was moved to a subscription model to try to raise revenues.

Enter's demise was not related to the slowdown of the economy, but to another macro-factor: the small size of the domestic market, which Pure Communications tried to break out of and failed.

The background of the companies had a strong influence on content production within them. *Ireland.com* carried the traditions of *The Irish Times*. Rondonondo emerged out of a telecommunications company whose management didn't really understand or have a commitment to content. Rondonondo had to spend time developing its content interests and building brands of content. The start-up company, Pure Communications, suffered from not having the support (financial, organisational) of a larger, non-digital media organisation behind it.

At the micro-level, there was a multi-layered, frictional dynamic to content production in each of the companies, as actors from different parts of the organisations sought to influence the content. The production and delivery technologies and infrastructures imposed limitations on what could be achieved. Frequently, advertising considerations forced compromises on the wishes of the editorial team. Management also imposed restrictions, and work was carried out within budgetary constraints, which usually were set by people not directly involved in content production.

The three qualitative case-studies had formed linkages to external actors, to avail of competencies and infrastructures they lacked internally. Furthermore, Rondonondo and *Ireland.com* supplied competencies and infrastructures to external companies, either through syndication, or in Rondonondo's case, developing content for external actors and hiring out its facilities. This deepened *Ireland.com's* and Rondonondo's overall integration into the industry, because they both supplied competencies and infrastructures to other companies, and depended on other companies for competencies and infrastructures they lacked internally.

9.3.2: Overview and evaluation of business models

The contraction of the industry between 2001 and 2002, and the decline in fortunes of my three qualitative case-studies, suggests a trend of companies struggling to generate revenues from digital media content. In 1999, the dominant business models were based on supplying content across a number of platforms, possibly on a syndication basis, and funding websites through advertising. This approach was taken by *Ireland.com* and Rondonondo.

Syndication, although lucrative, did not generate sufficient revenues to sustain the organisations. Advertising was an important consideration for all three qualitative case-studies. But in line with an industry-wide trend, the three of them had difficulty generating sufficient advertising revenues to sustain content production. *Ireland.com* moved from advertising to a subscription model. The chief operations officer of Rondonondo was skeptical of advertising's ability to deliver substantial revenues, and she envisaged implementing a subscription model for access to future content. And *Enter* was designed largely with the aim of incorporating a high volume of advertising content, although its creators also envisaged a subscription model for future online content. Each company regarded the success of a subscription model as depending on establishing premium brands of content, or possessing exclusive, quality content (such as the *Financial Times* does for the business community), for which people would be willing to pay online.

Advertising is a weak foundation for a digital media business model. The COMTEC study indicates that digital media ranks lowest of the media forms in priority for companies allocating advertising budgets, and is the first medium to have budgets withdrawn or cut in times of economic pressure (COMTEC, 2002).

By 2001, all three case-study companies had accepted that their current business models weren't working and wouldn't work in the long term, and all were positioning themselves for a subscription model. From my analysis of the three case-studies, I argue that a successful subscription model seems to be based on three broad criteria: the supply of content, the ability to deliver it, and a 'locked-in' or loyal customer base. A company's subscription model would be more likely to work if it was strong on all three criteria at the same time. The case-study companies were strong in up to

two criteria, but none were strong in all three. *Ireland.com* was closest to achieving all three criteria.

Randomondo management believed its content – mostly text – wouldn't entice people to pay a subscription fee. It was trying to put in place an infrastructure to produce high quality audio and video content, an ambition that pushed the intensive development and testing of the E-TV project. Randomondo was in a unique position in the Irish industry, because it was part of the company responsible for rolling out the delivery infrastructure for content. Eircom had thousands of people on its own ISP, which in turn allowed Randomondo to view broad quantitative figures on usage trends. Despite liberalisation of the Irish telecommunications market, these customers were to a large degree locked into Eircom for access to Internet and telephone services. Randomondo management believed this could be used as leverage to lock-in a customer-base to its content services. This was the business model in theory. Randomondo was closed before it could be applied in practice.

However, even when Randomondo was at the height of its development activities, Eircom had failed to rollout, countrywide, a broadband infrastructure that would have been capable of delivering high quality audio and video. Also, the content production infrastructure within Randomondo was loosely constructed. Because it lacked the necessary delivery infrastructure for E-TV, Randomondo couldn't move from development to implementation. Therefore, it hadn't defined specific audio and video content projects or programmes. The intention, when E-TV was established and running, was to produce smaller pieces of content in-house and outsource large pieces. Once it had a delivery infrastructure at its disposal, and had moved from development to implementation, it would have commissioned external companies to produce specific content projects and programmes.

According to the three broad criteria, Randomondo fared poorly. It had a loosely developed content production infrastructure; its own parent organisation had failed to roll out the necessary broadband (delivery) infrastructure; and it was working to the spurious assumption that customers locked into Eircom's ISP could be leveraged to subscribe to Randomondo content. Media organisations such as AOL/Time Warner aggressively promote their online content on their traditional media channels. Eircom assumed that it could promote content to users subscribed to its ISP. But there were no indications that this approach would have worked, or any evidence from other ISP companies that it does work.

Pure Communications was stronger on the content production criteria. It had, since the first edition of the CD-ROM, an infrastructure in place to produce audio and video content. This infrastructure remained in place for the life-span of the Irish edition of the CD-ROM. But Pure Communications was weak in access to a delivery infrastructure. The model of delivering revenue by charging a purchase price for the CD-ROM was intended to be short-term. The longer term model was to move online and charge subscription when broadband allowed for the delivery of high definition audio and video. But here, like Rondonondo, Pure Communications was restrained by the lack of a widespread broadband infrastructure, and so had to continue delivering its content on CD-ROM format. Pure Communications had no customer base locked-in. One of its key early objectives was to build a loyal customer base in Ireland, anticipating that it would transfer online after the rollout of broadband. *Enter* moved into the British market with a broadly similar objective – build a loyal customer-base which would later transfer online. It abandoned the small customer base it had built up in Ireland and didn't survive long enough to build one in Britain. *Enter* was in difficulty with respect to two of the three criteria: it lacked its preferred delivery infrastructure and had no locked-in customer base.

Ireland.com fared best on the three criteria. *The Irish Times* provided it with quality, branded content. *Ireland.com* developed an efficient content production infrastructure of its own, which provided breaking news to compliment *Irish Times* news. It could re-purpose content depending on the intended delivery platform (WAP, SMS). It fared best in suitability of the available delivery infrastructure. Its content output was predominantly text, which could be delivered with ease across current Internet delivery infrastructures. Although it had ambitions to integrate audio and video content into the website (and, therefore, could have encountered the same delivery problems as Rondonondo and *Enter*), there was no suggestion that this would have over-shadowed *The Irish Times* content. The redundancies announced in late 2001 and implemented in early 2002 reduced the number of people working for the newspaper and the website, and the associated cost-cuttings removed the possible integration of audio and video content. But the website would have remained predominantly text-based. Indeed, regardless of funding, enthusiasm for audio and video on the website had dampened by the time I renewed contact in 2002. Whereas traditional broadcasters such as RTE had expertise in producing audio and video content, The Irish Times Group had little. RTE had the capacity to produce a greater

volume and variety of audio and video content, and had an entire news organisation dedicated to producing immediate audio and video news. The Irish Times Group did not, and the traditional core competencies of the newspaper could not be used as a means to leverage *Ireland.com* into audio and video web-content, as had been possible with text-based web-content. In producing audio and video content, *Ireland.com* would have been competing against the core competencies of a traditional broadcaster, but with less expertise, a less well-developed production infrastructure, and with no tradition or brand of being a producer of audio and video. Therefore, *Ireland.com* retreated, and staked the website's future on The Irish Times Group's core competency: the provision of text-based news.

During my research placement in 2001, occasional references were made to the business model of the website – free access, funded by advertising. Advertising revenues had dipped since 2000, but even when they were at their peak, they weren't sufficient to lift the website to profitability. In 2001, *Ireland.com* management recognised that the website would have to move to a model based on paid access. The financial difficulties of The Irish Times Group accelerated the implementation of a subscription model. Its success was predicated largely on the reputation of the news service – *Irish Times* and breaking news – and of the user base the website had built up since 1994. *Ireland.com* had no locked-in user base. Although no other website had access to *Irish Times* content, Irish news content was readily available for free elsewhere on the web. *Ireland.com* was relying on reputation and loyalty rather than lock-in – that the website's reputation for quality would persuade people to pay for access instead of seeking free news content on other websites. As a free service, *Ireland.com* had a leading position; it had no guarantee of maintaining that position as a paid service. Loyalty to a brand of content is difficult to quantify. When I renewed contact in mid-2002, the subscription model had been active for several months. It had built a base of 8,500 to 9,000 subscribers, but *Ireland.com* wouldn't reveal how many subscribers were needed to turn the website to profitability. Overall traffic through the website had dropped.

Because the qualitative case-studies concentrated on media and entertainment content, the main business models were based on generating profits from a public audience, or through delivering a public audience to advertisers. In broad principle, these are the models used by the traditional media. But the traditional mass media

attract higher audiences and advertising revenues, and are in a better position to mark a profit above the cost of content production.

The Internet is increasingly being run on commercialised terms. This may reflect a change in the way people browse (surf) the Internet, as the culture of free access to content and services diminishes. Content provided through subscription could influence the early consumption habits that have been emerging. Users could become more discriminating and selective, based on the assumption that, as more websites turn to subscription, users will have a limited ability to pay. Websites could become more like channels of content, with users selecting and paying for a limited number of the websites most relevant to their interests and needs. This could restrict or reduce the web as a source of content, although this would not be relevant to not-for-profit information – academic, for example – or e-government services.

The re-structuring of the digital media content industry and its business models will probably have wide implications, and could be a valuable arena of future research. The re-assessment and re-structuring of business models were at an early stage when the empirical research informing this thesis was completed. When I renewed contact in 2002, *Ireland.com* did not yet know whether its subscription model would succeed. Further research will be required as the fuller consequences of the DotCom and technology downturns take hold and new models have been implemented over a longer period, more feasible for study.

9.3.3: Evaluating the accumulation of competencies, infrastructures and knowledge

Each of my case-study companies produced content that, over time, became more sophisticated and complex, as they implemented new ideas and features, or began developing content for new delivery platforms. Therefore, the content competencies, technical infrastructures and knowledge (of business models, production procedures, industrial trends and markets) needed to produce the content also become more complex. The case-study companies developed and accumulated these competencies, infrastructures and knowledge in a model similar to Lundvall's conception of innovation through interactive learning (Lundvall, 1992). His conception of learning by doing, using and interacting is particularly relevant to my four phase model of *Ireland.com*'s development. At each stage, the experience gained through developing and using the website informed the next phase of development. Further development

required the accumulation of further competencies, infrastructures and knowledge, but within the constraints of budgets, resources (human), and capacities of production and delivery technologies.

Accumulation is gradual and linked to the increasing complexity of an organisation's content output. Companies accumulate either through acquisition (hiring people, taking over companies), in-house development (training people, updating their skills, building the necessary technical infrastructures), or gaining access through forming linkages to external actors.

Competencies, knowledge and infrastructures in companies go through constant change, as new technologies are appropriated, as people leave, and as companies follow or set trends or 'styles' of content in the industry. An innovating industry is associated with a developing and thickening institutional set-up. So too an innovating content company is associated with a developing organisational structure, which includes an accumulation of competencies, knowledge and infrastructures.

In all three qualitative case-studies, informal networks were important in securing competencies, particularly for content. Many of the core competencies of digital media are quite similar to core competencies in the traditional media: writing, filming, editing, design. However, the competencies are not carried over from the traditional media unchanged. The *Ireland.com* case-study noted the struggle to adapt the house-style of newspaper writing to web writing. Competencies were being adapted to better suit digital media; they developed over time and through people's experience of working with digital media content. The case-studies stressed how they improved content artefacts through the experience gained from working on them, and implementing new ideas, elements and features. This experience had to be nurtured over time. The case-studies tried to retain within the organisation people who had built up these competencies. Pure Communications continued to employ the people who had the experience of working on *Enter* after it ceased production of the CD-ROM. However, *Ireland.com* lost through redundancies people who had built up experience of working on the website.

The means of bringing people into the organisations often relied on informal networks or personal contacts, as it does in the traditional media industry. Blurring the situation at Rondonondo and *Ireland.com* was the use of freelances, which gave the companies access to competencies without formally integrating the people into the organisations. Commissioning freelances in the media is traditionally an informal

process, depending on how reliable the freelancers are and if they are available. (Many freelance for more than one media organisation, so there can be a cross-over of the media they work for: print to web.) The number of freelances active within an organisation fluctuates, depending on the budget for hiring them, the available freelances, and the amount of work that needs to be done or shifts available.

Although each case-study company had tried to accumulate a base of content competencies, some of these competencies – and knowledge and experience of how content production proceeded in the organisation – were invested in people who were not formally employed by the organisation and were free to work in other media organisations.

This is an indication of how competencies circulate around media industries, both traditional and new. Although competency accumulation was evident in all three case-studies, this base was not stable. In all industries and companies, people move jobs, return to education, or retire, so the base of competencies and experience fluctuates. But it seems especially fluid in content production, with a large percentage of content employees not formally (contractually) employed by the company. In the case-studies, there was a hierarchy. The editors, deputy editors, chief sub-editors, or senior film and production engineers were most likely to be permanent or contracted staff. These people had the longest service in the organisations, the most experience of developing content, and their judgement carried most weight in the further development of content innovations. They had a role in the routine production of content – for example, the production of news content on a daily basis for *Ireland.com* – but were also charged with the overall task of developing ideas for new elements and assessing their potential and feasibility. And although senior people could leave the organisations, this represented the stable core of content competency and experience in all three case-studies.

In newly emerging industries, age and experience can diminish as the basis of authority within companies, with technical knowledge often the key to advancement. Burns and Stalker, writing about the organisation and management of companies in young industries, argue that in traditional companies “to be older meant that one was more effective and better qualified. But in the new situation of technical and commercial change, this basis of authority has become invalidated” (Burns and Stalker, 1979: xvii). There was some basis for this in the structures of my three case-study companies. People at senior levels did tend to have more experience and be

older than those at lower levels, but they had less experience and were younger than people in equivalent positions in traditional media organisations. Also, because senior people in my case-study companies tended to be relatively young (no one had yet reached their forties), they maintained comparable levels of technical and content knowledge to younger people at lower levels of the organisation.

However, at lower levels, reporters, sub-editors and film and production engineers were likely to be freelance, and to work for more than one media organisation. Some freelances worked regular hours or shifts, others worked infrequently, but all had in common that they were not contractually employed. Freelances were most likely to be assigned the routine tasks of producing content and had little input into the overall development of a content innovation. They tended to be younger, have spent less time in the organisations, and have less experience in content production. But they served important functions, and produced a large volume of content for *Ireland.com* and Rondonondo. The situation in Rondonondo was complicated because, in addition to in-house freelances, it received content from an external media organisation. Pure Communications was a smaller organisation, and the editor produced the majority of the content, although a freelance was hired to cover sports content. The base of technical competencies in all three organisations was more stable. Technical staff tended to be hired on a contractual basis.

Lundvall's conception of competency accumulation implies a greater degree of stability than is the case in most organisations. This is particularly so when dealing with production and innovation that is not subject to standardised scientific and technical knowledge and competencies. Content competencies are linked to the personalities, judgement and experience of people. Although certain standards and practices can maintain consistency of content production within an organisation, there is flexibility for individual styles to emerge in writing, filming and editing. The profile of the people in an organisation affects content production.

When applying the concept of accumulation, a degree of flexibility has to be incorporated into the model. Lundvall's model implies an upward accumulation. The case-studies show that this is not always so: Rondonondo closed, and its contribution to the industry was lost. Pure Communications shifted its activities away from digital media content, and the experience and competencies it had accumulated were no longer being contributed to the industry. Experience and competencies can be lost to an active innovator, such as *Ireland.com*, through cost-cuttings and redundancies. But

even without such measures, the base of – in particular – content competencies is not stable. In content organisations there can be a relatively stable core of content competencies at senior levels supplemented by a fluctuating layer of freelances. As these freelances can, and often do, work for more than one media organisation, it adds to the circulation of competencies around the industry, and to how styles and practices of content production can informally diffuse from organisation to organisation. None of the freelances I encountered at *Ireland.com* had also worked for Rondonondo or Pure Communications, but the Irish industry is small and the possibility of freelances working for two or more companies is high. The organisations of the case-studies were small and flexible. The greatest degree of flexibility was on the content side, especially in non-contracted freelances.

9.3.4: Emerging management styles of digital media content companies

The management system of the three case-study companies conformed closest to the organic model proposed by Burns and Stalker (Burns and Stalker, 1961; 1979; 1994). Organic systems are characteristic of industries that are subject to rapid change, and organisations must be flexible enough to adapt to changes and face unfamiliar situations. The digital media content industry, being young, was subject to change, with new technologies, market trends and styles of content developing over a relatively short period of time. This changing environment, as Burns and Stalker would have called it, required flexibility of the case-study companies. They each had weak levels of demarcation, and employees, to a higher level than in bureaucratised organisations, had inputs into decision making processes and shared a general sense of responsibility for the performance of the company and the quality of its content output. These are characteristics of the organic model, but the companies were not a pure embodiment of it. A solid layer of bureaucracy underpinned the companies, particularly in administrative areas, and although demarcation wasn't rigid, it wasn't fluid either. Editors, designers, sub-editors, and journalists had roles that they generally fulfilled. However, in two of the case-studies, Rondonondo and *Ireland.com*, demarcation wasn't as precisely adhered to as it was in their larger parent companies, which had higher levels of bureaucracy and conformed closer to Burns and Stalker's mechanistic model.

Burns and Stalker have two ideal models: an organic system for companies in a changing environment, and a mechanistic one for relatively stable conditions. Mechanistic systems have high levels of bureaucracy and demarcation and cannot adapt easily to change. Burns and Stalker propose that any model that falls between their ideal is dysfunctional, because it hinders the organisation from achieving its goals. My case-study companies, although closest to the organic model, also had elements of the mechanistic model, and so fell between. The case-study companies encountered a number of difficulties as they tried to establish themselves in the market, but their organisational structures did not hinder their innovative activities. Contrary to Burns and Stalker's argument, an organisational structure between organic and mechanistic can affirm innovation and not always be dysfunctional to it.

There was common ground in the management approach taken by each case-study company, although certain elements of management were context specific: The Irish Times Group, as a media organisation, was responding to the possibilities and challenges of the Internet and associated delivery platforms. Eircom, through Rondonondo, was trying to create advantages from controlling the delivery infrastructure for digital media content, as a means of leveraging itself into a strong position as a content creator. And Pure Communications had a specific product that it hoped would create a niche while the market remained receptive to new types of products. The origin of each venture affected the overall management style.

Pure Communications was a start-up. The management of the company came up with the idea of *Enter*, and developed it from a concept to an actual product. The company's resources were channelled towards promoting *Enter* and stabilising it within the market. The management answered to no higher authority in the company: there were no additional layers of management, distant from digital media content but with the power to make decisions that could affect production. Pure Communications management had control over the design of the CD-ROM and its overall development. The management made the decision to expand into a foreign market and change the focus of the CD-ROM. Pure Communications had the smallest organisation of the three case-studies and the least amount of demarcation. Management was not a layer separated from content production.

Rondonondo was part of a telecommunications company which had no tradition of content creation. The organisation was bigger and the layers of management more elaborate than in Pure Communications. There was a layer of management within the

Randomondo organisation itself, and an additional layer external to Randomondo but within Eircom. This was the main point at which Randomondo and Eircom interacted. There was a lot of friction between Randomondo management and Eircom management, and employees were aware of it. Although Randomondo negotiated with Eircom for budgets, Eircom effectively set the budgets within which Randomondo worked and therefore set the broad parameters of its technical infrastructure, staffing and innovative activities. Eircom management issued directives that Randomondo tried to resist, in some cases successfully, in other cases not. Randomondo was prevented from supplying content to other telecommunications companies. Eircom wanted Randomondo to service internal company needs; however, Randomondo wanted to exploit external markets.

Management and employees at Randomondo accepted that Eircom didn't really understand content, didn't know what it wanted from Randomondo, and didn't appreciate the developmental work at Randomondo. This perpetuated the feeling that Eircom regarded Randomondo as peripheral to its activities and not fully integrated into the overall organisation of the company. The operations officer argued that influential people in Eircom were against content development, and this was known while Randomondo was still active. Lucy Jung noted in her study of the BBC online how its management deflected criticism of the online service and fostered a strong sense of creative purpose (Jung, 2001). Eircom's disregard for content seeped into the Randomondo organisation, and the attitude from interviewees seemed to be that they had created quality content that wasn't appreciated. The public and private messages from Eircom management were mixed: publicly it backed Randomondo to become a leader in the content industry, but privately wanted it to concentrate on servicing internal needs.

Ireland.com's activities were closer to the core activities of The Irish Times Group than Randomondo's were to Eircom's. This was regarded as important in preserving *Ireland.com* when, in a similar financial situation, Randomondo was closed. Much of *Ireland.com's* content was created, first, for the newspaper, then re-published in a lightly-edited form on the web. *Ireland.com* was allowed relative autonomy in its breaking-news section, provided it did not scoop a story intended for the next morning's newspaper. *Ireland.com* and The Irish Times Group management had less interaction than was evident between Randomondo and Eircom. The Irish

Times Group set overall budgets and levels of investment, but allowed *Ireland.com* a high degree of freedom to manage its finances.

However, *Ireland.com* management was less successful than that of the BBC Online at fostering a culture of purpose and belonging within the overall organisation. On several occasions during my research placement, journalists referred to the low regard senior *Irish Times* management and editors had for the website. *Ireland.com* journalists had lower pay, contract status and benefits than *Irish Times* journalists. An *Ireland.com* journalist was present at the daily *Irish Times* editorial meetings, but did not sit at the main desk with the newspaper editors and was regarded more as an observer than an active participant. The underlying belief in *Ireland.com* was that senior Group management tolerated more than appreciated the website. The most obvious instance of *Ireland.com* having to respond to the directives of Group management was in implementing the subscription model.

Like Rondonondo, *Ireland.com* suffered from being a small, peripheral element of a bigger organisation. But it was closer to the core business of The Irish Times Group and the disregard for its activities was less than that experienced by Rondonondo at Eircom.

With so many factors influencing the emergence of the industry – and as a mark of the industry being at an early stage of its industry life-cycle – the management of the three case-studies fostered organisational structures that were small-scale and flexible and could respond to change. The origins of the companies didn't have a noticeable influence on their organisational structures, but a tension did arise between them and the larger, rigid non-digital media organisations of The Irish Times Group and Eircom. This was particularly so with Eircom, which was a highly demarcated telecommunications company, and had difficulty incorporating a smaller, flexible digital media organisation.

9.3.5: Import of new (media) codes, grammars and conventions

Because the qualitative case-studies were based on the creation of media and entertainment content, I examined the emerging grammars, codes and conventions of

content production. Also, my research explored how content artefacts were framed, conceptualised and implemented, and how they borrowed and adapted from previous forms of media. The discussion on the import of codes, grammars and conventions was restricted, because my main focus was on the wider development of the digital media content industry. There is need and ample scope for future research to fully articulate the process of importing and adapting mature media codes, grammars and conventions to new media, and to theorise the patterns and practices that are becoming the distinct characteristics of digital media.

The thesis provides some initial insights – in particular, on the proclivity of developers to refer back to and frame new media in terms of the old. Earlier studies suggest that new technologies frame themselves in terms of older technologies. But as the new technologies mature, they refashion old techniques that don't work in the new setting, and begin to display their own distinct qualities (Marvin, 1988). My research suggests that a similar pattern is true of digital media. Originally, innovators frame digital media content in terms of the traditional media, until the medium begins to mature and innovators accept that traditional media references and practices don't always fit easily with digital media. In each of my qualitative case-studies, there was an instance of digital media content being framed in terms of the traditional media: *The Irish Times on the Web* as an online newspaper (although, by 2002, the term online newspaper had been discarded by *Ireland.com*), *Enter* as a CD-ROM magazine, and Rondonondo's various online magazines.

There was a progressive awareness among the three case-studies that simply grafting traditional media structures and production competencies onto digital media wasn't beneficial. In particular, *Ireland.com* was slowly, and at times against the wishes of the Group management, trying to adapt *Irish Times* writing house-style to a less formal, shorter style. Complicating the process was that the website republished *Irish Times* content, and therefore had to retain a high level of 'style' consistency with *The Irish Times*.

Two of the qualitative case-studies – *Ireland.com* and Rondonondo – were trying to exploit the growing possibilities of mobile communications devices, especially mobilephones. But their content ambitions were inhibited by the display limitations of the platform. Mobilephones, for both SMS text messaging and WAP, are a highly restricted medium. An SMS message can accommodate only a few lines of text, and WAP stories in *Ireland.com* are restricted to 90 words. In 2002, WAP and SMS could

not easily accommodate images, and the typographical possibilities were limited. Not only did this restrict the form and quantity of the content, but also the types of content that could be delivered in such a condensed manner. Both Rondonondo and *Ireland.com* offered narrow bands of content to mobile communications devices: news content, weather, sports news, entertainment news and cinema listings.

9.4: Implications for methodology and future research

Deeper research into the emerging codes, grammars, and conventions will require qualitative methodologies. The research should be conducted in real-time (participant observation), and contact time with the case-studies should be for a longer period than was possible in my research. One of the problems of researching an emerging industry is that start-up companies tend to be particularly vulnerable to closure. Future research, perhaps building on the conceptual framework established in this thesis, could benefit from the tendency of innovators to stabilise as markets mature.

Future research should clearly distinguish between media and entertainment content and utilitarian informational content. Linked to this should be a study of how the language of digital media evolves and gains common usage and specific associations with digital media. The *Enter* case-study shows the difficulties of using old media references to frame a new media artefact.

The research must draw further on media studies to complement what I have taken from systems of innovation and social shaping of technology perspective, to offer an elaborate conceptualisation and theorisation of digital media and its aesthetics.

In studying the emergence of the industry, the thesis necessarily takes a general approach to content. Future research must be sensitive to the platform for which the content is being created – the web, PDA, mobile communications devices, interactive games (and the narrative conventions that are developing within them). Particular codes, grammars and conventions are emerging for each platform. A sharper focus on them will benefit not only production research but also consumption research, because the technological form through which content is consumed affects the user's perception. For example, cinema is different to television. In cinemas, films are presented as self-contained narratives, whereas television is a continuous flow of images (Flew and McElhinney, 2002).

As argued earlier, future research should have a sharper distinction between media and entertainment content and utilitarian informational content. An element of this should be a focused examination of the business models of informational content, which is likely to be supplied from organisation to organisation, or directly to professionals to allow them to function, and not to a general audience.

9.5: Concluding remarks

It is difficult to develop a conceptual framework that is sensitive to all the facets of the industry's emergence, but yet could offer a coherent analysis of it. Technology-driven, linear accounts of emergence appear reductive in comparison to my conceptual framework, and create a one-dimensional, uni-directional conception of what is a multi-dimensional, multi-directional process. To gain a fuller sense of the process, the conceptual framework has to work at macro, meso and micro-levels. Research that is restricted to macro and meso-levels – and based upon crude quantitative statistics – could not provide a full account of the multi-layered emergence of the industry. Neither could research restricted to micro-level inquiry. Future research must incorporate a multi-layered conception of the industry.

This research has sought to provide a fuller understanding of how the digital media content industry and innovations within it are emerging. Three years is a short timeframe to examine the industry, especially at an early stage of its emergence, when industry profiles, knowledge, competencies, infrastructures and innovations are subject to rapid change. The trends and characteristics uncovered by my work may change or fade away as the industry reaches a higher level of maturity. This is the meritable fate of a 'real-time' study of industrial innovation processes. Further research, over a longer period of time, will be necessary to examine the industry as it matures and forms more established patterns of innovation, output, revenues, competency, and knowledge.

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