Fredrik Augustsson

They Did IT

The Formation and Organisation of Interactive Media Production in Sweden

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Preface

How does a dissertation come about and how do you sum it up? I guess it started when my supervisor Göran Ahrne told me that Åke Sandberg, who came to be my assistant supervisor, was looking for a research assistant to help him organise a couple of workhops related to the Internet, of which I knew little at the time. When I was encouraged to apply to the PhD studies and write a dissertation a few weeks later, Göran gave me the comforting advice that an academic career often is a huge disappointment, but that it never is too late to quit. From there on started a journey that has lasted six years. Nine employments, four departments, five offices and seven computers later, the journey has come to an end.

I would like to thank those that cleared the path and helped me along the way. First and foremost Åke Sandberg and Göran Ahrne who gave me the opportunity. While setting up and running the MITIOR programme, Åke has shown in practice how confronting material and ideal structures can be a costly affair resulting in limited opportunities and resources, but one that can pay off in terms of good research. Without his struggles, this dissertation could not have been made and for that I am grateful. I am quite sure there was times when Göran did not get what interactive media is or what I what aiming for, which is understandable given that I was uncertain myself. But he always encouraged me to move foreward, shut doors to many roads I was tempted to walk that probably would have gotten me more lost than I already was, and instead opened new doors that led me forward.

I also want to thank the others I have worked with, who commented my work and encouraged me: Stephen Ackroyd, Michael Allvin, Patrik Aspers, Martin Brigham, Karin Darin, Christopher Edling, Steve Fleetwood, Rolf Gustafsson, Magnus Haglunds, Tommy Lindkvist, Anne Lintala, Sanja Magdalenic, Gabriela Maguid, Bo Melin, Emma Movitz, Casten von Otter, Apostolis Papakostas, Mick Rowlinson, Andrew Sayer, Arni Sverrison, Phil Taylor, Paul Thompson, Mikael Thålin, Chris Warhurst, Ewa Wigaeus Tornqvist, Åke Walldius. A special thanks goes to Atty Burke for assisting me in reconstructing empirical data and designing figures, layout and proof reading, it without whom it would not have been finished in time. Puh…It is odd how writing a dissertation can sometimes feel lonesome when so many are involved or affected by it.

Thanks also to participants at the following workshops, seminars and conferences where work has been presented: PhD course at the National Institute for Working Life (NIWL) 2000, PhD seminar at sociological dept., Stockholm University 2001, European Sociology Conference 2001, MITIOR/ESBRI seminar at TIME Stockholm 2001, Critical Management Studies Conference 2001 and 2005, Nordic Sociology Conference 2002, dept. of Organisation, Work and Technology at Lancaster University 2002, dept. of Human Resource Manage-

ment, University of Strathclyde Business School 2002, Work With Computer Systems 2004, Max Planck Institute, Berlin 2004, Work Health seminar at NIWL 2004 and two seminars at NADA, KTH in 2005.

This research has mainly been financed by the NIWL within the dept. of Work Organisation, Bergslagsprogrammet, SMIF, the dept. of Work Health, and Tema Storstad. Additional financing of studies and expenses include SALTSA, the dept. of sociology at Stockholm University, Dept. of Organisation, Work and Technology at Lancaster University, Vinnova, the IT Commission, the City of Stockholm, IT-företagen and SIF Stockholm.

I dedicate this dissertation to Putte and Jonas for creating the material and ideal preconditions for this – and me – to come about and to Emma for support and love beyond belief, and not just in times of doubt.

Stockholm November 2005
Fredrik Augustsson

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1. Introduction: Setting the Stage

In the middle of the 1990s, something happened in a Sweden that had barely recovered from the largest economic crisis at least since the Kreuger crash (Edvinsson 2005), as a new technology, sector and practice emerged: the so-called interactive media sector. The sector consists of firms that produce, among other things, previously unheard of solutions such as web sites and e-commerce for the at the time mythical Internet. The sector emerged out of and became related to other parts of society, especially information technology (IT), management and media. But it also grew to be something of its own based on technologies widely believed to reshape or even revolutionise business, media and society (Castells 1996-2000; Tapscott and Caston 1993; van Dijk 1999).

How could one of the fastest growing and advanced parts of the global IT-sector in the world develop so early and fast in Sweden? After all, it was a small country near the Arctic Circle that had barely recovered from an economic crisis, a country that is repeatedly accused of having too high taxes and too strong unions, lacking entrepreneurial spirit, being dependent on ancient large companies and hostile to small and medium sized enterprises in general.

The simple story is that young entrepreneurs started small interactive media firms to cater for the rapidly growing demands for IT and Internet solutions that followed the developments in IT in the late 90s. An Internet buzz crazed, leading to massive investments in IT and interactive media firms, and a stock market bubble as firms grew in size and numbers, but usually not in profits. For a couple of years, Sweden was considered to be at the forefront within IT, a sector thought to be crucial for all nations' economic success in the future. It seemed as if everyone was talking about the Internet and that IT could solve anything (Cronehed 2004; Lennstrand 2001; Lindstrand 2002). But the bubble eventually burst and the 'dot com death' followed, wiping out the majority of firms. According to the simple story, the saga seemed to be over a few years later as the firms had all but vanished from the media's attention and public discussions.

The story above is however not only too brief, but partially misguiding. The purpose of this study is to argue for an alternative and more complex understanding of the formation and organisation of interactive media production in Sweden around the turn of the millennium. In a broader sense, this study is about how new things come into being, using interactive media as an example: how is it that some actors start doing something that is perceived as new and why do they do it in a certain way? How do new practices, groups of firms and social fields form? Why do they form at all and how is the new related to that which already exists? Put differently, the study frames a highly limited and special type of

practice as part of broader questions of why new practices form and become organised in a certain way and the role of that already in existence.

When asking the above, an assumption is that it could look different. The description by Helgesson (1999) of how telephone operating in Sweden formed and came to be regarded as a natural monopoly in the early 1900s and changed from being handled by companies to a state monopoly is an interesting and relevant example. If the Internet and e-mail had been developed in the 70s or 80s, it is not unlikely that it would have been a government monopoly handled by Televerket or the Post Office, like the French Minitel system (OECD 1998). All e-commerce would perhaps be run through official Televerket portals and the merchandise delivered by the Post Office (cf. Hörnfeldt et al 1999). This alternative now seems unlikely, but would probably not have been twenty years ago.

The above points to the importance of timing. In any given context, certain alternative developments are impossible, others more or less likely, but none certain. Given the technical developments, it was more or less inevitable that interactive media solutions would appear sooner or later, but it was uncertain how their production would be organised. It would for instance be impossible to have an organisation of interactive media production based on slavery in Sweden during the 1990s, so this is an alternative that can be ruled out and in need of no immediate explanation. It was highly unlikely that Sweden would have had a state monopoly on interactive media production during the same period since the 1990s was characterised by deregulation and privatisation, making the creation of a new state monopoly more or less politically impossible. It was however possible that interactive media production would have been performed internally by firms in general, or by existing firms related to the field and practice. Yet, this only occurred in part as new firms were given the opportunity to step in.

A description of the formation of something new is also the story of oppressed alternatives, and an explanation needs to answer both 'why' questions in relation to that which *is,* and 'why not' questions in relation to that which *is not*. Thus, the analysis of the growth of firms producing interactive media solutions for others is also the analysis of why some firms do not produce it themselves while others do and why the state does not do it all. As Calhoun puts it:

> Causality always depends on inference that goes beyond the "facts" or numbers themselves. And in the deeper, theoretical sense, it depends on recognizing that the facts could have been otherwise. […] History, thus, is the story of what has happened. We seek in addition, however, an account of what could have happened because this is crucial information for consideration of our current decisions (Calhoun 1995, p. 9).

A Study in Sociology…

In this study, I target questions and draw on empirical findings and theoretical arguments from several disciplines, but I do so largely from a sociological perspective. I further argue that the focus of this study, how new things come into being and become organised, relates to two central problems in social science: i) the relation between agency and structure, or micro and macro; and ii) novelty and change. Clearly, both problems are complex and it would be both bold and folly to suggest that they are 'solved' here, and no such attempt is made. Still, they will be briefly discussed below and further in following chapters.

i) Agency, Structure and Beyond

The structure – agency debate has at least two aspects of relevance here: the relative causal status given to structure and agency and the 'proper' or preferable level of study, i.e. the ontological level at which researchers should analyse empirical phenomena to detect causality. The formation and organisation of interactive media production, here conceptualised as a practice and social field, directly calls the respective roles of structure and agency into question: to what extent is the formation of social fields the cause of entrepreneurial action and to what extent is it the result of structural preconditions and configurations (Reed 1997)? And when in place, is the structure of a social field the result of the choices of the actors involved, or do the structures of the social field determine the possibilities and affordances for actors to choose certain ways to organise (Gibson 1979)? It has further become all the more apparent that descriptions and explanations of the organisation of production cannot be restricted to the macro (i.e. society or economy) or micro (single firm or actor) level (Davis et al 2005). I argue that causality resides in both structure and agency, dialectically related but different types of entities. Following this and shortcomings of studies limited to the micro or macro level, respectively, this analysis pays attention to the meso level of social fields and links the three levels together (cf. DiMaggio 1991).

ii) Novelty, New Technologies and Change

The second general problem in social science of relevance concerns relations between novelty, change and new technologies. This is necessary to discuss since much of what has been written and said about interactive media and IT in general takes novelty and change as its starting point, and this presumed novelty has effects on the formation of interactive media production in Sweden.

Technology is not the only factor that causes and explains the formation of a social field and the organisation of production, it has to be understood in relation to other factors and processes. The causes for changes as well as their effects appear on different levels, need not develop in the same direction, and might even be contradictory. Novelty is in some cases due to changes in existing actors

and structures and in other cases due to the emergence of new ones and changed configurations. Following this, using stage models where the new is perceived as the opposite of a caricature of the old, as in discussions of an old and new economy or industrial and network society, is unsatisfactory.

…and of Interactive Media

Although growing, research on interactive media production is still rather limited. There has been a lot published concerning the impact of IT on more or less everything imaginable. But much of what is written about interactive media and the IT sector in general in the media and parts of research has been mere rhetoric, or built on guesses, hopes and fears of the future and new technologies (for discussions, see DiMaggio et al 2001; Holmberg et al 2002; Lennstrand 2001; Rössler 2001; Slack et al 1998).

Previously available descriptions of interactive media are mostly either statistical estimations of the size and revenue of the market, or case studies focused on particular projects or firms (for examples, see Eckerstein et al 2002; Hörnfeldt et al 1999; Lindstedt 2001; Malmsten 2001; Mattsson and Carrwik 1998; SIKA 2003; Statistics Denmark 2001; Uvell 1999; Willim 2002). Although valuable for certain purposes, such studies present a limited and sometimes distorted picture of Swedish interactive media production, at least in relation to the purpose here. They say little about the formation of practices and social fields and and the organisation of production.

This study builds upon most of the relevant survey data available that focuses on interactive media production in Sweden. The study has been conducted at NIWL between 1999 and 2005 as part of the MITIOR programme, started by Åke Sandberg in 1996 and since then having consisted of several researchers. The surveys conducted within the MITIOR programme that I make use of in this study are three firm level surveys aimed at producers of interactive media solutions performed in 1997, 2001 and 2003 (results from the last survey are not yet reported, the former two are published as Sandberg 1998; Sandberg and Augustsson 2002), one survey focussing on in-house production of interactive media solutions in larger Swedish firms and government agencies (Augustsson and Sandberg 2004a) and one study aimed at workers in firms producing interactive media solutions (Sandberg et al 2005). I have participated in conducting all of the surveys apart from the one from 1997 and the findings reported here are based on analyses of the original data, which has been modified to fit the purpose of this study. The surveys have further been supplemented by empirical data retrieved from visual and media analysis (see chapter two and appendix A).

Interactive Media – A Preliminary Definition

It is nearly impossible to study something without giving it a name. But the labelling of a phenomenon is problematic if both the labels and the phenomena are changing and integrated parts of the construction. Since the beginning of this study, the meaning of interactive media has changed (cf. Moriset 2003). The transformation and fluidity of the label and that which it refers to is an important finding of the study that contributes to understanding the formation of interactive media. To give a final definition of interactive media at the outset is not the point, but an integrated part of the answer (cf. Sayer 2000, p. 20; Sterne 2003). Still, it is necessary to present an initial definition in order to make it possible to understand what the study is about.

Most previous definitions of interactive media are based on technical descriptions, emphasising features such as interactivity, possibilities of two-way communication, the combination of several mediums and digitalisation (e.g. Ambron and Hooper 1988; Chaffey 2002; Elsom-Cook 2001). The initial technical definition can be necessary for practical reasons, but many prior studies unfortunately seldom move beyond or question the definitions made, making it hard to even explain what is 'new' about new media (Lievrouw and Livingstone 2002).

Technically, interactive media is here defined as a *solution* that is digital and multimodal (includes several media). It is a solution that the user can interact with, i.e. it responds to the users actions. The solution can be off-line (CD-ROM, DVD), on-line and wireless (Internet, intranets, 3G) or a combination of the above. Common examples are web pages, computer games and information kiosks. The boundaries to solutions like digital TV and 'ordinary' computer software are not clear-cut. Other names for similar solutions are new, multi- and digital media. As the definition shows, it is in part a misconception to refer to the solutions as media, a term originating from traditional media studies and beliefs about the technical development (cf. Feldman 1994; Pavlik 1998).

Interactive media production is the *practice* of producing such solutions. This can be done as a non-profit or artistic activity: private persons might develop websites as a means of presenting an expression, functioning in the same way as e.g. paintings, photography. The focus of this study is on the production of interactive media as a commercial practice that can be handled internally by organisations themselves or by firms that produce solutions for external customers (Augustsson and Sandberg 2004a; Sandberg and Augustsson 2002).

In Sweden, interactive media production is often considered to be part of the IT, advertising, management or IT-consulting, in turn part of the TIME sector (Telecommunications, Information, Media and Entertainment), or the experience industry (Jansson 2005, pp. 36-37; Nielsén 2003). Such external classifications based on perceived sectors give limited basis for understanding meaning or causal relations since specialisation, co-ordination and the circulation of goods

and capital is simplified and the causal groups are overshadowed by taxonomic ones (Sayer 1992; 2000). A neat picture is created, but it is not one that resembles reality as perceived by those involved or can be used for explanations. Even so, the classifications might have consequences for e.g. recognition and resource distribution as has been the case for interactive media.

Internal recognition can however not be taken too far. Those who perceive of themselves as involved cannot solely be given the right to determine definitions since this may lead to faulty conclusions. Many ideal and material structures are not visible and people can be and often are wrong in their perceptions of social phenomena and causality (cf. Hedström 1996). The relativism of definition found in social constructionism must be rejected since human agents and researchers are fallible (Fleetwood and Ackroyd 2004).

Interactive media as a *social field* is in this study defined as being made up of the actors that i) are involved in the practice of producing interactive media solutions and ii) identify themselves and to some extent are recognised as being a part. The crucial difference between a practice and a social field thus concerns the extent to which actors identify themselves, and are identified, as participating in the practice. As will be shown, the separation between practice and social field and the difference between the recognition of insiders and outsiders to the social field is central to understanding the formation and organisation of interactive media, especially in terms of resource allocation.

Research Areas and Questions

My argument so far is that the formation and organisation of interactive media production in Sweden is insufficiently described and explained. A description of interactive media cannot start from or limit itself to traditional concepts of industries or sectors as these do not sufficiently capture the practice in a way that makes it possible to explain its formation and organisation. It is further argued that an explanation of the formation and organisation of interactive media production is related to two central problems in social theory: the structure and agency debate, and novelty, social change and the role of technology. Following this, the purpose of this study can be summarised in two major research areas and a series of sub questions:

1. i) How did the production of interactive media form in Sweden and ii) how is interactive media production organised?
   Were most firms within the field actually new and started by young entrepreneurs, as was the common image of the field? To what extent are solutions produced internally by existing organisations? Is the organisation of production characterised by a high level of shifting relations between many firms? Are the firms characterised by non-hierarchical structures?

2. How can i) the formation and ii) the organisation of interactive media production in Sweden be explained?
   Was the formation and organisation of the field inevitable due to the technical innovations, and how do the technologies used influence the organisation of production? How did the IT bubble influence the development, could the formation of the social field have occurred without it and the following crash, and vice versa? What role did the state play in the formation of the social field?

The first research area is mainly descriptive (although in need of conceptualisation), whereas the second is explanatory. This study then offers developments within two areas of knowledge, one mainly empirical and the other theoretical. The first gives a description of the formation and organisation of the social field for interactive media in Sweden and the second an explanation of the relations between the formation of a new technology, practice, and a social field. Following this, the study can be read either as a study of interactive media production where theory and analysis function as a way to understand the findings, or as an attempt to develop the theory and analysis of formation and organisation of production, with interactive media as an empirical case study (Dosi 1984, p. 1). I believe both ways work, but that readers will find that it is to some extent two different studies.

Delimitation

This study is delimited in time, geography, practice and topics: it is about Swedish firms producing interactive media between the early 1990s and late 2003. As will be shown in chapter four, interactive media production as a practice hardly existed in Sweden before the early 1990s, hence there was little to study (cf. Hamngren and Odhnoff 2003; Nissen 1993). The upper limit is partially set because I must cease researching at some point and deliver a finished product, but also because there are signs of a dissolution of the social field at the end of the period (see chapters seven). The limits in time are however not 'real', this is not when the story starts or ends.

The production of interactive media has attracted a lot of attention among economic geographers and a large proportion of the empirical studies focus on geography, or are at least limited to a certain region or city (Batt et al 2001; Braczyk et al 1999b; Brail 1998; Indergaard 2004; Jansson 2005). Although geography is an important aspect of organisation, the availability of previous studies is a good argument for focussing on other aspects.

The study deals with just one practice in Sweden, the production of interactive media. Therefore, it is not possible to conclude in what ways the organisation of production that characterise the social field of interactive media resembles other

social fields. The empirical results (but not necessarily the theoretical findings) reported here are only claimed to be valid with normal caution for the mentioned context. This context also forms the explanatory background for the formation and organisation of the field.

The central issue here is the production of interactive media artefacts. But how the organisation of production affects the design of solutions or how they might change the organisation of work, production and society and in general is not investigated. Following this, the user and consumer side of interactive media is not investigated if not involved in production. I neither investigate why or how particular innovations in interactive media technology are made or why certain innovations become successful while others fail.

Since focus is placed on the overall formation of interactive media production, who actually performs the labour being divided – e.g. issues of gender and ethnicity – and matters of inclusion and exclusion are only briefly mentioned (cf. Augustsson and Sandberg Forthcoming/2006; Davies and Mathieu 2005).

Whether or not interactive media production in Sweden in general is efficiently organised – or specific firms better than others – will not be dealt with. If you are looking for stock market tips, you are reading the wrong study. The study still includes matters of efficiency as part of the *explanation* of why it is organised in a certain way (cf. Stern 1999; Swedberg 1990).

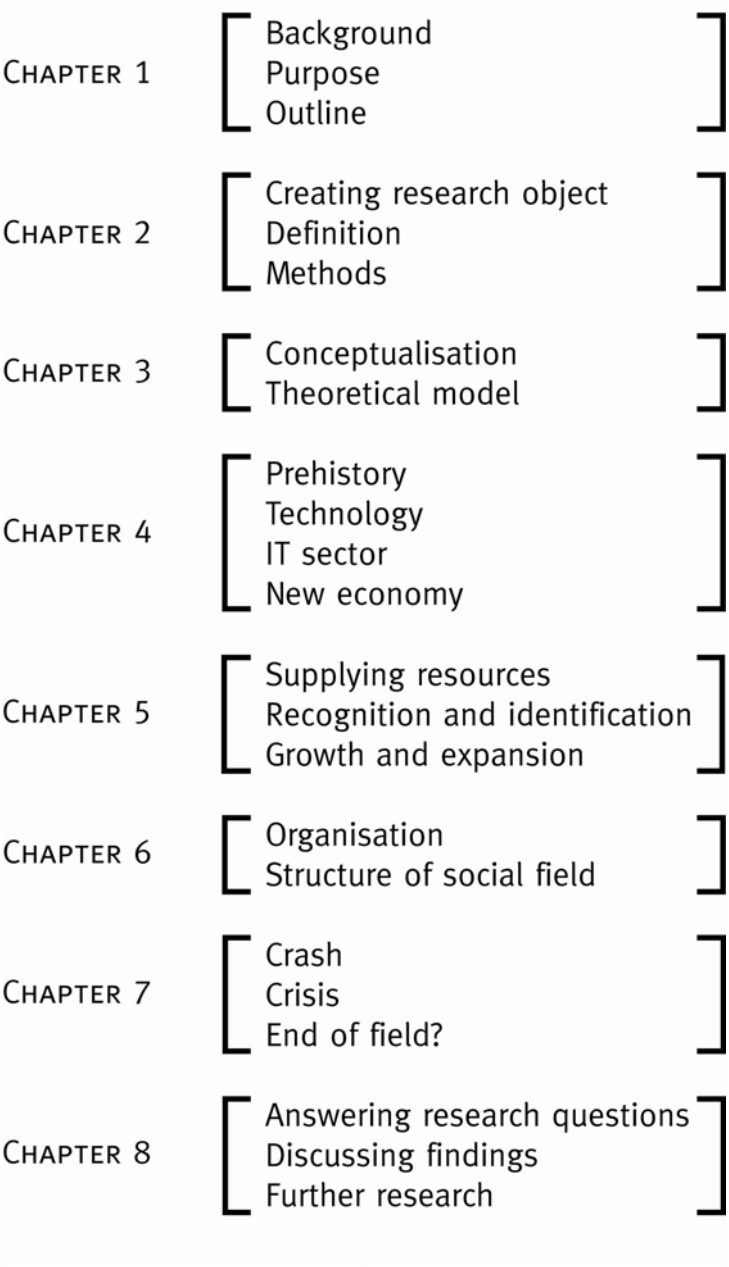
Outline

The presentation follows the outline presented in figure 1.1. In the research process, the methodological, theoretical and empirical findings are however integrated parts of the study intended to make the area of research understandable.

The present chapter has thus briefly presented and defined the area of research and purpose as the formation and organisation of interactive media production, shown why this is of interest to study and how it relates to sociology in general, as well as pointed to some areas that are not covered.

The next chapter contains a discussion of how interactive media is approached and transformed into a research object through a process of abstraction and conceptualisation. In connection to this, an elaboration of how the study relates to broader issues in social science is made. The chapter continues with an extended discussion of the definition of interactive media as an artefact, practice and social field and how the three relate to each other. This is followed by a description of the activities inherent in interactive media production, intended to provide a better understanding of the work that goes into making an interactive media solution. The chapter ends with a description of the empirical methods used and how the results have been analysed separately and in relation to each other. A more detailed and 'technical' description of data collection and analysis is found in appendix A.

Figure 1.1. Outline of study.



Chapter three is the major conceptual and theoretical part of the study. It contains a model to conceptualise interactive media as well as a theory to explain formation and organisation of social fields in general, both of which I have developed in close relation to previous theories on one hand, and the empirical findings of the study on the other hand. It is thus not a theory to be tested by applying it to the empirical case as both the theoretical and empirical findings are outcomes of the research process. Since the intention is that the model and theory developed may be fruitfully used in other areas than the focus of this study, the discussion and presentation is quite abstract and dense. Connections are however repeatedly made throughout the empirical findings and in the final chapter.

The empirical findings are presented in chapters four to seven. The chapters are ordered somewhat chronologically. For each period however, different themes that describe and explain the growth and structuring of interactive media production are in focus. Thus, chapter four contains a discussion of the situation in Sweden at the time of the formation of interactive media production, where it is argued that the earlier economic crisis and the following restructuring of the private and public sector, as well as ideas about a changing society, contributed to placing IT and thereby interactive media at the centre of attention. This is followed by a closer look at the developments in technology necessary for the production of interactive media solutions, how the technologies were diffused and the visions attributed to them. The next theme concerns a brief look at the already existent IT related practices in Sweden, intended to show that there were organisations and knowledge to handle IT before the coming of the interactive media producers during the 1990s. The chapter ends with a discussion of how the ideas of an imminent new economy and knowledge society came to be identified with the actors that produced the IT solutions thought to cause the changes, as well as a discussion of the beliefs in changes and convergences of markets due to IT that flourished at the time. It is argued that these ideas, together with thought and real changes and convergences of markets, contributed to a growth in demand for IT and interactive media solutions.

Chapter five starts with a description of some of the initiatives taken by the state that contributed to increased opportunities for interactive media production to form and be realised, including the IT in Schools Programme, the adult education initiative, increased number of university educations, business start-up aids and tax deductions on personal computers. It is shown that many of the initiatives taken by the state were a result of the previous crisis and the belief in a transition into a knowledge economy, rather than aimed at nurturing interactive media, but that the initiatives still had an important effect. This is followed by a description of the growing demands for interactive media solutions and willingness to invest in the firms that produced such solutions. Following this, it is shown how the IT boom is due to a financialisation of the social field, whereby interactive media production is turned into a speculative object valued according to other standards than other parts of the economy, and the role that the media played in this process. The chapter continues with a discussion of how identification, labelling and classification were central for positioning and resource allocation. The chapter ends with a description of how the above results in a rapid growth, redirection and expansion of firms that produce interactive media solutions and a growth in the in-house production of such solutions.

Chapter six is focussed on the organisation of interactive media production. It starts with a discussion of the novel forms of organisation that presumably characterised firms producing interactive media solutions, where it is argued that the novelty was more important as an idea than as an organisational form. This is

followed by a description of the vertical and horizontal division of labour within firms producing interactive media solutions. It is shown that although there is a certain flexibility concerning what interactive media workers do, it is possible to group them into three clusters of activities and positions following the logics of technology, aesthetics and economy. The firms are further generally flat with few levels of management, but they are not decentralised as the majority of influence rests with project and higher managers. The chapter then turns to the organisation at firm level describing in turn the firms' involvement in activities within, related to, and besides interactive media, the proportion and extent of production that is outsourced and performed as subcontractor or by customers. It is shown that the grouping into different positions in line with the logics of the social field is consistent on firm and inter-firm level as well. Based on this, it is possible to create a model of the overall structuring of the social field and practice of interactive media production based on the division and integration of labour.

Chapter seven concerns the IT crash, including the events leading up to it and its effects. It is shown how a cluster of financial reports issued by some of the main Swedish interactive media producing firms caused bad publicity and a general stock market fall. The stock market fall, coupled with rapidly decreasing demand for interactive media solutions, led to a lack of capital, layoffs, shut-downs and in some cases bankruptcies. The chapter continues with a recapitulation of the media debate following the IT crash, especially concerning the distribution of blame and shame, and ends with some speculations about the development of interactive media production as a social field after the crisis.

In chapter eight, the empirical and theoretical findings from the study are discussed thematically: technology, practices and social fields, resources, formation and organisation, structure and agency, timing and change, and comparisons and generalisations. This is followed by more concrete answers to the research questions, suggestions for further research and a postscript.

Those readers whose main interest lies in interactive media production in Sweden itself are advised to read only parts of chapters one to three, the whole of chapters four to seven and the answers to the research questions in chapter eight.

2. Approaching the Research Area

This chapter spans from the philosophy of science to practical methods of empirical data collection and analysis. It thereby describes the transformation of interactive media into a research object, using abstraction and conceptualisation (cf. Morgan 1997). The choice of conceptualisation guides the methods used to study interactive media and further makes it possible to view the research questions as part of broader theoretical issues concerning structure and agency, and stability and change.

Basic Assumptions

The study rests on a separation between the transitive objects of the theory used and the intransitive dimensions of the phenomena the theories refer to (i.e. reality) as well as a belief that many phenomena exist independently of us and our perception of them, i.e. a separation between ontology and epistemology (Collier 1994, pp. 50-51).[1] A further distinction is made between the real, the actual and the empirical domains of reality (Bhaskar 1998a, p. 41; Collier 1994, pp. 42-50). The real exists regardless of whether we know about it or not as material and ideal structures with causal powers. The actual refers to what happens if and when (real) causal powers are activated (as events). The empirical refers to our experiences, which are more or less fallible representations of the actual and real.

The above differs from on the one hand naïve and empirical empiricism and on the other hand strong versions of social constructionism. While Berkelian empiricism and the Humean (1739/1992) principle holds that causality can be directly inferred from co-variation between observable sequences of events (Berkeley's 'esse et percipi', cf. Sartre 1957/2003, p. 6), it is here argued that causal powers are not necessarily observable or presently activated (Bhaskar 1975/1997, pp. 87-8). Proponents of social construction, on the other hand, claim that the world is what we believe it to be, which cannot be correct since we are repeatedly mistaken (cf. e.g.Sartre 1957/2003, pp. 6-12; Sayer 2000). The world has to be structured and separate from our knowledge for life as we know it and science to be possible (Bhaskar 1998b).

Social studies concern complex open (rather than closed) social systems involving a multitude of interacting structures, actors and mechanisms where the same

[1] This discussion is influenced by critical realism which has grown to be a more influential philosophy of science within organisation studies (see e.g. Bhaskar 1975/1997; 1998b: Archer et al 1998; Collier 1994; Sayer 1992; 2000; Archer 1995; 1996; 2000; Ackroyd and Fleetwood 2000; Fleetwood 1999; Fleetwood and Ackroyd 2004; Brown et al 2002.

causal mechanisms can cause different outcomes and alternative mechanisms cause the same result. Following this, explanation is here based on finding the necessary and contingent actual generative factors that have the powers to cause the observed outcome and give an account of how they operate through social mechanisms (Ackroyd and Fleetwood 2000; Archer et al 1998; Fleetwood 1999; Hedström and Swedberg 1996; Sayer 1992; 2000). Logics might here be as valuable as empirical data: what is it about X that gives it the causal powers to cause Y; how must X be constituted for Y to be possible?[2]

Abstraction and Conceptualisation

Abstraction and conceptualisation is important since social facts have to be won, which cannot be achieved through method alone (Calhoun 1995, p. 65; Mingers 2004).[3] Once the conceptualisation is settled, the range of possible outcomes is limited (Sayer 1992, chapt. 3). The constraining and enabling powers of concepts cannot be denied but they do not determine the research process more than language determines reality (Danermark et al 2002; Hacking 1999).

Linguistic and visual presentations are also influenced by the media through which reality is transferred (Calhoun 1995; Sayer 1992). The construction and labelling of interactive media is an integrated part in the transformation of structures, the positions of actors involved and the organisation of production. The task at hand is to recapitulate the phenomenological understanding employed by those involved and to move *beyond* this conceptualisation to create an external abstract explanation of the concrete, a double hermeneutic (cf. Augustsson 2004; Calhoun 1995; Fleetwood 2005; Giddens 1977; Hacking 2002, p. 40; Karlsson 2004).[4] A set of interrelated concepts based on abstractions form the building blocks for an explanation of some features of the phenomena, but in itself is not an explanation (Edling 1998, p. 2). Explanations refer to real phenomena, not concepts (Danermark et al 2002; Sayer 1992, p. 87; Stinchcombe 1968). Still, abstraction show that interactive media is an example of something that exists in other contexts and relates to general research issues.

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[2] Logics are generally based on closed systems, but can under certain circumstances be used in explanations of open systems, e.g. true/false statements (Popper 1992; Wittgenstein, 1974). In closed systems, it is however irrelevant if reality behaves like the models developed (Blaug 1992; Hirsch et al 1990). But this is mainly applicable in pure mathematics and formal logics that do not correspond to any reality: the laws are always valid as agreed upon rules (although see Rasch 2002).

[3] Cf. Marx (1867/1990, p 90): '[…] *in the analysis of economic forms neither microscopes nor chemical reagents are of assistance. The power of abstraction must replace both*'.

[4] The issue is more complex since there is a separation between the conceptualisation used by those directly involved, i.e. interactive media producers, the researcher, and those outside the social field for interactive media production. There are further competing ideas or logics between different insiders. I return to this issue in subsequent chapters.

The concepts might not be regarded as the sharpest tools in the shed, some are rather fuzzy but useful (Sayer 2000). The fuzziness is intended to mirror the intransitive complexity at the same time as making understanding and explanation possible, rather than to hide the inherent complexity behind oversimplifications. Theories of self-referential systems like interactive media production to some extent have to include overlaps and contradictions since this is part of the phenomena itself and reduction from complexity runs the risk of forgetting it (Law and Mol 2002; Luhmann 1982, pp. 260-1). This is not a retreat as compared to e.g. formal modelling (cf. Collier 1994, pp. 42-51):

> Understanding concepts and how they change […] requires an understanding of the material practices associated with them and the way in which they are contested. As Bourdieu puts it, unquestioning use of everyday categories for things such as occupations or ethnic categories amounts to "settling on paper issues that are not settled in reality, where they are the stake of ongoing struggle" (Sayer 1992, p. 34).[5]

Methodological Consequences for Central Areas

The ontological and epistemological approach taken here has relevant methodological and theoretical consequences for the two areas pointed out in the introduction: the relation between structure and agency, and the connections between technology, change and novelty. The methodological consequences are discussed below, whereas the theoretical elaborations will be dealt with in chapter three. The critical realist position makes it fruitful to use the morphogenetic approach developed by Archer (1995; 1996; 2000) based on e.g. Marx, Lockwood (1964), Buckley (1967) and Bhaskar (1998b), and with similarities to models proposed by Coleman (1990) and in line with Hedström and Swedberg's plea (1998) for studies of social mechanisms. The morphogenetic approach essentially states that actors and structures are different but related entities and that structures predate actors, who can at best transform them. Stated this way, the approach is hardly new, but ontologically and analytically preferable.

Following the above and previous studies of organisations, their environment and relations to it, the methods used here need to incorporate data from several levels and over time and still conceptualise the research area in a way that do not incorporate everything (Scott and Meyer 1994). It is argued here that the relations between actors and their environment should focus on the alternative *positions* that individuals and firms might occupy, the *activities* they perform and the possible and realised *relations* between them (Archer 1995, pp.70-71; Bourdieu

[5] The benefits of this view are that we can criticise peoples' ideas about positions based on their actions (Calhoun 1995, pp. 88-91; Sayer 1992).

1986; DiMaggio 1991; Marx 1867/1990; Simmel 1971). As argued by Bhaskar (1998b, pp. 40-41;):

> Such a point, linking action to structure, must both endure and be immediately occupied by individuals. It is clear that the mediating system we need is that of the positions […] occupied […] by individuals, and of the practices (activities, etc.) in which, in virtue of their occupancy of these positions (and vice versa) they engage […] Now such positions and practices, if they are to be individualised at all, can only be so relationally.

Concerning the second area, technology is important, but it is not the only factor of change and it can only analytically be separated from several other factors. Novelty is further not only due to or affecting new organisations, but also those already in existence. Stage models based on ideas about a rapid and complete change to the opposite among all actors and on all levels are faulty, but have been influential in relation to discussions about innovations in IT, the new economy and the knowledge society, and they do have an impact on the formation and organisation of the practice and social field. It is therefore necessary to use methods that take the different effects of a multitude of factors and processes on structure and actors into account. The method also needs to pay attention to influential, albeit faulty, ideas that influence the formation and organisation of interactive media.

Defining Interactive Media

Taken together, the aim of this study, its relations to broader research issues and the discussions regarding how to transform interactive media into a research object (as well as theoretical elaborations in the coming chapter) create a foundation for a working definition of interactive media and make it clearer why traditional classifications based on i) technology or ii) industrial classification are insufficient for explanation.

i) Conceptualisations of interactive media limited to an external definition of the technology as artefact, i.e. the solutions, or process – how the solutions are produced – take the technology and its meaning as unproblematic and as residing in the technology itself. This neglects the social shaping of the technology as artefact, system *and* process: the formation of what interactive media is to be not only involves the construction of the actual solutions, but also of the practice of producing such solutions, alternative positions and the actors holding them and relations between them. It further neglects actors' identification with the technology as practice and artefact. Do actors perceive that they are involved in the process of producing interactive media solutions and that the artefacts they produce are interactive media solutions? Technical definitions mean that only the material aspects of the technology are considered, resulting in a materially based technological determination of inclusion and exclusion of e.g. actors.

ii) Definitions of groups of firms based on industrial classifications, like most official statistics, have some practical problems associated with the systems themselves. The systems are unsuitable as a basis for defining interactive media given the purpose of the study at hand since they are not constructed to serve the purposes of explanations (cf. Jansson 2005, pp. 35-37; Kalleberg et al 1990).[6] The classifications typically follow a hierarchical deductive logic where all actors are assigned to classes, no actors are placed in more than one class and the classes arranged into levels of subclasses made up of atomistic actors that share or lack some attribute as compared to actors in other classes. Such classifications often exclude some actors that should be included and vice versa.

Like definitions based on technology, those based on industrial classifications pay limited attention to the construction of the practices that make up the classes and firms' identification with these classes, it is enough if they are dividable and classifiable (Anderson 1991; Luhmann 1982). The definitions further insufficiently recognise that firms usually are involved in several practices, and therefore belong to several classes, that different firms involved in a certain practice might belong to alternative classes and differ in other respects than performing the practice. Attempts to solve the 'dilemma of fuzziness' by forcing labels onto actors and constructing Linné-inspired schematas or *ex post* classifications based on significant differences and predictive power is no solution (Hedström 2001).

The presumed novelty of interactive media can in fact partially be attributed to a faulty understanding: a new technology leads to a redefinition of SNI-codes, which creates a new class thought to represent a new type of firm or market. If it is assumed that new solutions like interactive media are produced by new firms and systems of classification are altered or expanded to include these firms, the growth of firms within the new classification can be taken as a sign of a growing new population of firms, or even the sign of a new and different stage.[7]

The Meaning and Relations between Artefacts, Practice and Social Field

Similar to Bourdieu's use of e.g. habitus, fields and capital, it is more complex to explain in the abstract and precisely define the central concepts I use than to empirically show their meaning, especially as they also constitute part of the outcome of the study (see e.g. Bourdieu 1990; 1998; Broady 1991; Sayer 2005). The first step in the definition of interactive media I have used is based on the end

[6] The official Swedish version of this is SNI-codes, 'Svenskt Näringslivs Index'. The international equivalent is Standard Industrial Classification (SIC). All Swedish firms are included according to major business activity. To this, firms can add complementary business areas, one sign that firms are not easily classified.

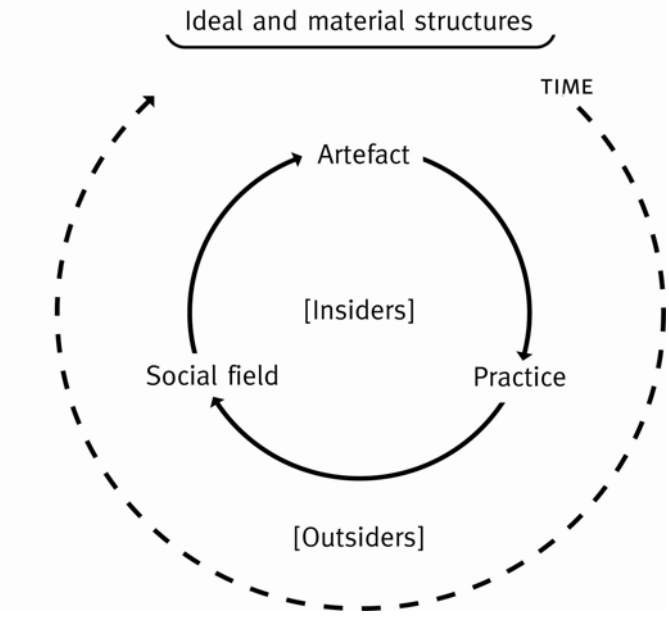
[7] This is in my view one of the most fundamental objections against empirical studies within organisation ecology and evolutionary economics that are based on register data with industrial classifications: a change in classifications is confused with a creation of a new population of organisations. Other studies face the opposite problem, i.e. novelty is neglected because existing classifications cannot capture new types of organisations.

result, i.e. what constitutes an interactive media solution as understood by those involved. The second step concerns determining the activities that makes up the practice of producing such solutions. If interactive media solutions are understood by insiders as constituting certain technical artefacts, what are the tasks that go into producing them, i.e. the activities that make up the practice? The third step consists of finding the firms and people that perform the activities and identify themselves as involved in producing interactive media, which also constitutes central aspects of the formation of social fields.

An interactive media *artefact* is thus the framed meaning given to the solutions created by those that produce interactive media. The *practice* of interactive media production is the set of activities that goes into producing an interactive media solution as recognised by those involved. The *social field* consists of the actors recognised as involved in the activities identified as part of the practice of producing interactive media artefacts, as defined by those involved in their production. As shown in figure 2.1, there is thus a circle of framing where those involved, what they do and what it leads to is continuously redefined against the backdrop of previously existing structures and actions (Shelton Hunt and Aldrich 1998).

Following this, a practice only exists when a set of activities are considered to belong together and constitute inherent (but separate) parts of a common practice aimed at a specific goal, in this case producing interactive media artefacts. The artefacts might however be part of several alternative practices. The practice is in turn only considered to constitute a social field when it is recognised as something that generally or 'really' is handled by a certain group of identifiable actors and takes place in a certain part of the social landscape (cf. Anand and Peterson 2000; Phillips 2002).

Figure 2.1. Circle of framing interactive media as artefact, practice and social field.



Interactive media producing firms thus refers to a theoretical group based on an abstraction of the insiders' collective identification of a shared practice aimed at producing certain solutions, a collective self-consciousness where at least some actors know each other. Most activities included in the practice can also take place in other settings, i.e. outside the social field, but are not always recognised as interactive media production. Thus, an actor can be involved in the practice of producing interactive media solutions without being recognised as being part of the social field. There are *constitutive rules*, institutional bases for labelling behaviour as a certain activity only when performed as part of a particular practice and rules governing the preferable type of actors involved (Berger and Luckmann 1967; Scott and Meyer 1994, p. 61; Searle 1969). As will be shown in raltion to interactive media production, the perception of performing a practice is more important for certain types of external resources than actually performing the practice. This makes the issue of consituitiuve rules an area for struggles over definitions. A social field is thus not just an alternative way to classify firms but something that has explanatory values that will lead to different outcomes for insiders and outsiders.

The circle of framing has no logical starting point, but time plays a role. It is at each point possible to ask what constitutes an interactive media artefact. Based on that, it is possible to examine in turn the activities and thereby practice that goes into making that solution, those that are involved in the practice and those making up the social field. One can also start elsewhere in the circle, for instance by investigating the actors that are considered to belong to the social field, then asking what it is that they are producing (i.e. the artefact) that makes them part of a group and then the practices going into making that solution.

The role of time is what makes it possible to define and empirically investigate interactive media without falling into an endless loop of socially constructed fluid concepts, but still pay attention to the phenomenological meaning given by those involved (cf. Archer 1995; Fleetwood 2005; Giddens 1976). If there is an (at least fairly) agreed upon definition of interactive media artefacts (or any of the other concepts in the circle), it is possible to critically examine the activities that goes into making such solutions and those handling them. One can thus ask questions like: why is it that some activities are not considered to be part of interactive media production even though all interactive media artefacts necessitate that someone handles them? Why are some of those that are involved in the practice of producing interactive media artefacts not considered as part of the social field? Why are the borders of the social field placed where they are given that some of those considered to be insiders are not involved in many of the activities that go into producing a solution and many actors are involved in several alternative practices that go into making other types of artefacts?

Categorising Interactive Media Production Activities

I study the organisation of production as the hierarchical vertical and horizontal division and integration of activities within and between firms considered by those involved as part of the practice of producing solutions. The horizontal division of labour includes the activities that workers are involved in, what firms that produce interactive media solutions for external customers do as a whole, the activities they outsource to others, what they do as subcontractor, what customer organisations do, and finally the activities performed by larger firms and government agencies with internal interactive media operations. The vertical division of labour within firms is represented by different positions, managerial tasks, involvement in decision-making and external contacts and ownership. The vertical division of labour between organisations is examined through perceived dependencies between related firms.

The number of activities considered to be part of a practice can be made with different levels of generalisation, but must be decided empirically using the language of those involved (see Schütz in Aspers 2001a, p. 290). All categories used here are based on discussions with people active within and related to the social field about understandable and meaningful ways of investigating interactive media production. This does not mean, however, that the analysis needs to work with the same level of generalisation. It is often necessary to construct new levels of generalisation for causal explanations, as is done later concerning clusters of activities. I have worked with several levels of generalisation that have differed over time as knowledge has increased, interactive media technology has changed and a redefinition of interactive media production has occurred.

The more detailed categorisation of central activities inherent in interactive media production that *workers* within firms are engaged in consists of 15 activities described in more detail below: concept, storyboard and script writing; graphic, web and interface design; programming; systems development, databases and advanced programming; content research; copy; sound and music production; video and movie production; photo; animations; illustrations and graphics and; supply actors for sound and vision; educating customers; project management; strategic advice and; usability and human computer interaction (HCI). Workers in firms producing interactive media solutions were asked if they usually perform the respective activities, if they sometimes perform them or if they do not perform them as part of their job.

The complete activities of *firms* are specified into the above listed central activities (minus HCI) plus six additional activities that *can* be part of producing interactive media, but need not be. To this is added ten broader activities that are not part of the practice of producing interactive media solutions, but that firms producing interactive media sometimes perform. Firms have been asked whether they usually deliver the activities, if they sometimes (can) deliver them, or if they

do not deliver them. Firms have further been asked if they usually, sometimes or not outsource 13 of the activities, handle them as subcontractors to other firms or if customers handle them.[8] Firms and government agencies that produce all or parts of their own interactive media solutions internally have been asked whether they usually perform the central and seven related activities, if they sometimes perform them, subcontract them or if they are irrelevant.

Concept Development, Storyboard and Script Writing

The development of a concept, a storyboard and script writing constitutes the formulation of the general idea of an interactive media solution and specification of the inherent plots, and sequences of events. For a web site, this involves deciding the overall aesthetic layout and functioning. The activity can largely be handled using pen and paper, white boards or discussions, although documentation might be made digitally. Concept development does not demand any deep technical knowledge, although it of course is useful to know what is feasible.

Graphic, Web and Interface Design

Graphic, web and interface design involves more hands on decisions and development of the graphics that confronts users of interactive media solutions, whereby the conceptual ideas are converted into an actual interface. The activity is both technical and aesthetic, since those involved need to have a feel for HCI, what looks good and what is technically possible. Workers involved in graphic design mainly work with computers to develop the final graphics. Still, many of the initial parts of the process can be performed using mock ups on paper.

Programming

Programming is necessary to convert text and visual components into formats that are readable e.g. on the Internet, to make sure that different pieces are placed where they are supposed to be and look as intended, to ascertain that clicking on a link actually takes users to the intended page, that documents are possible to download, etc. Much of it involves standard languages like HTML. Other parts might demand that special programmes are developed or converted to make solutions work as intended. The activity is largely technical and demands that those involved have programming skills and know how to perform coding, although software development programmes and compilers at times makes hard coding unnecessary.[9]

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[8] The outsourcing/subcontracting of project management and strategic advice was not included in the questionnaire as it was believed that firms would be reluctant to outsource such central activities and hence not perform them as subcontractors to other firms.

[9] Compilers are programmes into which programming code is written as commands rather than ones and zeros. The compiler converts the program language into a binary format that computers understand. This reduces necessary efforts, calculations and potential errors.

Systems Development, Databases and Advanced Programming

Systems development and database construction is a more advanced form of programming that often demands knowledge of coding in different languages and how to link different software (like Java and SQL) to each other and make them work with the OS, hardware and Internet standards. An example is an e-business solution for CDs. Systems development and database construction might then involve creating the database that holds all CDs as posts, information about them and links between posts (e.g. artist, name of CD, other CDs by the same artist, price, the number in stock). The solution might also retrieve information from users, like the CDs they search for and choose to order, whom to charge and method of payment, where to send the CDs, etc.

Content Research

Content research involves undertaking research about interactive media solutions and in some cases the customers' desires and existing preconditions of their solutions. It is largely handled before any actual programming takes place. In the case of an online CD-store, it most likely had to include creating a list of available CDs from retailers, looking at common ways of categorising music, perhaps information about the CDs that sell the most and preferred methods of payment. If the customer already has a back catalogue, it also needs to be investigated to see how it relates to the intended solution.

Copy

Copy is the domain of language in its broadest sense, covering most things from correct grammar to more creative aspects like writing informatively, interestingly and persuasively. It is related to concept development, as it includes putting words onto the idea of a solution in e.g. slogans, and a previously existing slogan might form part of the basis for an interactive media concept. The activity is quite often handled by copywriters and might also include content research. The activity requires limited computer skills, but it is preferable that those handling copy have an understanding of the requirements that the interface demands.

Sound and Music Production

Many interactive media solutions, like most web sites, are silent or just have Windows' standard sounds. For other solutions like computer games, the sound is often an important feature. Sound and music production involves supplying this demand. A separation can here be made between 'non-music sound effects', like speech, explosions, car engine sounds, and music. The former usually involves sampling and digitally modifying sounds. The creation of music might also be done just using a computer and some software programmes, but in other cases are produced in a normal music studio. Due to the increased economic importance

and influence of computer games, it has become more common to use famous actors for speech and artists for creating music. Music artists and companies have also increasingly come to view computer games as channel for advertising and source of revenues. As an example, a computer game focused entirely on the US rap artist 50 cent was recently released.

Video and Movie Production

Video and movie production refers to creating moving pictures, preparations, editing and post production. Video and movie production do not have to differ much when performed for interactive media solutions as when done otherwise, the main difference being that the end result is always digital and incorporated in multimodal solutions (Manovich 2001). The activities can start out using analogue techniques and then be digitalised, or using digital technology from the outset. An interactive media solution however usually entails certain restrictions since moving pictures use a lot of computer space and processor capacity.

Developments in hard- and software have lead to the use of real actors as the base for computer animated movements of characters in e.g. computer games. Actors are then filmed from different angles and the results fed into a computer where a software programme creates a digital image of the body that is 'dressed' with layers of computer generated design.

Photo

Photo refers to all cases where a picture is taken and the preparatory and post production activities involved, like finding a suitable location, lighting, development and editing of pictures. The activity is mainly creative, although technical knowledge of the equipment is necessary. Due to the increased use of digital cameras and editing in post production, technical knowledge usually involves familiarity with software programmes, digitalisation and converting image file formats, as well as online distribution and publishing (Sverrison 2000b).

Animations

Animations consist of creating animated movies and objects, i.e. moving pictures that are not just ordinary film, although films might be part of the animation. Classic animation like huge series of sequential hand made drawings are time consuming and costly, but developments in software and hardware capacity has created opportunities for making animations digital from the outset at a much lower cost, especially for 3D-animations. Digital animations are necessary for advanced interactivity, since animators cannot in advance animate all scenarios that users might confront given their interactions with the game.

Illustrations and Graphics

Illustration and graphics consist of creating still images and graphical symbols like logos. The images can be created digitally on computers from the outset, or be converted from analogue, e.g. hand written drawings and paintings, to digital format through scanning. In both cases, programmes like Photoshop might be used to alter illustrations. The illustrations can also be used as a way to visualise the creative intentions of the content developers in a storyboard or as a basis for computer animations.

Supply Actors for Sound and Vision

If an interactive media solution is to include actors for speech, photos, moving pictures or the basis for animations and computer graphics, these have to be supplied. The activity of sourcing and organising actors for sound and vision is basically the same as for casting in the motion picture industry and is more creative and practical than technical. In games based on sports and motion pictures, contact with specific players and actors are the prerequisite for the games to ever be developed as the concept evolves around the actors' presence.

Educating Customers

Some types of interactive media solutions, like e-business solutions, demand that customers be educated on how to maintain and update them, unless all maintenance is handled by the producer. This might also include support functions, i.e. that customers are able to contact the producers when they have problems or need assistance with specific tasks. The education is mainly focussed on the technical aspects of solutions, rather than aesthetic ones, as it usually is the former that causes problems and where producers can be of assistance.

Project Management

Project management consists of transforming customer desires and concepts into a working interactive media solution at a predetermined time and cost and in line with the specifications of contracts. This involves breaking down the development of a solution into a number of specific tasks and periods in time, specifying the competencies and amount of time necessary to carry them out, gather project members and delegate tasks and deadlines.

Project management has a central role in the development of solutions and the person responsible for the activity is a key figure. But they usually also have to negotiate between different project members, customers, the firm CEOs and owners, other project managers and freelancers. Project management is in itself not a technical or aesthetic activity, but general skills in both areas are beneficial to determine whether alternatives are realistic, identify potential problems, the competencies necessary and how long it might take.

Strategic Advice

Strategic advice consists of assisting customers in deciding in what ways they can benefit from purchasing an interactive media solution, analysing alternatives and existing standardised solutions, the possibilities of modifying such solutions or developing tailored solutions. When it is decided that a specific solution should be developed, strategic advice might consist of assisting in the process of implementation and evaluation and conduct follow ups to ascertain whether the desired targets have been reached. Strategic advice requires an understanding of the technical and aesthetic possibilities of interactive media solutions. But it is more important to have an understanding of the *intersection* between technology, organisation, business and work. Given this, it is related to developing the overall concept of a solution, but also to general IT and management consulting.

Usability and Human Computer Interaction (HCI)

Usability and HCI concerns users' interaction with interactive media solutions. This is a fundamental part of e.g concept and graphic design of solutions since they must be tailored to the users that will interact with them. Usability is also an activity in itself focussed on analysing how user friendly solutions are and the extent to which solutions are used as intended. This usually requires less knowledge of the technology per se and more knowledge of overall computer systems development, communication and user interaction.

Comment

Many activities inherent in the practice of producing interactive media solutions overlap. As will be shown in chapter six, both workers and firms are generally involved in several of the activities inherent in the practice and shift between doing tiddferent tasks at different times. There is no rigid division of labour.

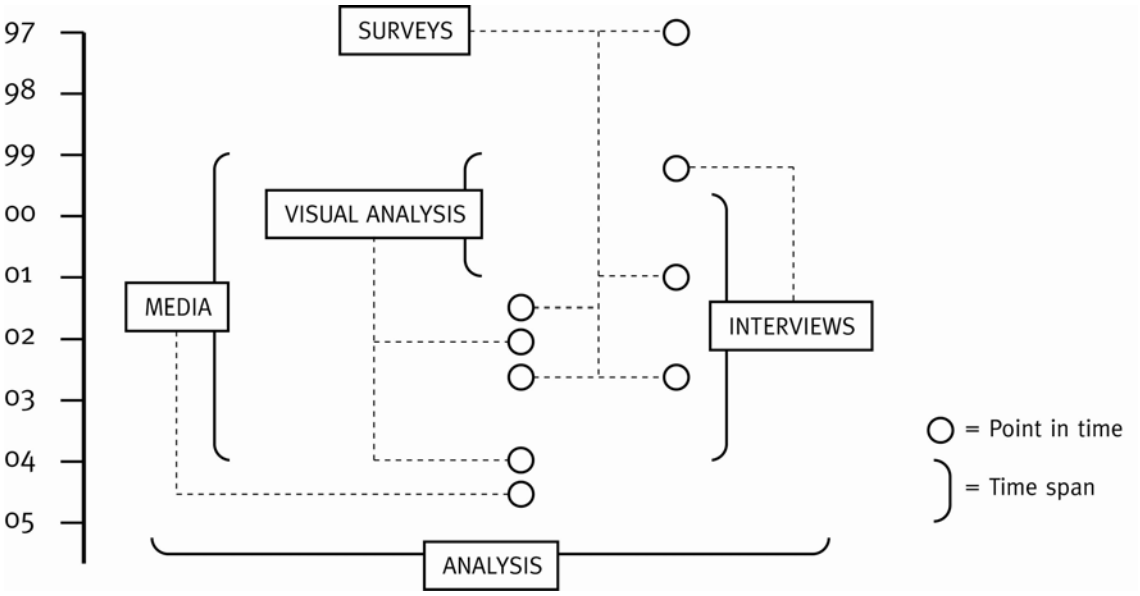
All activities contain a 'lower' or narrower specification and they can be grouped together at a more general level. At the highest level, the activities come together as the practice of producing interactive media. The levelling of activity specification is indicated by on the one hand the examples I have given of the tasks that go into the respective activities and on the other hand the indications of the extent to which the activities are technical, aesthetic or economic, or require such knowledge. I refer to these three broader categories as *clusters of activities* that make up three groups of interactive media workers and firms. The concept is further discussed in chapter three and the empirical findings concerning groupings of specific activities into clusters are presented in chapter six. As will be shown, the three clusters of activities are further related to the logics of the social field. At this level of division of labour, the cluster of activities dominated by an economic logic are harder to single out and separate from managerial tasks like project management and strategic advice.

Choice and Design of Research Methods

As argued above, an examination of the formation and organisation of interactive media production requires i) several different methods to cover both ideal and material aspects from a realist and phenomenological perspective conducted ii) at different levels and iii) over time that iv) are possible to combine to create a full analysis (Mingers 2004), in this case taking availability of material within the MITIOR programme into account. The methods used to gather empirical material consist of interviews, surveys and analysis of visual artefacts and media coverage. The interviews give an inside perspective on interactive media as artefacts and practice, as well as provide and test hypotheses. The surveys provide information on the distribution, division and integration of activities inherent in the practice, as well as basic information on different levels, over time and between different organisational settings. The visual analysis provides information on the ideal structuring, i.e. logics and status, of the social field. The analysis of media coverage provides information on the formation of the field and its construction and presentation in the media. The methods are described below and detailed information is available in appendix a. The process of data collection and relations between methods and empirical material is presented in figure 2.2.

The figure shows that survey data has been collected at five points in time (although given the work that goes into conducting surveys, it has been a continuous process involving several members of the MITIOR programme) I have constinuously gathered media articles and conducted interviews. I have also performed a visual analysis that has been repeated at two occasions. Preliminary analyses have been made throughout, but the final analysis involving all the empirical material was mainly performed in 2005.

Figure 2.2. Timetable of data collection and analysis.



Interviews

Informal interviews with insiders and trade and union representatives have been conducted throughout the course of the research process as part of questionnaire design and evaluation, to gather information on the field and practice and to test hypotheses. The interviews have mainly been documented as field notes and later integrated in the study. As part of knowledge sharing, the MITIOR programme has presented empirical results at a series of open seminars that have worked as a way to evaluate and discuss empirical findings with people active in interactive media as well as direct further research.

Surveys

Quantitative empirical data is taken from five surveys about interactive media production conducted between 1997 and 2003 within the MITIOR programme. The surveys have been published in separate reports that contain descriptions of the research design (Augustsson and Sandberg 2004a; Sandberg 1998; Sandberg and Augustsson 2002; Sandberg et al 2005). Only a brief overview of the same is given here.[10]

The first survey was conducted in 1997 and aimed at management in Swedish firms producing interactive media solutions (Sandberg 1998). The population came from a list from Promise, a Swedish trade organisation which is part of the Swedish Industry Association (Sinf) that aims at organising interactive media producers, supplemented with lists found in business journals. A total of 297 responses were received (about 50 per cent). The second survey was conducted in 2001 and directed to management in firms producing interactive media solutions (Sandberg and Augustsson 2002). A list from Promise was supplemented with a systematic examination of all on- and off-line sources found from the autumn of 1999 to the spring of 2001, creating a database of potential firms. 90 per cent of the firms in the database were classified and 345, 44 per cent, of the relevant firms filled out the complete questionnaire. The third survey was conducted in 2002 and directed at workers responsible for in-house interactive media operations in a random sample of 800 Swedish firms and government agencies with more than 200 employees. A total of 370 organisations (46 per cent) responded. The fourth survey was conducted in 2002/3 and directed at management in a sample of 57 firms that responded to the 2001 survey, plus a couple of firms supplied by Promise. 52 (91 per cent) of the firms that agreed to participate

[10] I have worked with and made calculations and modifications to the original survey data, rather than taking data from the published reports. This means that the empirical data can differ somewhat between this study and the previous reports. Given this and in order to avoid confusion (resulting from the time-lag between the completion of the surveys and the publication of reports), I consistently refer to the *surveys* rather than the reports except when the latter contains more extensive discussions not covered here.

responded. The fifth survey was conducted in 2002/3 and directed at workers involved in interactive media production in the firms targeted in survey four. 370 (82 per cent) of the workers responded.[11]

All surveys except the one from 2002 regarding in-house production have been stored in a single database, which enables hierarchical, comparative, longitudinal and cohort analyses. Due to the low base numbers and high turnover of firms, the possibilities are however limited. The survey data is used to describe the formation of the field and the organisation of production, including internal differentiation and combinations of activities. The surveys in themselves cannot serve as explanations of the findings and there is limited use of more advanced statistical methods here.

Visual Analysis of Web Sites and Use of the Internet

Web sites are visual artefacts conveying information that it is possible to interpret by for instance analysing patterns found when studying large numbers of web sites (cf. Rasmussen 2004). Visual analyses of interactive media producers' web sites have been conducted continuously between 1999 and 2001, again in 2002 and 2004/2005 (Augustsson 2004). I have been looking at a total of at least 1,600 web pages belonging to firms that produce interactive media solutions and about 350 of these at three different points in time. Looking at web pages as a whole, including pictures, text and structure of information, the purpose has been to find overall patterns, rather than detailed analyses.

Interactive media producers' web pages present an image of the firms and their involvement to actors inside and outside the social field (Willim 2002). Styles and differences in visual construction become detectable and knowledge about the producers and the social field they are active within can be traced. This is valuable for understanding the fields' logics, the basis for status and the relations between insiders and outsiders, but demands knowledge of the field that goes beyond the visual artefacts themselves (Aspers et al 2003; Bourdieu 1993).

Interactive media production takes place both on and through computers and the Internet (Garsten and Wulff 2002). The Internet itself is therefore a research tool and area containing information that is inaccessible elsewhere, like discussion groups, comments to articles and blogs. For the purposes of this study, I have spent an estimated average of between one and two hours a day online during the last five years watching and documenting interesting information, intervening by posting comments and questions on web sites and communicating with people active in the field as well as analysts and journalists. This contributes to an understanding of the language of the field, the topics discussed; what is at stake for those involved and how they express their views about it.

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[11] Note that it is just a coincidence that the number of responses in the third and fifth survey is the same. The source of statistical data is consistently mentioned in tables and figures.

Media Coverage and Second Hand Information

The attention paid to interactive media makes the media an important tool and area for research since it is one of the primary sources for basic information. As the main narrator, the media also played a role in the construction of the social field, the meaning of interactive media and the identification of relevant actors (cf. Giddens 1991, pp. 23-27; McLuhan 2001; Pettersson and Leigard 2002).

I have collected paper and online news articles and items since 1999 through subscriptions to online newsletters directed to the IT sector and almost daily readings of major Swedish newspapers as well as trade specific papers and magazines. To correct potential bias and obtain a fuller account, a systematic search was performed in 2004 using the Affärsdata online media and business information archive (www.affarsdata.se), which contains articles dating back over twenty years. A number of specific and general search terms have been entered for the period starting the first of January 1990 and ending on the last of December 2003. A method of stepwise reduction of the available material has been used. The stored paper articles and items amount to roughly 5,000. The search terms used retrieved about 75,000 hits in Affärsdata of which roughly 3,000 have been saved, in total a reduction of at least 95 per cent. It should be noted that a large majority of the articles mainly contain financial information regarding e.g. changes in share values and many are very brief. As a result, I have only found it necessary to read a minority of the articles in more detail; most can be glanced through quickly during classification.[12]

The media articles and items are analysed in two ways. First, a study of pairwise connections between search terms by investigating the proportion of overlaps. Second, a 'traditional' classification of articles into themes and sub themes based on my interpretation of what they concern and how they relate to the research questions. The first method, which is restricted to the digital material, makes it possible to see how often individuals, firms, events and discussions are mentioned together and apart, which gives an image of the ideal structuring of the social field. The second method initially includes all articles. It classifies media coverage into different themes and enables analysis of what and how much has been said about each area. A dual reading of the material is used whereby i) basic information about what has happened in terms of e.g. mergers and acquisitions, investments, lay-offs and files for bankruptcy are gathered and ii) an interpretation is made of how events are framed and the construction of interactive media emerged.

[12] I would argue that it is still valuable to include the articles mainly containing financial information that only have been glanced through, since they reveal the extent to which interactive media became financialisated (see chapter five).

Combined Analysis

Methods are not simply additive pieces of a puzzle that combined give a complete picture. Instead, they often result in contradictory findings, meaning that empirical data cannot be analysed method for method. Instead, it is necessary to study the empirical findings from different methods as integrated parts of a complete explanation and relate them to other findings and theories based on the research questions, a 'holistic' analysis that forms an understanding. In this case, I have started with the classification of media coverage into different themes (using the second method of analysis described above) since this is most suitable to function as a base for building an overall 'story'. Based on previous information and preliminary understandings and in relation to empirical data from the other methods, i.e. visual analysis, interviews and survey data, the themes have been rearranged and reconfigurated into new ones that are not restricted to or dependent on the analysis of the media coverage alone. By adding linkages, a time axis and causal relations, I have constructed an overall model of the formation and organisation of the social field that includes actual but abstracted events and explanations. The specifications and organisation of themes and links has gone through several iterations during the research process before a final working model with good 'fit' was found. The model has also functioned as a basis for the presentation of the empirical material.

3. Formation and Organisation of Social Fields

How is one to make sense of the formation and organisation of interactive media production? This chapter contains a conceptual and theoretical model developed in relation to on the one hand earlier theories and on the other hand empirical results retrieved during the practical research process, although this is not always visible (cf. Bourdieu 2001; Bourdieu and Wacquant 1992). The concepts, which are built upon abstractions of observed phenomena and theoretical arguments, are those that I have found to be adequate to describe the ontological reality relevant for the study. The theoretical aspects are fallible explanations based on hypothetical causal processes (see Collier 1994, pp. 57-59). The parts are of course related as the choice of concepts favours certain theories and vice versa (Morgan 1997). It should be emphasised that I have chosen to refer to the explanation as a theoretical *model* for matters of simplicity. It is more correct to label it as a set of interrelated concepts held together by a theoretical perspective, or a theory in progress, as it lacks some of the attributes commonly associated with a 'proper' theoretical model.

Since the theoretical model and the empirical results are both outcomes of the overall research process, the two cannot be used as each other's proof, apart from usefulness, internal consistency and lack of contradictions (Stinchcombe 1968). The theory is however not an ad hoc storytelling or 'everything matters' theory, it has a logical structure (Blaug 1992; Hedström 1996). To show this, the theory is presented separately from, and in some cases goes beyond, the empirical results. Thus, the theory is rather abstract and condensed, but references to it are made in the subsequent chapters.

This chapter is divided into different parts focussed on alternative aspects of the theoretical argument. It begins with a discussion of technology and organisation. The second part concerns what social fields are and their relations to agency and structure. This is followed by a discussion of different aspects of the formation of social fields. The chapter ends with the outcome of formation and organisation in terms of the ideal and material structure of social fields.

Technology, Organisation and Markets

Technologies, and ideas about them, are part of the material and ideal structural configuration that constrain and enable social fields to exist and do so in certain ways, meaning they have causal powers (Bhaskar 1975/1997; Miller 2003; for a different perspective, see Orlikowski 2000). Technology is important, but to single it out easily contributes to an apparent technological determinism. Still, it

seems necessary to treat technology separately as interactive media is so deeply identified with technology, if only to show that it fits within the overall explanation: technologies are created, exist and are used as material objects and there are ideas about them, their production and use. Technologies are vertically and horizontally ordered: some technologies are ideally and materially close or distant, 'above or beneath', and depend on others.

This is a study about computer-aided production of interactive media, but interactive media technology or computers are not discussed in detail. As they have a limited effect on formation and organisation of production as studied here (although see Manovich 2001; Willim 2002). Producing interactive media solutions renders different limitations and affordances than e.g. building cars since, for instance, large assembly plants are unnecessary (cf. Normann 1993). But this is not specific to interactive media, it is an essential feature of digitalisation and all computer-created and mediated solutions. The conditions of digital solutions influence the production process, but like other structural configurations have to be studied in their specificity to contribute to an explanation.[13]

Focus here is neither on the role of the broader IT. Research on relations between technology and organisation has a long history and the impact of IT on organisation and work has made the number of publications grow rapidly (Augustsson and Sandberg 2003a; DiMaggio et al 2001). Although the impact of IT differs from other technologies, the questions and answers are often similar, e.g. how are technologies produced and how do they influence work and organisation (Bloomfield et al 1997; Fulk and Steinfeld 1990; Wood 1987). Much recent writings on IT and organisation are sadly ahistorical with tiresome repetitions of old arguments and debates, and a neglect to review earlier research (Augustsson and Sandberg 2003a). A quote by Edmund Dahlström (1965, p. 118) from 1965 captures this point. Although written forty years ago about another highly influential technology and debate, automation (cf. Sørensen 1996), it could have been about IT:

> The enquiries and investigations that have been made of this so-called automation reveal that the perceptions of automation in the popular debate have been both vague and exaggerated […] the concept automation has come to connote phenomena that are rather technically heterogeneous and one cannot talk of anything radically new. It is in this case hard to separate the effect of the technical changes from the effects of the economic ones.

The neglect and confusion that Dahlström describes is also found in contemporary research due to different definitions of technology and organisation, theoretical positions and research questions (Liker et al 1999). Despite the confusion sometimes found in research, one can however not deny that fundamental

[13] See Sayer (2005) on differences between specific characteristics and causal powers.

changes occur over time and that technology play a role for this (Sandberg 1976, p. 254 and onwards; Sztompka 1993; Tilly 1984).

Although some ideas about the relations between technologies, organisation and new markets might be confusing and even faulty, they have an impact: if people believe ideas are real, they can be real in their consequences (cf. Ackroyd 2004, p. 156; Eco 1989; Sandberg 1976, p. 152 and onwards; Thomas and Znanieki 1927). Tailorised production of IT artefacts for instance is in research sometimes confused with innovation and every artefact viewed as something new (see e.g. Rosenqvist 2000). All digital solutions differ since there is no reason to develop the same solution more than once, just as there is no need to shoot the same movie twice, when identical copies can be made at very low cost (Negroponte 1995). But most solutions are not fully or partially innovative, and probably cannot be. Still, views of interactive media production as innovation have had an impact on the formation of the social field through policy initiatives, research funding, resource allocation and legitimisation of entrepreneurs and IT innovations (Brenner and Sandström 2000; Movitz 2004). The views further contribute to using data on technical diffusion as a measure of market growth and to assumptions that production of interactive media takes place in new types of organisations. Thus, the explanatory value does not lie in the correct predictions of innovation studies regarding the formation and organisation of interactive media, but their practical and policy outcomes.

A separation is here made between technology as *artefact*, *system* and *process* (Kline 2003). *Artefacts* are man-made objects like the car with the internal combustion engine, itself made up of a number of artefacts. Technical *systems* are related networks of technologies necessary for a certain artefact to function, or technologies considered to belong together (Latour 1996; Law and Hassard 1999). Systems are structures with the causal powers to shape, constrain and enable the development of artefacts through path dependent lock-in processes that make the cost lower than possibly superior alternatives. A well-cited example is the QWERTY keyboard design, which is supposedly inferior to alternatives like Dvorac (although see Lewin 2002). *Processes* refer to the transformation and combination of resources to produce output using artefacts and systems (cf. Perrow 1967, p. 195; Thompson 1971).

The artefacts at centre in this study are interactive media solutions, where every actual solution is a realised artefact that potentially shapes the idea of what an interactive media solution is and should be. Producing such an artefact, i.e. technology as *process*, is a practice that in part takes place in a social field. The technical system involves hardware (computers, servers etc.), software and overall infrastructure (telecommunications, electricity).

Causality, Technology and Organisations

Debates about the causal relation between technology and organisation have been common, the most notorious of which concerns the level of technological determinism (Mackenzie and Wajcman 1999). There are two related issues here: i) the relative technological determinism as opposed to the impact of other variables and ii) the possibility of separating technology and society.

i) The Power of Technology

In essence, the well-known debate about technological determinism concerns to what extent certain technologies lead to a particular form of organisation, the impact of other factors and the level of freedom of agency. The debate has been closely identified with Marx and followers like labour process theory, as well as other research traditions such as socio-technology, and is based on interpretations of Marx's materialist use of Hegel's dialectic; that ideas are in the last instance based on material conditions and that material and technological configurations created and sustain the capitalist society (e.g. Collier 1989; 1994, p. 48).

Earlier studies of technology and organisation, mainly from a Marxist perspective have been criticised for viewing technology as too deterministic with little room for agency and for confusing technology as artefact, system and process, which has blurred causal relations (Grint and Woolgar 1997). As a response and elaboration, the choice of certain technologies, needs for worker participation and the role of management discourse have been included in analyses, resulting in a plurality of paradigms (Liker et al 1999; Orlikowski 1992). It is usually held in contemporary studies that the impact of technology is complex and contingent upon several factors of which technology in itself is only one (e.g. Bloomfield and Danieli 1995). As argued by MacKenzie and Wajcman (1999, p. xv), social scientists have proven to be the least (or last) social of those involved:

> Successful practising engineers have always known that their work is as much economic, organizational, even political, as it is 'technical'. They know that a design that works technically will still fail if it is too expensive, if it is unattractive to employers or customers, if its 'fit' to the structure of an organization is poor, or if it falls foul of powerful political forces.

Thus, technology does not in itself determine the organisation of production, but is part of the enabling and constraining material and ideal structures, and relations to organisation are contingent.

ii) Technology vs. Society

The above refers to the relative explanatory power of technology compared to other factors. Social construction of technology studies go further by arguing that technology is more or less inseparable from other factors. Earlier studies often

treated technology as a black box outside society, mainly focussing on its effects when implemented (Mackenzie and Wajcman 1999; Rosenberg 1994). It was assumed that not yet known superior technologies were just waiting to be found by genius innovators, that dominating technologies were superior, innovation linear and technologies had one effect only when implemented (see Bijker 1995a, pp. 1-15 for a discussion). In short, it was the modernist belief in non-social and non-ethical objective technologies that gave rise to societal improvement through cumulative progress headed by researchers and engineers (Nelson and Winter 1982; Baum and Singh 1994, cf. Bauman 1992). The 'modernist' assumptions have been revised after empirical investigations of development processes (Grint and Woolgar 1997), resulting in a loosely integrated perspective on the social construction of technology as well as actor network theory (Bijker 1995b; Bijker et al 1987; Law and Hassard 1999; Mackenzie and Wajcman 1999).[14]

Social construction of technology studies have constructed thick descriptions of how technologies are created that avoid idealised models common in management of technology and innovation studies (e.g. Adler 1999; Mähring 2002), and ethnographic stories of 'boys and toys' with limited theoretical basis (e.g. Jager and Ortiz 1997; Kidder 1981; Rogers and Larsen 1984). A basic assumption in social construction of technology studies is that technology and society are not separable and that the meaning of technology has to be understood in relation to framing, relevant social groups and power resources, rather than as residing in the technology itself (Bijker 1995b). Early stages of new technologies are argued to be uncertain, where decisions and coincidence affect developments through lock-in effects that make some future paths less likely because others are chosen. Exemplifying with the bicycle, Bijker argues that technologies reach closure with limited further changes. But closure is at best only momentary, which Bijker's example shows (see below on uncertainty and aspects of formation).[15]

The aim of studies on the social construction of technology was originally and to a large extent is still to explain why some technologies are developed and designed a certain way (cf. Normann 1988). The purpose in this study, however, is to show how the process of technical development in conjunction with other factors also can involve the construction of a practice, a social field and an identification of relevant actors, where technical development is just one way this can emerge. The focus is not development *per se*, but how technologies are given a

[14] Social construction of technology studies is here used as a generic term for a wide collection of perspectives similar to how the STS term is sometimes used (Sverrison 2000a).

[15] Consider BMX, Off-road and City bikes, changes in the construction of frames, handle bars and experiments with springs. This is a common fallacy in studies from a rear-view perspective: the past is seen as a chaotic process leading up to a stable 'now' with limited attention paid to contemporary variations (Tilly 1984). Similar assumptions of development towards equilibrium also underlie e.g. evolutionary economics discussed below.

meaning, viewed as the natural practice of some actors and requiring a certain organisation of production (Bijker 1995b, pp. 237-42, cf. Sundberg 2005).

Based on the difference in focus between some studies on the social construction of technology and the aim of this study, two relevant aspects of the formers' reply to the technology-society question should be noticed. First, there is no doubt that technologies are socially constructed (Mackenzie and Wajcman 1999). Technologies do not appear out of nowhere ready-made with an agreed upon meaning and use, making the terms social and construction redundant. Furthermore, it is seldom specified if it is the technology, its production or the idea of what the technology should be that is socially constructed (Hacking 1999). All are, but that is not the same thing. The technology is constructed since i) the production of e.g. interactive media could have been organised differently, ii) the artefacts could have looked different and iii) ideas of what they should be could differ. But once construction has occurred, the technologies in all three meanings exist, no matter what we think about them (Sayer 2000). Once constructed, the technologies are socially *defined* rather than continuously *constructed* (Sayer 1992, p. 26). The question 'what else should it be' remains unanswered, i.e. what should interactive media be if not social (Aspers 2001b)?[16] The assumption that technology and society cannot be separated is correct, but then what?

Second, some studies in the social construction of technology tradition rightly describe the development of technologies as artefacts and systems, but do not always incorporate technology as practice (process) and thereby fail to consider the broader applications of their argument. What is constructed is not only new artefacts, but the practice of producing those artefacts and the associated positions (Sterne 2003, p. 373). The invention of the car is also the construction of car manufacturers, the car industry and car workers (cf. Normann 1988).

The idea that the construction of artefacts also includes the construction of a practice is not previously absent, the interaction between the subject and the object is a central to Marx and the dialectic process (Russell 1979, p. 749). Some studies on the social construction of technology tries to escape the alleged technological determinism debate in Marx's writings by arguing that man constructs technology, which is an unnecessary and self-evident argument. The alleged determinism is a simplification of Marx's argument and a position that no one seems to hold (Grint and Woolgar 1997). Structures, including technologies, however usually rest on earlier technologies that influence their design and use and come to actors ready made. In the attempt to avoid technical determinism thought to result from Marx, social construction of technology studies have lost focus on the practices and the attempt to include technology in society has somewhat isolated it from its production and construction (see Winner 2003).

[16] It could be argued that the opposite of social is e.g. antisocial, deterministic, individual, cognitive, technical or economic, but none of these seem satisfactory to me.

Technological Change and the Birth of Markets

The above discussion can be extended to the formation of social fields and contrasted to evolutionary economics to position the explanation developed here. Evolutionary economics, closely identified with Nelson and Winter (1982), has spurred an interest in technological innovations and market creation within mainstream economics, which constitutes a change from the Ricardian paradigms' focus on equilibrium and exchange (Ekelund and Hébert 1990; Hodgson 1994). According to evolutionary economists, transformation of existing markets and the creation of new ones are due to exogenous changes, especially technical innovations. Existent firms might enter new markets through diversification due to perceived economies of scope, but new firms are usually assumed to dominate and always enter new markets due to established markets' costs of entry and the first mover advantage of existent firms (cf. Hill and Rothaermel 2003). Evolutionary economics is restricted to objectively defined economic markets, whose existence and borders are treated as unproblematic: they appear, change and merge due to technical innovations. Ideas of what markets are and should be are regarded as obvious, any uncertainty residing in the success of the technology itself. Cases where markets are not created are seen as 'market failures'(for discussions, see e.g. Block 1990, chapt. three; Boyer 1997).[17]

The orderly explanation above contrasts the complex and ambiguous view on the formation of social fields I argue for below: i) (changed) technology is not the only cause behind new social fields and ii) although technologies can be analytically singled out, they are ontologically inseparable from society. Further, iii) it is uncertain whether technologies will result in new social fields, be dominated by existing actors or simply fail.

Social Fields

The concept of social field and similar ideas have been used in several research traditions, although with alternative definitions and labels, e.g. social systems in systems theory and organisational field and communities in organisation theory (Aldrich 1999; Buckley 1967; Luhmann 1995; Parsons 1951/1991; Scott and Meyer 1994). Social fields have also come to have an influence in economic sociology through the works of Bourdieu (1993), Fligstein (2001) and to some extent White (2002; cf. Azarian 2003).

Here, I use the concept of social field to conceptualise parts of society by linking actors to the practices they perform, how they identify themselves and are recognised by others. Social fields are ideally and materially structured parts of

17 This implies markets are the natural starting point and best solution for economic activities, but that there are cases where they do not function as well as they hypothetically can and are in need of adjustments. But markets need to be constructed (Abolafia 1996; Callon 1998), making it more correct to view their existence as 'market successes'.

society that are part of larger structures, meaning that some social fields are perceived to be closer to each other than others and that there are differences in e.g. status between social fields.

The boundaries between social fields are fuzzy and sometimes contested. The fuzziness is partially because actors are only regarded as insiders when performing the practices perceived to make up a social field and because the same action can have different meanings and different actions the same meaning (Sayer 1992, pp. 30-31). The fuzziness makes it problematic to distinguish between endogenous and exogenous processes (Sztompka 1993, p. 21).

Social fields inclusion in societal structures should thus not be confused with e.g. Parsons' (1951/1991) or Solo's (1967) orderings of society since social fields overlap, have fuzzy boundaries and are in part based on phenomenological aspects (Bourdieu 1993, pp. 37-38; cf. Scott and Meyer 1991; 1994). Society itself is further not an entity or distinguishable whole, it is fluid and has many causes and processes (Tilly 1984). The use of social fields is not just a difference in scope as compared to e.g. micro and macro studies intended to make the area of research more manageable, but an ontological and causal conceptualisation that makes interactive media possible to explain. Social fields are thus both *conceptual* referring to a certain part of society, and *explanatory* in that social fields have causal effects on the formation and organisation of a practice.

A practice refers to all separable activities geared towards the central aim of a social field currently considered to belong together. It is only in certain positions that actors are part of the field and they usually belong to several social fields due to involvement in alternative practices (see Goffman 1961 on cases where this does not apply; Wenger 1998, p. 6). An interactive media worker, for instance, is only part of the field while doing something related to the field. At other times they may be somewhere else which can, but need not, refer to another physical location. Humans are something more than their positions in social fields and only display a small part of their repertoire of actions and feelings when holding them (Abiala 2000; Ahrne 1990; Goffman 1959; Hochschild 1979).

When actors perform practices, they are participating in, reconstituting and potentially transforming social fields, although their intentions usually are to pursue their own goals based on their interpretation of the situation (Archer 1995; Buckley 1967, pp. 17-23; Coleman 1990; Giddens 1976; 1984). When no actors are performing a practice, the social field ceases to exist (Fleetwood 2004, p. 35; Sztompka 1993, pp. 9-10). There is no such thing as empty social fields but knowledge of pre-existing 'dead' fields might endure as history and legends and they constrain and enable the formation of fields to come.

Social fields are not necessarily geographically bound. A geographical area often involves actors from several social fields that might be mutually dependent, or not even aware of each other's existence. Yet, social fields compete with each other for collective goods and other resources bound in space, like real estate,

competent personnel and political support. Spatial concentration of social fields might go unnoticed to outsiders, but increased knowledge of the existence of social fields can change our perspectives of locations. What previously was perceived as a 'dead' area can become the centre of our attention, where everything happens. We are however fallible: an area might come to symbolise the centre of a social field that holds the majority of insiders although this is not the case. 'Where' depends on what is not geographically occupied, where one 'should' be and the part of the social landscape where something takes place (Ahrne and Papakostas 2002; Ahrne et al 1996; cf. Bourdieu 1989).

Social fields and the actors within them are dependent on resources to form and endure (Lounsbury et al 2003). Potential social fields that do not receive sufficient resources will not be founded and they are likely to wither away if resources are not continuously supplied. The necessary resources are ultimately in the hands of actors outside the social field in question. Although there is an internal differentiation of social fields and some actors depend on other insiders for their supply of resources, internal actors cannot survive solely on trading with each other (cf. Smith 1776/1952). Given that resources are scarce, the formation of a social field might challenge established actors' resource allocation, which is a reason for them to move into emerging social fields or try to block others from utilising opportunities. The necessary outside resources are both material (e.g. capital, infrastructure) and ideal (recognition, status, legitimacy, knowledge, et cetera) and derive from output, direct and indirect investments and support.

Output gives actors and social fields material resources, usually revenues from sales. But delivering a desired output also creates ideal resources like outside legitimacy and support from e.g. the state and firms as the social field becomes viewed as necessary and a potential for economic gains (Scott and Meyer 1994).

Direct investments are targeted at a specific social field or actors within it and can come as material resources from private outside actors through families, bank-loans, venture capitalists, other firms and the stock market and from the state as e.g. investments, financial aid or subsidised use of public resources, for instance in times of crisis (Engstrand 2003; Larsson 2001). Outside actors can also supply direct ideal resources by supporting and protecting social fields and inherent actors in front of others. State officials might for instance publicly announce their belief in the importance of social fields for the future labour market and economic growth of a country and change legislation to protect social fields. Influential private outside actors can create support for a social field by themselves entering or investing in it, or just claim that they have great beliefs in its future growth and importance.

Indirect investments and support are not targeted directly at a social field or specific actors within it, but still benefits them by giving access to resources. The state might make broader investments in e.g. education and infrastructure, changes in legislation and create tax subsidies and business start-up support that

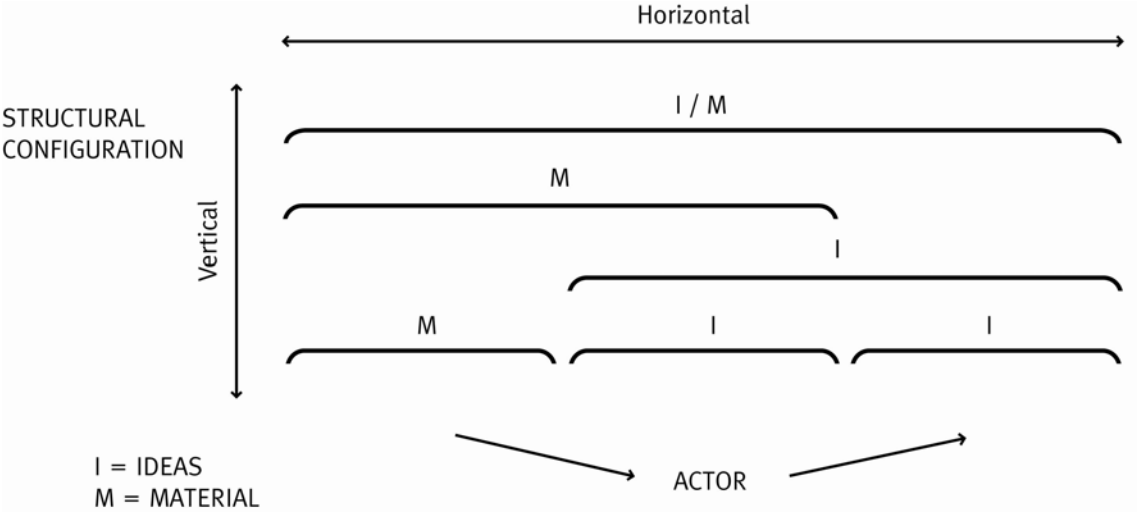
create more material resources for several social fields (Fligstein 1996). Outside organisations finance e.g. technologies by using it themselves and subsidising external actors' use, which creates resources for the formation and existence of related products and services. By sponsoring certain technologies, firms belonging to one social field can thus contribute to the possibilities for others to exist. The state can also give indirect ideal support by expressing their beliefs in broader issues like IT that becomes identified with a particular social field and the success of one social field or a single firm within it can create support and legitimacy for others perceived to be similar.

Formation of Social Fields and Structures of Reality

The formation of technologies and social fields does not take place in a void or out of a Hobbesian state of chaos (Bijker 1995a, p. 15; Hobbes 1996). There is inertia in novelty, a stickiness meaning that it will be limited and enabled by that which already exists and that only some directions are possible and probable from a certain position. The stickiness of the past is what social fields emerge out of, become part of and partially alter by their existence (Dosi 1984, p. 298; see also Ahrne 1990; 1994; Archer 1995; 2000; Coleman 1990; Scott 1995b). As argued, actors are dependent on and compete for scarce resources that are in the hands of others with power and resources to limit the possibilities of creating something new and put constraints on the possible ways of structuring social fields (Aldrich 1979; Pfeffer and Salancik 1978). Existent organisations are however characterised by inertia based on material factors and ideas about what they are and should do, which lowers their possibilities of and interests in altering or entering new fields (Ahrne and Papakostas 2002). They are also faced with uncertainty, subject to alternative opportunities, and have to decide whether or not to become involved. To not get involved may be devastating, as it was for the Swedish manufacturer of mechanical calculators FACIT, just as it may be to get involved: Ericsson's involvement in the PC-market during the 80s and their mobile phone operations in the late 90s almost ruined the firm (Meurling and Jeans 2000). Firms that do not become involved might find it hard to gain resources as the social field they are active in is transformed to the extent that their services are unwanted, and the field may even disappear.

The social landscape is also characterised by tightening through an organisational concentration (Ahrne 1994; Perrow 1991). It is becoming less possible to do something new that does not interfere with that and those already in existence (Ahrne and Papakostas 2002). But the formation of social fields is something more than an increase in division of labour or social differentiation (cf. Aldrich 1999; Alexander and Colony 1990; Parsons 1951/1991). Changes, like the Internet, can also *enlarge* the social landscape and create new opportunities for new and existent actors (Shelton Hunt and Aldrich 1998, p. 279).

Figure 3.1. Relation between ideal and material aspects of structures, actors and change.



To expand on and show the theoretical significance of the methodological discussion in chapter two, it is argued in turn that i) structures and actors are ontologically different entities, ii) that structures have material and ideal aspects, iii) that structures are vertically and horizontally stratified and iv) that structures predate but are transformed by actors, although structures can contribute to their own change (cf. Coleman 1990, p. 8). This is shown schematically in figure 3.1 and elaborated below, exemplified with ideal structures.

i) Structures and Actors

Structures and actors are, as argued, ontologically different interrelated entities that cannot be reduced to one another as in e.g. structuralism and methodological individualism, or collapsed into one as in Giddens' (1984) structuration theory (see Archer 1995). If structures are not separated from actors, they cannot have an impact or be acted upon, be manipulated or manipulate us (Archer 2000). The separation is further important to understand the aspects of formation and organisation that are due to structural preconditions and those that are due to actors' interaction with these structures.

ii) A Duality of Structures: Ideas and Material

Structures have ideal and material aspects that cannot be reduced to one another, as in material or ideal determinism, or collapsed into one as in social constructivism (Fleetwood 2004). Even though our possibilities of clearly separating these two aspects in our daily life and empirical research are limited, the ontological separation is analytically crucial (Hacking 1999; Russell 1979, p. 787). Material aspects are e.g. resources and infrastructure like buildings and technologies (see Fleetwood 2005, on the separation between material and artefactual structures). Ideas, e.g. discourses, norms, values, cultures and institutions, make the reali-

sation of opportunities possible by making certain practices and social fields possible and desirable.[18] Scott (1994, p. 56) argues that:

> The modern appeal of institutions is that it provides a much needed counterbalance to a set of earlier theoretical approaches that gave primacy to materialist forces shaping organizations […] the new institutionalism attempt to redress this imbalance by stressing the importance of idealist concerns – symbolic systems, cognitive scripts, and normative codes.

I agree on the predominance of materialist aspects in some earlier theories, although ideas clearly dominate in a longer historical perspective (Russell 1979), but just like methodological individualism as a response to holism, new institutionalism has in my opinion in some cases gone too far. Material aspects are forgotten, treated as if without impact or determined by institutions. This stretches the 'much needed counterbalance' to a postmodern project where structures can be reduced to linguistics. In e.g. organisation theory, an earlier focus on division of labour and the structure of production has in some cases been traded for identity and ideology (see e.g. Alvesson and Deetz 1996; Czarniawska 1997), thereby losing some of the earlier analytical strengths (cf. Hassard et al 2001; Sayer 1995). This is an unnecessary trade off that limits explanations as *both* ideal and material aspects are integrated parts of reality (Friedland and Alford 1991, p. 241). Even those that try to abolish material aspects are often dependent on them as the proof, sign and unequal outcome of ideas (cf. Sartre 1957/2003, pp. 16-18; Sayer 2000, p. 34).[19] The separation between ideal and material aspects of structures makes it possible to analyse, for instance, change and continuity as alterations in either image or practice, or both, as well as the discrepancy between the two.

iii) A Stratification of Structures

Structures are horizontally and vertically stratified in that: i) some structures, e.g. wage labour, are of a higher order than and might logically necessitate others, like capitalism: markets necessitate exchange, which in turn necessitates division of labour (Marx 1995, p. 35; Smith 1776/1952) and ii) alternative structures can exist under the same higher order structure, e.g. both economies of scope and focus on core competencies under capitalism and socialism (Chandler 1990).

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[18] Ideal structures thus refer to all types of shared ideas, including ideas of causality, whether correct or not. Ideal structures should not be confused with Weberian ideal types or taken to mean ideal in the normative sense of the word, i.e. as a preferable or the best solution, or in a Platonic meaning of an undistorted reality. All three latter ideas are however part of ideal structures (Fleetwood 2005).

[19] The relevance of gendered discourses, for instance, is seriously hampered if not related to e.g. inclusion/exclusion (Askonas and Stewart 2000), a gendered division of labour and wage inequalities (Hultin 2001).

Ideas are not a set of easily observed logically interrelated governing structures that affect all parts of society in similar ways with identical result (Williamson 2000). Ideas have different levels of formality, specification and scope (Foucault 1989, pp. 34-43; Friedland and Alford 1991, p. 241; Sjöstrand 1995). It is often uncertain which structures are ontologically related and causally dependent, as in the relation between capitalism and patriarchy (Giddens 1991, p. 15; Sayer 2004, pp. 9-10). Still, we hold ideas about necessity based on e.g. regularity that influence our values and actions. We construct fallible beliefs of what 'must' be the case for us to act that incorporate frameworks for the construction and validation of knowledge claims (Giddens 1984; Scott 1994, p. 60; Weick 2001). Following this, there are real and believed necessary compatibilities and incompatibilities of structures. This creates *constellations of ideas*; ideas that are perceived to belong together that function as each others support (cf. Sandberg 1976). Ideas further change over time, meaning that some things will at a given time be the right thing to do and that the timing of formation influences who becomes involved and how they structure production.

Dissimilar actors and social fields can thus be governed by the same ideas because the ideas are thought to apply to several fields and their inherent actors. Other ideas are specific to single social fields and separate them from other parts of society (Calhoun 1995; Luhmann 1995; Meyer et al 1994). The actors included are presented or present themselves as holding specific views and morals, are interested in certain cultural attributes and might be expected to wear certain clothes. Loyalty towards attributes might be just as central for inclusion as performing the practice since recognition as an insider depends not only on what one does, but perceived similarity (Augustsson 2004; Bourdieu 1986).

Ideas travel through relations between actors, the media and other artefacts in processes of knowledge sharing and sense-making whereby actors learn, interpret and adapt what e.g. interactive media is as an artefact and social field and their own position in situations of interaction (cf. e.g. Blackler 1995; and DiMaggio and Powell 1983; Edling 1998; Liljeros 2001; Stern 1999, on processes of diffusion). In such processes, actors generally compare themselves to and mimic other actors within the same social field they are or would like to be similar to, and related actors are more important as role models than unrelated ones (White 1992b).[20] Shared educational backgrounds further create similar ideas that are reinforced through relations between former students (Darin 2003) and people bring with them ideas as they move in and out of firms through labour turnover and inter-organisational collaborations.

Different media hold, diffuse and shape ideas about artefacts, practices and social fields. There are indirect relations between actors through the media, but

[20] Compare reference group theory, that people act and hold values thought to be similar to the group (or social field) they aspire to be part of, rather than the group they are presently in.

the media is also an actor in networks of relations (Calhoun 1991a). The media function as arenas that actors use to e.g. influence organisations, create public support and allocate capital by presenting views about what the practice is and should be, who the important players are and how production should be organised, i.e. what is happening. Media artefacts are further *actants* that people and other artefacts interact with and through (Law and Hassard 1999). The (media) artefacts contain embodied knowledge and ideas that are interpreted and constructed through interaction with those artefacts (Latour 1996; 1998). Our interaction with technologies thus teaches us, but does not determine, who we are and our place in social fields (Callon 1991; Poster 2002; Weick 1990).

iv) Structures, Actors and Transformation

Structures predate current actors and constrain and enable action in ways only partially understood (Archer 1995; Bhaskar 1975/1997; Fleetwood 2005). If the latter was not the case, actors within forming social fields would seldom be mistaken or have problems finding their activities and positions. There would be minimal dynamics since the right number of firms doing the right thing would be created at the right time to meet demands. It is further to some extent *because* structures are constraining that they are enabling – by limiting uncertainty through reduction of alternatives, thereby creating cognitive order. Existing structures create a foundation to build upon and the perceived constraints point to possible directions (McKinley and Scherer 2000; Sartre 1957/2003; Weick 2001).

We interact with and reshape both material and ideal structures within limits. This is probably more evident concerning material structures, like buildings, but also applies to ideas; they have the same ontological status. We cannot shop around for the ideas to govern us, but we can and do hold *ideas about ideas*. New institutionalism traditionally gives little room for direct strategic individual or group influence on ideas, mainly indirect through organisations, and tends to limit influence to misinterpretation and innovation (Nee and Ingram 1998; Scott 1994, p. 57). But people do not passively accept and become affected by ideas (Hensmans 2003). Neither is it only a matter of interpreting ideas, as if there was a 'pure' idea that becomes distorted when confronting people. Ideas about ideas and other structures are sometimes transformed into action specifically targeted at e.g. resisting, changing or exchanging them, to limit their impact or claim that they are sometimes or always invalid (Boström 2001; Davis et al 2005; Hobson 2003; Sayer 2005; Sztompka 1993, chapt. 16, 17). There are of course differences in power resources and unequal opportunities for creating, sustaining and altering ideas, they are the focus of political disputes (Bourdieu 1999; Fuller 2003; Knight and Ensminger 1998; Sayer 2001). This assumes people are aware of at least *some* ideas and that they can be changed or neglected, but not that they know of alternatives or are interested in change (Groenewegen and Vromen 1999; North 1990; Sjöstrand 1993).

Individual and collective actors use alternative strategies to confront ideas. i) They decouple themselves from some ideas, claim to follow them but only adjust themselves on the surface to e.g. protect the technical core of an organisation (Meyer and Rowan 1977). ii) They take on ideas head-on and claim they are invalid or inapplicable to them (Hobson 2003). This might be because the actors or what they do differ so much from previous practices and fields that only insiders feel they can decide the rules of the game. Ideas (as well as other actors) are thus bypassed through a *labour of division* (Hetherington and Munro 1997). The labour of division, which is most easily conducted by new entrants, is focussed on pointing to differences between actors and ideas and arguing that certain ideas are relevant for some actors, but not for others (cf. Augustsson and Sandberg Forthcoming/2006; Foucault 1970/2002; Luhmann 2002, on classification as a prerequisite for exclusion). iii) Actors make links to actors and ideas perceived as positive to make their practice cognitively possible, legitimate and worthy of support (Hobson and Lindholm 1997; Lounsbury et al 2003). iv) They change their self-presentation to fit ideas (Fombrun and Shanley 1990).

It is because structures are hierarchically and vertically stratified, have material and ideal aspects, are separate from actors and to some extent ambiguous that we can strategically manipulate, be manipulated by and misinterpret them.

Opportunities, Realisation and Change

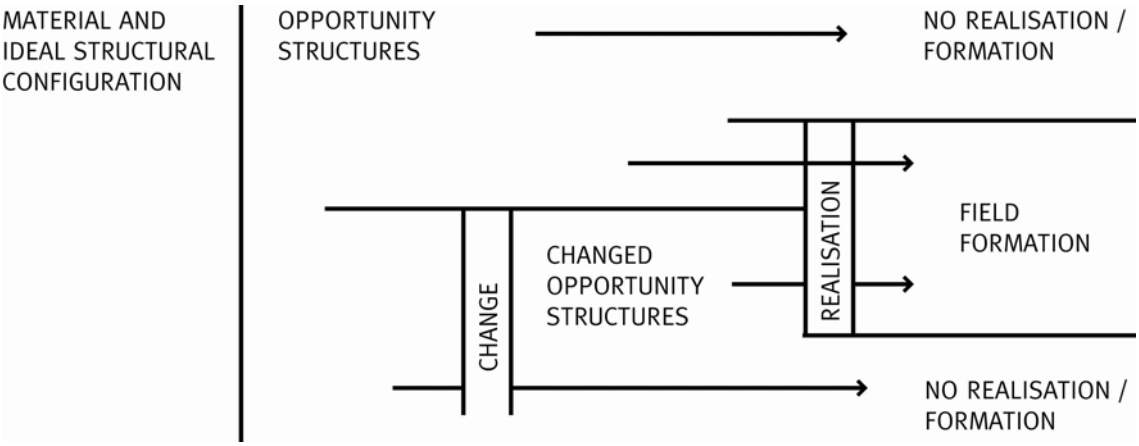
The emergence of social fields is often regarded as the outcome of change, and they do constitute a source of change since they alter the configuration of society and are *sometimes* dependent on change to come about (cf. Ahrne and Papakostas 2002; Sztompka 1993). The changes can be e.g. technical innovations, changing legislation and changing compositions and movements of people and organisations that might open up new social fields, while closing or altering others. Changes reconfigure *opportunity structures* by creating necessary and favourable material and ideal structures for already existing and new actors to gain resources by engaging in new practices currently not realised or blocked by others (cf. Ahrne and Papakostas 2002; North 1993; Parsons 1968, pp. 510-513; Weber 1978b). Opportunity structures thus need not be realised by new actors, but might just as well lead to an enlargement or redirection of the practices performed by existent actors and in those cases not always as new social fields. Opportunity structures are necessary, but not sufficient, for new social fields to emerge. The opportunity structures must be realised, *the practice put to practice*, so to speak. The changes creating new opportunities can occur long before they are realised, if they ever are. Opportunity structures might not be realised because e.g. others are, thereby oppressing alternatives, or because no one thinks of them, has an interest in them, or believes it is feasible to realise them. Thus, all empirical

studies are of positive cases, only that which comes into being, and not the unrealised alternatives. This restriction does however not apply to analysis.

In perfect markets, there are no opportunities for anything new to appear as resources have been optimally allocated. Society is however no perfect market and people are fallible. No actors know of all opportunities, but we can develop new knowledge, artefacts and ideas and thereby alter opportunities. It is argued here that i) there are always opportunities for something else or more than is currently realised to exist, but that novelty probably will interfere with that in existence, ii) that we are unaware of some opportunities, even if they are realised (by others), but that we can learn of their existence, iii) that the formation of social fields is not only caused by change but most easily detected through it, iv) that all changes do not alter opportunity structures, and v) that alterations in opportunity structures can occur even if actors continue to behave in the same way. Thus, the relation between continuity, change, opportunity structures and the transformation of social fields is *contingent but partially necessary* where changes have causal powers to alter opportunity structures, but these are not always realised as new social fields or at all (figure 3.2). Opportunities are thus dependent on both structures and the qualities of actors (Shane 2000).

If people continue to do the same, or an increasing proportion does something, new opportunities may arise whether realised or not. Change *and* continuation may create opportunities that might be realised and if realised, existing structures, as well as actions and flux, influence *how* they are realised. Continuity in one or more parts of the social landscape can create opportunities for something new to exist somewhere else, hence leading to change or continuity. A change in one part of society can further mean that other parts formerly seen as obsolete are viewed as central and given more resources.

Figure 3.2. Relations between continuity, change, opportunity structures and the formation of social fields.



It is not just a matter of if, but *when,* practices are realised and what other practices and actors already exist, i.e. timing. If organisations that handle certain practices exist, then the possibilities for new actors to move in and handle them (differently) are limited (Abbott 2001; Aldrich 1999; Katila and Mang 2003). Creative destruction (Schumpeter 1934/1974) can thus be viewed as the abolishment of some actors or practices that oppress alternatives in order to reconfigure opportunity structures. Opportunity structures might hold possibilities for several alternatives of which only one can be realised (although the realisation of one alternative might create opportunities for others, see below). The realisation of one alternative transforms the others into contingent unreal alternatives that can only be studied analytically, but their 'unrealisation' explained with reference to structures, events and actors where the substitutability and diversity of practices play a role (Turner 1994, pp. 9-11).[21] Opportunities are thus not destined to be realised or be so in a certain way, leading to a double negation of determinism.

The continuous existence of unrealised opportunities is one reason why covariation between some factors of change and the formation of social fields is an incomplete explanation. Still, because opportunities are real but not always detectable, their existence is mainly observable through changes and realisation, i.e. in positive cases. This can, as in evolutionary economics, lead to faulty conclusions regarding causality, i.e. new markets are caused by technical innovations and technical innovations always cause new markets.

Entrepreneurs and Entrepreneurial Action

Entrepreneurial work, action and ideal framing, is important for social fields to form. Actors need to perform new practices or old practices in new ways and label them as different from that in existence. I define entrepreneurial actions as those intended to either change opportunity structures to facilitate something new to exist or to realise opportunities in existence, whether successful or not. Elaborating on Merton (1936), action can create opportunities for something new to exist whether intended or not, but it is only when intended that it is an entrepreneurial act. This includes ideal entrepreneurship, voicing the possibility and desirability of novelty to exist using persuasion, fear and hopes (Garud and Jain 2002). Thus, entrepreneurship is an *act* that any actor can perform and is not restricted to e.g. new firms (cf. Swedberg 2000).

In his writings on religion, Weber (1978b, p. 439) discusses the prophet, a '…purely personal bearer of charisma, who by virtue of his mission preaches a religious doctrine or a divine commandment'. According to Parsons (1968, p. 567), 'The prophet is significant as the initiator of a great process of rationali-

[21] Compare Sombart (1906/1976) on the lack of socialism in USA, Weber (1978a) on why capitalism developed in the west and nowhere else and Papakostas (1999) on the lack of clientilism in Sweden.

zation in the meaning of the world and the attitudes men should take towards it'. Contemporary equivalents are e.g. IT and management gurus, who preach the desirability and determinism of technologies and social fields (Micklethwait and Wooldridge 1996). Although the prophets might be wrong, they can influence interpretation and recognition and shape the formation of social fields through their 'divine visions'.

Most actions are purposive and potentially alter structures (but the possibilities are usually limited), but entrepreneurial acts are here restricted to those where the *intention* is to change or realise opportunities (Shane and Venkataraman 2000; Wenger 1998, p. 45). Realisations of opportunities like the Internet unintentionally created opportunities for e.g. Internet pornography, spam, virus attacks and computer security that have been realised (Lane III 2000; Nordfors and Levin 1999). The computer is a precondition for computer games, but was not created for that purpose (King and Borland 2003). Still, the spread of computers created a demand for gaming that contributed to increased computer density and millions of advanced computers are now sold for the main purpose of playing games. Realisation of some opportunities can thus enhance alternatives that might be realised by the same or other actors.

Attempts to realise opportunities might of course fail, which can prevent new attempts due to doubt in the possibility and desirability of a social field to form: investments might be withdrawn; actors can lack organisational capabilities; coordination might fail and events can create illegitimacy for the new (Amburgey and Rao 1996, p. 1272; Hannan and Carroll 1977). Several promising fields more or less disappear due to early devastating events, like the Hindenburg disaster that caused the end of Zeppelins as commercial transportation.[22]

Uncertainty and Aspects of Formation

It is usually hard to pinpoint an exact moment when a social field is established as it is a continuous process of formation where coming into being and disappearance in part depends on the interpretations of those involved (Giddens 1976, p. 35). It is not clear if it is a field and what kind of social field it will be (Helfat and Lieberman 2002). The difference between a forming social field and the transformation of an existing field is a matter of degree. Some transformations are seen as large enough by those involved to mark the emergence of a new social field, while others constitute a change in an existing field. Over time, a social field

22 Another example is the former Cash system for micro payments supported by the major Swedish banks. Due to failed pricing strategies and bad publicity, the banks cancelled the system in late 2003 and the cards could no longer be used after October 2004. If the accidents at Harrisburg and Tjernobyl had happened earlier or the first Swedish reactor at KTH in Stockholm had suffered a meltdown, nuclear power would probably have faced the same future (Agrell 2002), as could the Internet have done due to e.g. Morris' virus attack in 1988 (Ross 2003).

might dissolve into separate fields and separate fields can merge into one. A social field earlier seen in isolation can become framed as 'actually' being part of a forming field, but later 'break free' again. The actors might come to the conclusion that nothing of significance to them happens and that the best thing to do is continue with business as usual. But a change can be seen as important, in which case actors might still continue as before, hoping that it will work anyway, at least for some time. They can also view changes as a threat or possibility that needs to be dealt with by trying to avoid it or embracing it, a way to improve ones position, gain resources and expand.

There are (at least) three questions and aspects that have to be given preliminary answers for a social field to form: i) what is it, i.e. the construction of the meaning of the social field itself, including relations to other fields and outside actors; ii) who should be involved, the identification of relevant and legitimate actors; and iii) what should be done by whom: the division and integration of activities between them (see below). The aspects are integrated parts of the same process. Framing what something should be is at the same time framing who should do it and how.

The formation is not a matter of scientific definition or round-table negotiation, although this can be involved, but an everyday sense making (Sayer 1992; Weick 2001). Talk is important to establish an idea in which new social fields become seen as possible and wanted, there has to be a successful negotiation of meaning. If words and meanings do not work, they will not prevail (Benford and Snow 2000). During field formation, actors relate more to other actors within what is expected to be the field than to outsiders to find their positions and organisation through a process of mutual identification and response (White 1981). It is however uncertain which actors qualify as insiders and who to look at since the boundaries of social fields are not given and are sometimes contested.

The result of this so-called 'field framing', 'boundary work', or 'translation' is not necessarily a mutual agreement (cf. Bloomfield and Best 1992; Gieryn 1995; Lounsbury et al 2003). There are conflicting views and ideal struggles based on and affecting capital outcomes over the power to define what interactive media is since the definition affects the availability and distribution of resources (Bourdieu 1990; Giddens 1976, p. 151). But everyone cannot disagree about everything at once, total disagreement gives way to *partial* coherence over time due to repeated interaction and socialisation (Farjoun 2002). Social fields however do not emerge from words alone. We can define something as a social field or something else, but that does not make it happen. Furthermore, something that has existed before does not automatically change because we choose to call it something else, even though the framing of a field or practice as something else might eventually *lead* to change (Bhaskar 1998a; Sayer 1992, p. 26).

The Meaning of a Social Field

All social fields are about something, but there can be struggles over what this something is and how it should be understood. Social fields are characterised by competing applicable logics seen as valid understandings of what the meaning of a social field should be (Fligstein 2001). There might be open conflicts based on the opposing logics and they can dominate over others (Lounsbury et al 2002; Stryker 1994). The logics are only partially compatible and irreducible to each other, and there is no correct or fundamental logic. Logics that are not opposed to each other will not be viewed as different, but aspects of a shared logic (Archer 1996; Zeuner 1999). Stating that e.g. interactive media production is economic does not make it false to call it technical or aesthetic. A logic is in this sense not true, it can only be held and shared. Logics cannot be *ex ante* assumed, they have to be empirically determined. Still, some are more probable due to overall ideal structures; an economic logic is probably present (but might be intentionally denied) in all social fields organised like capitalist markets.

Established firms have alternative entries into social fields since they come from different backgrounds (Shane 2000; cf. Van den Bosch et al 1999 on multimedia markets). They stand in different places in the social landscape and therefore have different outlooks and dispositions to act upon (Ahrne and Papakostas 2002; Bourdieu 1998). Their understanding of the new differs, which makes them focus on different things, and frame the practice and the field differently. For firms coming from one field, the change is viewed as the evolution of what they previously did, for others the possibility to extend activities, and for yet others a threat to the field they are currently active in (cf. Bijker 1995b, p. 34). Firms and other actors are however capable of questioning both the social landscape and their identity and preconditions (Sayer 2005).

Firms that start doing something new related to what they already are doing do not always reorganise, unless the redirection in itself is seen as a reorganisation. Firms that extend the practices they perform or move into a new field have some reminiscence of their history, but that they do move at all shows that they can change. Thus, logics influence the organisation of production since it is the interpretative entrance of outsiders that move into the social field and thereby shape their view on what the practice is and what they should do (Wenger 1998, pp. 167-8). New firms have less manoeuvre inertia and are less stuck in certain ways of thinking, but usually face other obstacles e.g. lack of reputation, resources, organisation structure and relations to suppliers and customers. Like established firms, new firms are influenced by different ideas concerning what a forming social field should be, i.e. pre-existing ideal structural configurations.

Official systems of classification that label and differentiate social fields can be understood as struggles for outside recognition and legitimacy over the performance and image of a practice and for the inclusion and exclusion of actors

(Fuller 2003). Official classifications give social fields legitimacy and influence access to resources. It is not until a practice and the actors that perform it are visible that they 'really' exist, can pose demands, create social space and be held accountable (Hobson and Lindholm 1997). Actors also use labelling to signal inclusion or exclusion from a field, dependant on the values attached to it.

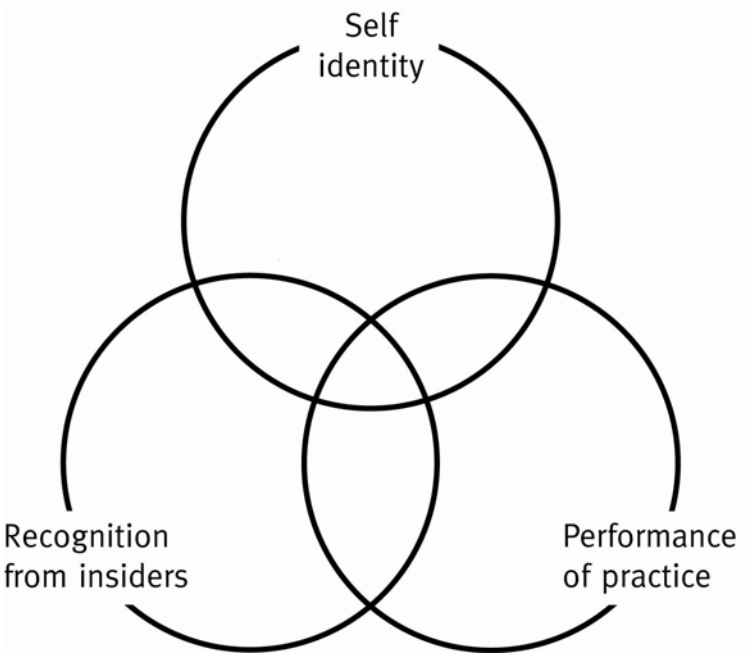
Actors usually do not want to be labelled by others and tend to fight over official recognition and its content (Askonas and Stewart 2000; Hobson 2003). The process of legitimisation and official systems of labelling is only partially in the hands of insiders or based on their views. They are co-created based on the interests of outsiders, sometimes as their means to argue for legitimate control over the field and its resources, or simply because there is a perceived need to call a social field something. There has to be *some* correspondence between insiders' collective identity and outsiders' recognition – not any interpretation will do (Fleetwood 2005). A common identity assumes commonality in function and feature, at least in presentation, but an official classification need not cover firms that do the same thing or in the same way (Anderson 1991; Brunsson 1985; Fombrun and Shanley 1990; Lee 2001).

Involvement

The second question of formation concerns involvement. To expand on what was argued in chapter two regarding the definition of interactive media, the status as insider depends on what actors do, self-identity and recognition from others. Actors can perform a practice without identifying themselves, or be recognised by others involved, as insiders and vice versa not perform a practice but identify themselves as or be recognised by others as part of the social field (cf. Blackler 1995, pp. 1036-8). It might be enough for an actor to identify oneself as an insider to be one, but the performance of the practice and recognition by at least some other insiders is usually a necessary condition (Bourdieu 1986; Calhoun 1995, p. 51; Sayer 1992, p. 33; White 2002). There is further a separation between the recognition of insiders and outsiders meaning that some actors are recognised by other insiders, but not by outsiders, as belonging to the social field, and vice versa.

The status as insider is thus partially in the hands of others and it is difficult for those related to a social field, as well as researchers, to definitely classify actors as active within a certain social field and not another (see figure 3.3 on next page). Actors can use the confusion strategically to *frame out* particular or general others through the previously mentioned labour of division in order to try to get rid of competition and gain dominance over resources. Ideal control over a social field can thus function as a substitute for authority over the actual performance of the practice in the pursuit of resources (Augustsson 2005).

Figure 3.3. The role of performing a practice, self-identity and recognition from others involved for status as insider to a social field.



Not all actors will have an interest in entering or being identified with a forming social field. While some would like to dominate a forming social field and gain access to available resources or avert others from doing so, others distance themselves, perhaps preferring that no one utilises the social field. But it is only when there is authority that an actor can determine what a social field should be like. This authority usually rests with the state, which can prevent others from forming a social field, or at least try to do so: by having a monopoly on the right to use violence, they can make it illegal or create a state monopoly. Economic activities are reliant upon the state and institutions, but are characterised by a lack of authority between firms and other actors. Firms cannot tell each other not to perform a practice or engage in the formation of a social field, unless they have some legal monopoly like a patent, professional legitimacy or standards. Firms might present themselves as insiders and all others as outsiders, or somewhat 'lesser' insiders, but this usually has limited effect on performance in social fields where anyone can attempt to enter.

Thus, established firms generally have a choice to enter a new social field and people can choose to start a firm intended to be active within the field. Attempts to enter social fields might however not be successful, many established firms retreat rather quickly or even go bankrupt. The long-time survival rates for newly started firms are furthermore so low that a certain degree of ignorance (or as in the case for some so-called 'ethnic entrepreneurs', desperation) probably is necessary for their establishment (Aldrich 1990; Aldrich and Fiol 1994).

The Performance of Practice and the Distribution of Activities

The question of what it is that should be done and by whom involves i) what constitutes a complete solution, i.e. the borders downward where raw material is turned into inherent practices and upward between producer, consumer and user, ii) core competences and iii) compatible activities, i.e. the overall vertical integration of the social field (Bijker 1995a; Chandler 1962/1998).

i) Alternative types of actors have an interest in framing the practice and drawing the boundaries of a field differently, give it different direction and size. Including more of certain types of activities will make those actors performing them more central to the field, increase their legitimacy and affect the allocation of resources. There might also be an interest in framing out certain activities as not part of the practice and the social field in order to e.g. keep powerful existent actors out. As argued above, actors generally have limited possibilities of prohibiting others from engaging in practices, but they can try to convince other insiders and outsiders that the *activities* others perform are not part of the practice.

ii) The services delivered by firms within a social field are not given and firms not identical even if they refer to themselves using similar classifications (Baum and Oliver 1996). There is an internal diversity meaning that all actors do not perform all the activities seen as part of the practice (Wenger 1998, pp. 128-9). This involves the construction of core competencies, i.e. the activities firms perceive to be central for acquiring resources and hence future survival (Prahalad and Hamel 1990; Thompson 1971).[23] Identification of core competencies and decisions of what to keep inside and outside a firm is the outcome of a process of identification involving both the firm and its environment (Dijksterhuis et al 1999). This includes relevant other firms an actor is, or would like to be, similar to, those they would not like to be like as well as customers, and random events altering access to resources (Gottfridsson 2001; White 1981; 2002).

iii) The process further involves finding out what activities 'naturally' belong together, or at least can be rationally combined. A firm with experience in developing databases might view it as natural to handle the technical aspects of interactive media production, but leave design to others. They might give up their prior area of experience and completely focus on interactive media, or decide that the activities make sense to combine. This creates *clusters of activities*, meaning that firms who perform one activity are more likely to do certain other activities, and vice versa avoid certain activities. The ideas of activities that go together must face reality and if they turn out to be too hard to organise within a single firm, the firm must try to alter its cluster. The opportunities and affordances offered by material conditions cannot be changed through willpower alone.

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23 Core competencies differ from competitive advantage. Just because a certain activity is central for the survival of a firm does not mean that the firm performs it well or relatively better than other firms (Aldrich 1999; Porter 1985).

The Structure of Social Fields

The result of the process of formation is a horizontal and vertical structure of social fields that I conceptualise ideally according to logics and status, and materially according to the division and integration of labour. The ideal structuring of the social field differs from the material structure based on the division and integration of labour within and between firms. While the former is based on identity and recognition, the latter is based on the activities that actors perform and the relations between them. There is however a dialectic relation between the material and ideal aspects of the structural configurations, meaning that what actors do is dependent on their status and logics, and the engagement in certain activities affects how actors will view the social field and their status within it (Wenger 1998, p. 149). But like actors and structure they cannot be reduced to each other, and should not be confused with objective and subjective notions of structure as they have the same ontological status (Archer 1995; 1996; Fleetwood 2004; Sayer 1992, pp. 21, 34-35).

There are also tensions between the material and ideal structures of social fields given that division of labour constitutes difference, while status and logics are based on sameness: we compare ourselves to similar others that share the same logics, but in production collaborate with others who do different things (cf. Askonas and Stewart 2000; Lamont and Molnár 2002, p. 170; Luhmann 1982). This will here be shown with closer attention paid to interactive media as both division of labour and logics are field specific.

Ideal Structures: Logics and Status

The previously described logics that direct the alternative meanings associated with a social field contribute to an ideal horizontal structuring. Within interactive media production, there is a tension between economic, aesthetic and technological logics (Augustsson 2004). Actors are generally dominated by and carriers of certain logics that they are socialised into through relations and interpretations of existing ideas. The logics are further repeatedly reinforced in actual interaction with others involved in the practice. There is a set of common-meaning based constraints making up the ensemble of possible interactions that reduce uncertainty and create understanding (Buckley 1967, pp. 94-5).

The vertical ideal structuring of social fields is dependent on the status of actors (Aspers 2001a), based on the recognition of others within and outside the field in question. All actors are free to argue a position, but all do not have enough power or symbolic capital to claim one. Systems of status are negotiated by people in social interaction against the backdrop of the overall ideal and material structures, and because reality has particular structures and properties existing independently of our understanding of them, not any understanding will function as a basis for status. Apart from logics, status is in many emergent fields

made up of time of entrance, brilliance and success (Bourdieu 1986; Shrum and Wuthnow 1988). Time of entrance brings status based on perceived experiences from the founding period of social fields and participation in the entrepreneurial and innovative stages of field formation, which creates legends (Jager and Ortiz 1997). Status based on brilliance is an evaluation of the quality and quantity of prior actions and what actors are perceived to be capable of doing now and in the future, where artefacts function as manifestations of prior actions (cf. Willim 2002). One might consider an actor to be brilliant based on personal interaction or reputation, but it is not until an actual artefact is evaluated that expectations can be judged. Success is a problematic source of status since it is partially its outcome. Actors can gain status based only on success, but there is a risk others will feel they have not been true to the field or, have become successful on behalf of others or are becoming threats to the field (Augustsson 2004).

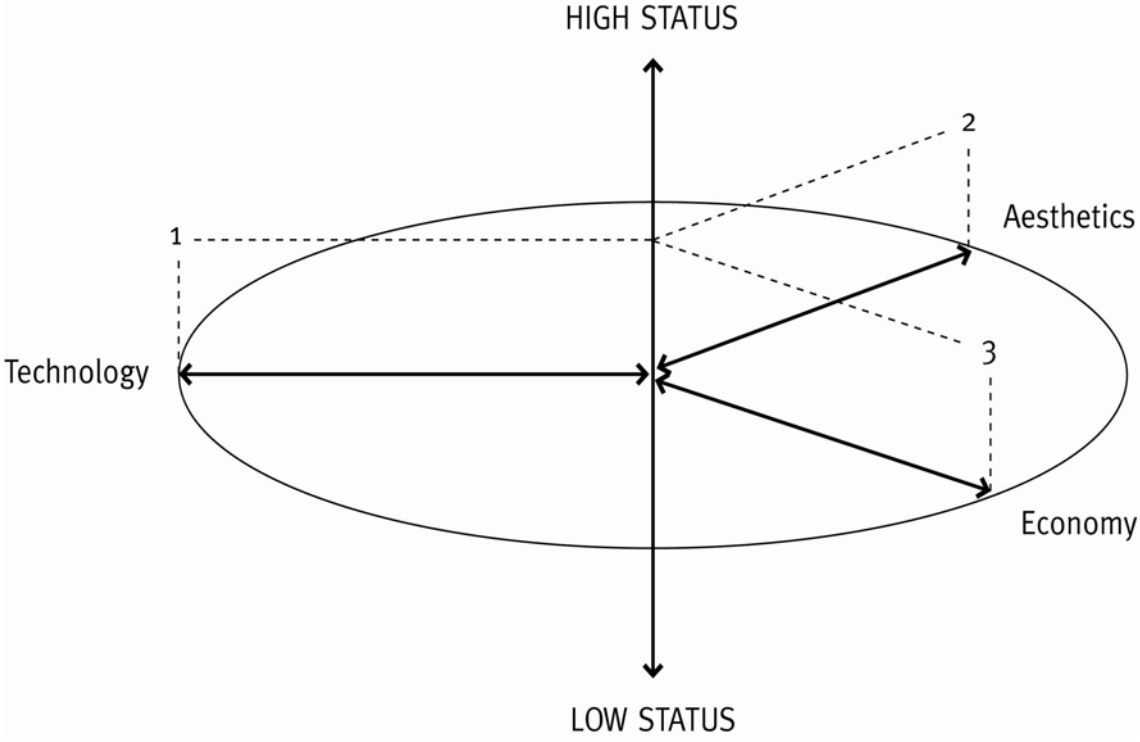
Aspers (2001a) uses the concept of *icons* to refer to people that stand out and are known and admired by most insiders of a social field and at least some outsiders. I use the term valuation, which includes a combination of varying degrees of knowledge and admiration. I also differentiate between internal and external recognition, creating four status positions: icons, sell-outs, indies (i.e. independents) and amateurs; and dual status systems (see table 3.1).

Icons and sell-outs refer to individuals and firms that are known to both insiders and outsiders, but while icons are admired by a large proportion of insiders, sell-outs are not. Those in indie positions are admired by insiders, while the small proportion of outsiders that do know of them probably view them as too *avant garde*. Amateurs are hardly known by anyone inside or outside the social field, and those that do know of them think little of their status. Sell-outs are considered to be actors that have either violated the moral codes of the social field (Rehn 2001) or are seen as charlatans whose external recognition does not match their talent. Outsiders view sell-outs as more central to the social field, which gives them access to resources, e.g. signing good contracts, becoming involved in prestigious projects, the possibility to charge higher rates and having access to investment capital. Insiders' main sanction against violations of internal norms is to lower actors status as they cannot deny access to external resources (Coleman 1990, chapt. 10-11). Those with high outside valuation have greater possibilities in publicly framing the field and perhaps getting customers, but high internal valuation might be more influential for other firms.

Table 3.1. Status positions in social fields based on internal and external recognition.

	External Valuation	
Internal Valuation	High	Low
High	Icon	Indie
Low	Sell-out	Amateur

Figure 3.4. Vertical and horizontal ideal positioning of a social field based on relative differences in internal status and logics.



Status and logics are related in social fields, as logics determine valid claims to status: an actor can receive high status because it is successful according to criteria in line with a logic, i.e. technical knowledge, aesthetic brilliance or developing economically profitable solutions. Since logics are internally irreducible and only partially compatible, different sources of status are sometimes hard to combine and transfer, meaning that social fields might have separate internal status systems. As shown in figure 3.4, this creates a multidimensional perspective of ideal positioning in a social field (here without the distinction between internal and external valuation and with three high status positions marked).

Material Structuring: Division and Integration of Labour

The ongoing changes of social fields only creates temporary moments of structural stability where the material structuring consists of interrelated potential and realised *positions* that actors might occupy based on the clusters of activities within the practice that they are involved in and their relation to other actors (cf. Bourdieu 1986; 1990; 1993). This makes it fruitful to make use of a classic but neglected concept in the social sciences, the division of labour (cf. Rowlinson 1997, chapt. 5 for a discussion). The organisation of production within social fields is in this study defined as 'the vertical and horizontal division and integra-

tion of activities within and between firms in the practice of production of interactive media' (cf. Augustsson 2001; 2003; Sayer and Walker 1992). Division of labour i) assumes the integration of labour, ii) takes place within and between firms, and iii) is vertically and horizontally structured.

i) Whenever labour is being divided, there is a need for integration that requires different levels and methods of cooperation and creates varying degrees of knowledge of and relations between actors (Alter and Hage 1993; Sayer and Walker 1992). In spot markets, it is enough to purchase a service or good without having communicated with or even know of the producer. In most other cases, as in hierarchies, networks and business groups, there are needs for deeper and more stable relations between identified actors, which create possibilities for authority and control (Granovetter 1994; Powell 1990; White 1992b; Williamson 1991).

ii) Division of labour takes place both within and between firms since not all workers within a single firm or all firms do the same thing. This has traditionally been referred to as technical and social division of labour respectively, which is unfortunate as the division of labour within firms is not shaped by technical factors alone and the division of labour between firms have to consider technology (Braverman 1974; Sandberg 1980; Sandberg et al 1992; Sayer 1995). Given this, it is more correct to call it division of labour within and between firms, or more broadly organisations (Augustsson 2001; Madhok 2002).

iii) Both division of labour within and between firms has vertical and horizontal dimensions. Within firms, horizontal division of labour refers to the separation between tasks performed by different workers, whereas vertical division of labour refers to levels of authority. Horizontal division of labour between firms in this study mainly refers to engagement in different activities involved in the same practice, but on a larger scale refers to all differences in direction. There is generally no formal authority between independent firms (Laestadius 1992) but a vertical division of labour based on perceived and actual dependence and power between actors, especially known and related ones (Aldrich 1979; Pfeffer and Salancik 1978). Dependence between firms is not necessarily based on the relative size or position as e.g. subcontractor that firms currently hold, especially not when firms tend to shift positions and hold several positions at once.

Given that the activities that are not performed in one firm generally are performed within another, the division of labour within and between firms is related. Furthermore, the extent that activities are viewed by one firm as their core competencies and how they are organised within that firm makes it more or less likely that they will be handed over to others. There is further a flexible specialisation, meaning that firms have competence to perform more activities than they do at a given moment and that the activities they perform vary over time (Augustsson 2005; Hirst and Zeitlin 1997).

Figure 3.5. The material structuring of social fields based on division and integration of labour within and between firms.

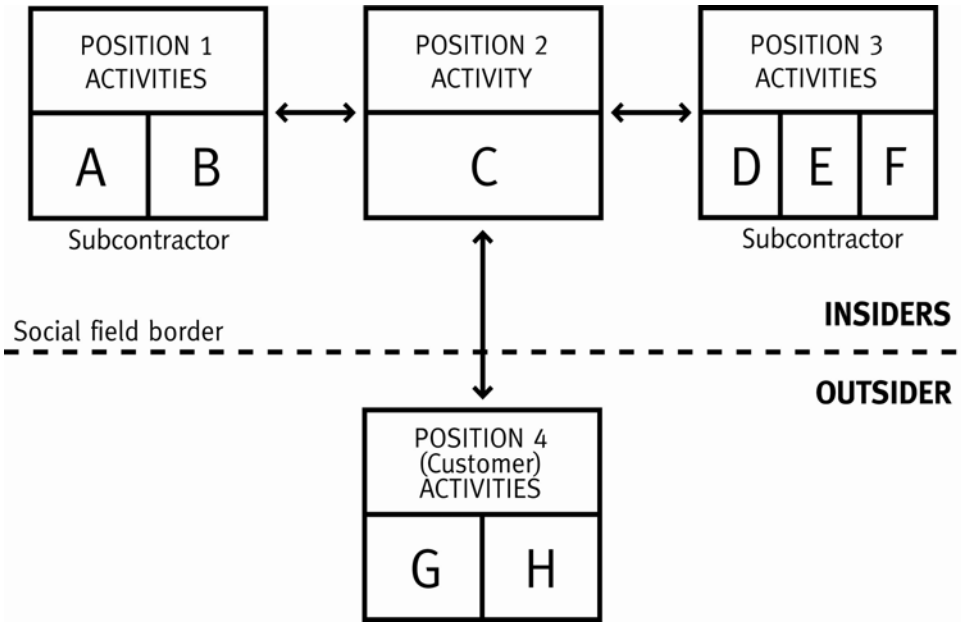


Figure 3.5 gives an overview of horizontal division and integration of labour within and between firms and adds the role of the customer, which shows that practices can extend social fields (cf. White 2002, p. 6). A firm currently in position 2 performs activity C, while outsourcing activities A and B to a firm in position 1, activities D-F to a firm in position 3 and customers in position 4 handle G and H. The activities outsourced and those that the customer handles are further divided between different workers within the respective firms, apart for the firm in position 2.

Variations in the Organisation of Production

The result of the inherent firms finding their core competencies and the distribution of activities among firms is not a simple specialisation where some firms become subcontractors, others core producing firms, distributors or retailers. Although changes are greater in the early stages of formation due to higher levels of uncertainty, positions are never final and firms can occupy several of them. There will be several alternative clusters of activities at any single moment, making perceived positions more ideal types than descriptions of actual structure. There are good reasons to know more things than the ones presently performed, and contingency and the actions of others create turbulence (Augustsson 2005).

Variations in organisation between firms can be seen as a process of experimentation and learning to solve the inherent uncertainty about what one should do and how and find ways to meet mutual demands for flexibility and stability (Bijker 1995a, p. 13; Leana and Barry 2000). Even though organisation theory

and especially management literature currently is focussed on needs and possibilities of flexibility, it is essential to keep in mind that organisations are dependent on finding forms of stability if they are to prevail (Perrow 1986). One can reasonably assume that choices 'seemed like a good idea at the time' for those making them (Becker 1998, p. 25). But all choices will not turn out to be the best, and a deliberate choice is not made at every point. Through the activities firms engage in, they will find themselves in certain positions that make some choices and future actions seem more reasonable than others. Thus, firms are subject to structures that enable and constrain their future opportunities, partially because some previous opportunities have been realised.

Interactive media production is further project-based and aimed at producing differentiated solutions during a specified period of time (Rosenqvist 2000). Activities and relations between firms will thus co-vary i) with the duration of projects, ii) during phases of a project, as some activities are the basis for later ones, iii) because some activities are performed simultaneously during a project and iv) because firms might be involved in several projects at the same time.

This does not mean that the boundaries of firms are disappearing (Ahrne 1994; Augustsson 2000), but that structures within social fields are not necessarily stable. The variation is not total since i) possible ways of organising production within a certain structural context are limited (Hollingsworth and Boyer 1997a), ii) firms have a tendency of collaborating with others they have prior experience of to secure control (White 1992a; 1992b) and iii) the relative benefits of alternative ways to organise production makes complete variation less likely. For social fields and firms with an abundance of resources, the negative effects of having an inefficient organisation might however not be visible or a matter of immediate concern. If the current focus of the firm is something other than efficiency, such as growth, rate of innovation, or solving a problem at any cost, variations in the way of organising production may increase.

Concluding Comments

The purpose of this chapter has been to conceptualise and theorise interactive media as a practice that in part takes place in a social field structured according to logics, status and horizontal and vertical division of labour. Practices and social fields are formed through the realisation of opportunity structures inherent in pre-existing material and ideal structural configurations, among them technical innovations. It has been argued that the concept of social fields function as conceptual tools to describe and understand the formation and organisation of interactive media production, but also that they have a causal impact. Technology influences formation and organisation, but it has been necessary to dismantle beliefs in technology to restore its proper role as a socially constructed part of both the material and ideal structural configurations.

The theory is rather abstract and condensed with few explicit examples and linkages to empirical findings (as well as previous theories). The theory further goes beyond some of the empirical findings that will be reported in this study and is in a sense both open-ended and 'complete', as it repeatedly reports what *might* happen, without offering many predictions, since it seldom points to what *must*, *will* or is *probable* to happen. I believe the structure of the theoretical model is fruitful to show that it is not just an ad hoc explanation that fits the case in question (Hedström 1996), but that the empirical findings, conceptualisation and theory are all outcomes of a research process aimed at answering the research questions regarding formation and organisation. Given this, the theory cannot explain the empirical findings in the sense of what really happened and the empirical results presented here cannot be used to falsify the theory.

To explain the formation and structuring of a social field is to ask what caused it, to find the unintended and intended acts that created and realised opportunity structures in certain ways, where reason is one cause (Bhaskar 1998b; Collier 1994; Hedström and Swedberg 1998; cf. Sayer 1995, p. 23; 2000). No law states if or when a social field will form, or how it will be organised. It is a matter of things sometimes happening, and sometimes not. One can find many arguments why there *could* develop a social field for interactive media production in Sweden during the 1990s, but few arguments that state that it *must*. Detailed empirical studies of specificities and causes on several levels inside and outside the social field are required, which is presented in the following chapters.

4. Sweden in Transition

Following the theoretical discussion, a constructive starting point for a description of the formation and organisation of interactive media production in Sweden is the preconditions that created opportunity structures and their realisation. In other words, in what ways did the context contribute to and shape the formation of interactive media? It is clearly impossible to pay attention to everything that had an impact, thus a choice has been made of what I perceive to be relevant areas. The chapter starts with a description of the economic crisis in Sweden in the early 1990s and the following restructurings, privatisations and deregulations. This is followed by a discussion of the developments, visions and diffusion of technologies linked to interactive media. The third section briefly describes the background and development of IT related sectors in Sweden and the role of Ericsson. The chapter ends with a discussion of how the changes that followed the crisis came to focus on ideas about an imminent knowledge society and a new economy, which firms producing interactive media came to be symbols of.

General Situation and Crisis in Sweden

Beliefs in great changes and transitions are a truth of every age and the role of crisis for more long-term and profound social changes are easily overrated (Durkheim 1893/1984; Uvell 1999, p. 19). Still, the economic crisis in Sweden in the early 1990s *did* contribute to many changes, altered material and ideal structures and thereby created new and sometimes, for some, less favourable opportunity structures. The economic crisis seems to be a critical juncture that influenced developments in many areas. It caused massive losses and redistributions of wealth, jobs and power among the population. It also led to an ideal shift, a questioning of previous and current ideas, most visible in the debate about the changing or disappearing Swedish model, welfare state and *folkhem*.[25]

It is argued here that the formation of the social field for interactive media production needs to be understood in light of the earlier economic crisis, the effects of which were still very much present at the time of formation. Given that the crisis was the largest in Sweden since the Kreuger crash and perhaps even larger (Edvinsson 2005), this might seem to be an obvious argument. Still, there are as yet few accounts that directly link the IT boom in Sweden to the economic crisis that occurred less than five years earlier (see Benner 2004, for an exception). When connections are made, it is mostly between the 1980s real estate and

[25] Some of the changes might have occurred without the crisis. That is an unrealised reality one can only hypothesise about.

the 1990s IT bubbles and the following crashes.[26] Although the crisis is little over a decade old at the time of writing and one most readers will have experienced it first hand, it is necessary to give an (*one*) account of it. The IT boom and crash after all occurred just a couple of years ago, yet how many recall what exactly happened?

The Crisis, a Brief Recapitulation

Even though there is some debate regarding the relative importance of different factors leading up to the crisis of the early 1990s, most researchers agree that the origins are found in the 1970s or earlier (Larsson and Sjögren 1995; SOU 1999:150). In the 1970s, a focus on low unemployment, coupled with a fixed currency rate, contributed to increased inflation, high relative costs of labour and decreased competitiveness for Swedish export companies. To solve this, the Swedish krona was devalued several times in the late 1970s and early 1980s.

In 1985, the head of the Swedish national bank Bengt Dennis, the finance minister Kjell-Olof Feldt and Erik Åsbrink from the finance department, suggested that the regulations on the Swedish banks' maximum loaning should be abolished, which was approved by Prime Minister Olof Palme and parliament representatives (Affärsvärlden 1992). This system change caused a rapid increase in loans between 1985 and 1990, especially within real estate, and Sweden experienced an economic boom largely built on loans (Wohlin 1998). Although debt rates were alarming, the national bank could not limit loaning by increasing interest rates, since the Swedish currency was fixed. An optional decrease in state expenditures was deemed politically impossible due to the coming election, as was to release the currency, although for other reasons (SOU 1999:150, p. 36).

In 1990, the Prime Minister Ingvar Carlsson and finance minister Allan Larsson established a change in the Swedish government's economic policy from high employment to low inflation. The overheated real estate market started to experience problems, which caused massive troubles for borrowers, including finance firms, and subsequently the Swedish banks and other credit institutes, who in turn had borrowed large amounts of capital from foreign banks (Urwitz 1998). A national bank guarantee and emergency was established in September 1992 and the Swedes had to pay billions to save banks from bankruptcy and the bank system from total collapse (Jennergren and Näslund 1998). The crisis for the Swedish credit system caused both foreign and domestic financial speculation against the Swedish Krona, but was largely identified as an international attack on Sweden. The bank crisis also became a currency crisis, which led the national bank to defend the Krona by raising interest rates to 500 per cent in late 1992

26 Elmbrant (2005) makes some linkages between the economic crisis and the later developments related to IT, but he focuses on the speculative aspects of the IT bubble, rather than on the broader growth of IT and media related sectors and practices.

(Dennis 1998; Hamilton and Rolander 1993). The national bank soon had to give up and the currency fell. An economic crisis was a fact, and it was largely a Swedish crisis (Edvinsson 2005).

The Swedish currency was devaluated, the economic growth figures were negative, the budget deficit grew and Sweden dropped several positions on OECD's ranking of the world's wealthiest countries. As 250,000 people lost their jobs and 90,000 companies were closed down, the levels of unemployment in Sweden came closer to those in most other European countries, meaning that they were higher than they had been for as long as most could remember.

New Management Ideas and Restructuring

The economic crisis created ideal opportunities and perceived material needs for large structural changes for firms and government agencies (Almqvist and Glans 2004). There was also a loss of credibility and status among on the one hand the economists that were perceived as having prescribed the changes that caused the crisis and, on the other hand, critical researchers that reported on the negative effects of the crisis and the downsizing and reinstallation of the Fordist production system that followed (Sandberg 1995). An increasing proportion of firms and government agencies instead turned to the growing management consulting sector (Björkman 2003; Furusten 2004). The advice given to them, in line with the majority of management literature at the time, was often to downsize, focus on core competencies and outsource perceived peripheral activities with the aid of new IT solutions (Sandberg 2003a; Wikman 2001). IT was presented as a competitive tool, meaning that firms that used IT solutions would have relative advantages as compared to other companies (KFB and TELDOK 1997), ideas that largely originated from and were also influential in the US (Indergaard 2004, p. 17). Don Tapscott (1993, pp. xi-xii), an influential IT and management guru at the time, argued that IT was going through its first paradigm shift, evolving into a second era:

> The paradigm shift encompasses fundamental change in just about everything regarding the technology itself and its application to business […] Organizations that do not make this transition will fail. They will become irrelevant or cease to exist.

Firms and government agencies quite often adhered to the new demands, but they were advised not to produce IT or hold IT expertise internally unless it was viewed as a core competence (Barney 1995; Furusten and Werr 2005; Prahalad and Hamel 1990; Scarbrough 1996). Management ideas thus favoured increased IT production and placed the practice outside the established organisations, which increased opportunities for new and existing IT related firms to deliver the desired solutions (Augustsson and Sandberg 2003a; NUTEK 1996a).

As firms were split up, dissolved, re-organised, born and merged, the activities performed by existing firms shifted and there was a change in the demography of organisations. A number of large Swedish companies were sold to or merged with international companies during the 1990s, Asea, Astra, Avesta, Pharmacia, Volvo and SAAB. Other companies sold off or outsourced parts of their operations to foreign companies such as Lear Corporation and Flextronics. Many companies further performed huge layoffs of workers.

The perceived need to lay off people, outsource production and/or sell all or parts of the company to foreign actors at the same time as many companies made profits was hard to defend in front of a Swedish population. They had seen the value of the Swedish currency devalued, in many cases lost their jobs and perhaps even their home to banks they had to pay 100 billion SEK to save.[27] Every change seemed to bring with it losses of Swedish jobs and control for workers, unions and politicians; in any case that was the way they were usually presented. There was an increased acceptance or realisation that what firms did, where they did it and who they would employ to do it were far from certain.

The large export companies that historically had been the backbone of Sweden were no longer a secure source of employment (Wikman et al 1998). A large proportion of jobs that were created in the old companies ended up abroad or became more insecure forms of employment, thereby replacing internal labour markets with employability (cf. Garsten and Jacobsson 2004; le Grand 1989). It constituted a one sided abandoning of the invisible or psychological contract between employers and employees (Isaksson 2000; Zetterberg 1997). Policy, and thereby policy research, instead came to focus on creating the opportunities for new companies and sectors to grow (for discussions, see Lithander 2005, pp. 5-13; NUTEK 1996b). Future jobs in Sweden would not come in manufacturing, but in new advanced service sectors, preferably on a regional basis and in collaboration with research and local politicians (Etzkowitz 1994; Etzkowitz and Leydesdorff 2000). Thus, both management ideas and policy favoured an increased attention to the purchase of IT solutions from other companies and the restructuring and layoffs of the economy contributed to an increased policy (and research) focus on new firms and sectors (Ministry of Industry 2000). This constitutes a change that created opportunities and ideal acceptance for novelty, but it also meant that a lot of people were 'free' to engage in new activities and join new social fields as a large proportion of the workforce was unemployed or in insecure employments. The concent of the ideas further pointed to the organisation of new practices and social fields as markets, rather than state monopolies.

[27] SEK is an abbreviation for svenska kronor, Swedish Kronas in English. MSEK is short for miljoner kronor; million Kronas. One SEK is roughly 0.1 Euro.

Privatisation and Deregulation

Following the economic crisis of the 1990s, the 'crisis mentality' lead to growing demands and acceptance for the needs for privatisation as it was argued that the 1980s boom had been built on borrowed money and that we had been spending above our assets (for a discussion, see Hugemark 1994; SOU 1999:150). Questions about what the state should do reappeared on the agenda, often influenced by a growing new liberal agenda (Blomqvist and Rothstein 2000; Rothstein 2002). Sweden's EU membership and the union's focus on control over government spending, the break-up of state run monopolies, low inflation and employability rather than low unemployment and government investments to fight economic recessions, also played a role (Garsten and Jacobsson 2004). The so-called Lindbeck commission that was set up to analyse the economic crisis in 1993, for instance, in line with public choice theory suggested abolishing monopolies in the public sector's service production (SOU 1993:16). There was limited public opposition at the time and those that were critical were often ignored (SOU 1999:150).

The ideal opportunities for privatisation and deregulation that the crisis had created were realised by the newly installed right wing government and adopted and carried on by the returning social democratic government after the 1994 government election (SOU 1999:150, p. 173-174). Examples of privatisation and deregulation include health care, energy, railroads and other public transportation, telecommunications, postal services, education, real estate and housing. The focus on deregulation and privatisation meant that not even public sector jobs could be seen as secure anymore. It also made it politically very hard or virtually impossible to create and defend a new state monopoly on Internet connections and even more so on Internet based interactive media productions. It would open up for critique from both state employers that had or were in jeopardy of losing their jobs, and private market actors with an interest in the new markets. There further did not seem to be anyone who wanted or at least was willing to fight for a state run monopoly on interactive media.

The privatisation was not only a government run process to confront the economic crisis. Some individuals and groups of actors confronted the monopolies on e.g. media and communications: cable TV, press, telephony and Internet. They did not wait for the preconditions for the social field to establish themselves through state initiatives and technological innovations. Instead, they took an active part in shaping and pushing for favourable material and ideal opportunity structures and also tried to influence how the opportunities were formed and shaped. The most well known person here is the late Jan Stenbeck, who founded the cable channels TV3 and ZTV, the cell phone operator Comviq, the phone and Internet provider Tele2, and the free daily newspaper Metro, among other things. According to Niklas Zennström, CEO of Netcom at the time, Stenbeck changed

his mind back and forth several times before choosing to get involved in Internet related areas, so it was not a straight forward strategy (Att:ention 2005; cf. Mattsson and Carrwik 1998). Still, Stenbeck functioned as an entrepreneur that both acted to (and succeeded in) changing opportunity structures and to take advantage of the changed opportunities.[28]

IT as a Solution to Itself

The economic crisis and restructuring caused a situation where change was accepted as an ever-present and often negative reality out of the hands of people and politicians; it was explained by the international market, globalisation and advances in technology. Whereas Labour and Tony Blair inspired by Giddens (1998) launched the third way in the UK, the Swedish right wing launched the *only* way (cf. Almqvist and Glans 2004; Augustsson and Sandberg 2004b).

During the recession of the early 1990s, when there was public claims that Sweden was falling behind the international competition, there seemed to be little Swedes could be proud of. One of the few areas that was perceived to do well at the time and could function as a potential future for Sweden was the IT related sectors, and especially the telecommunications company Ericsson. This is somewhat surprising as Ericsson is one of Sweden's oldest and largest export companies, the very same type of firm that at the time suffered bad-will and was viewed as obsolete. Large parts of the IT related sectors had further repeatedly suffered crises during the 1980s and 1990s. Based on media coverage, Ericsson was however not seen as part of the grand old herd of firms and the crises for other parts of the IT related sectors never received much public attention outside the trade press (see later in this chapter).

The only role that IT played for the Swedish currency crisis was the increased possibilities to use global financial IT systems for currency speculation. But this hardly caused the underlying structural problems of Sweden's financial system (Affärsvärlden 1992). Still, there seems to have been an idea that change could be controlled by controlling IT: globalisation, a crisis seen as caused by international currency speculations, and changes of sectors due to higher demands for flexibility, were presented as bound together by IT (NUTEK 1996b). IT became the answer to the problematic situation that IT itself was thought to have created, an answer to both why and what to do.

By affecting all of society, IT also became presented as all-encompassing, all-embracable and apolitical. Following this, Sweden launched its first official IT policy: 'IT for everyone, before anyone else' (See Lundgren 2003, for a

28 Stenbeck also used a strategy of realising opportunity structures that legally were undetermined at the time, for instance broadcasting cable TV for the Swedish market from the UK and thereby bypass the Swedish TV monopoly and ban on advertising. This contributed to rendering him a reputation as hyper-capitalist that he would largely keep until his death, when he instead was hailed as a true entrepreneur (DN 020821; Vision 010318).

discussion). The only political dispute was how to make everyone a part of the IT revolution, but this was a conflict over measures, not goals. At a time viewed as a shift from industrialism to post-industrialism (Bell 1976; Castells 1996-2000), it was a return to a modernist view of societal progress through technological development. A partially faulty belief in the causes for previous changes and thereby necessities of future changes thus contributed to a focus on IT that supported the realisation of new activities and social fields. Investments in IT and knowledge were to some extent an adjustment to an actually changed situation, but also a source of felt control over societal changes only partially caused by the technology itself (cf. McKinley and Scherer 2000).

Following this, the timing of the formation of the social field for interactive media production is vital to understand resource allocation, who became involved and how they structured production. The period of formation in Sweden was turbulent and favoured new practices being placed on markets rather than being state run. Management ideas further supported placing them in new firms, rather than adding to existing ones. Since IT became viewed as crucial for the future of Sweden, it gained immediate legitimacy and official state support. Interactive media would no doubt have been produced in Sweden even if no economic crisis had happened. The opportunities resulting from the innovations in technology could not be neglected, and there were enough people and firms in Sweden with an interest in taking advantage of the opportunities for them to be realised. But the way the social field was formed, the rapid pace with which it happened, the massive resources given to it and the size and organisation it reached, would probably have looked otherwise.

The Role of Technology

I would argue that the role that e.g. management and IT gurus like Tapscott attributed to innovations in IT concerning competition and social changes was overrated. The same holds true for Swedish discussions regarding the relations between IT and the economic crisis, as well as the need for Sweden to be at the forefront of IT use and especially *production* to stay competitive. This does not mean that technology has no role to play in the formation and organisation of interactive media (as well as broader changes). Technical changes *do* occur and some of them have been necessary for interactive media solutions to exist. There could for instance be no digital solutions at all without computers and no web solutions without the Internet. Some of the technical preconditions were however in existence long before they were realised.[29] A brief exposé shows that all necessary technical preconditions for producing basic offline interactive media

29 More comprehensive descriptions of technical developments in computers and IT are found elsewhere (e.g. www.w3.org; Dosi 1984; Kent 2001; King and Borland 2003; Levy 1994; Manovich 2001).

solutions existed in the early 1970s and the PC and consoles booms of the 1980s created a mass market for e.g. computer games. The development of the graphic browser and related standards for the Internet in 1993 gave the technical opportunities for producing online interactive media and in most instances, Sweden was among the pioneering countries due to initiatives made by the state, firms, researchers and private enthusiasts.

Technical Development

By the early 1970s, most central components of what we now commonly consider to be a computer had been developed (Manovich 2001) and from the perspective of users, most developments of computer hardware after the presentation of the PC in the mid 1970s consist of increases in memory and processor capacity. The finding of new areas in which to use computers might in this respect be more important (Bloomfield et al 1997; Negroponte 1995).

The decision of the standard for CD-ROMs as digital storage devices in the early 1990s was an important breakthrough for interactive media since it brought the capacity needed to take a huge step forward, which was especially necessary for the development of 3D-games. At about the same time, interactive media went from using the increased capabilities of computers originally intended for other areas to being one of the major forces in pushing the development forward. The introduction of first person 3D-games, e.g. *Quake, Duke Nuke 'em* and *Doom*, in the mid-90s made users upgrade or buy new computers to handle advanced graphics and sound. The impact of computer games and consoles as well as pornography on the development of interactive media and computers has often been downplayed or neglected at the expense of more 'serious' desk top publishing and CAD/CAM solutions (Feldman 1994). Still, computer games have a long history and together with digital special effects, computer games have some of the most advanced solutions for e.g. movement and 3D animation (Kent 2001; King and Borland 2003; Manovich 2001, pp. 33, 182).

The origins of the Internet, the technical precondition for online interactive media solutions, can be traced to the 1960s and early 1970s. It was however when Timothy Berners-Lee and Robert Caillau at CERN developed the World Wide Web and HTML language around 1990, and Marc Andreessen at NSF developed the graphic browser Mosaic in 1993, that the Internet became truly adapted for interactive media solutions.[30] Some years later, the GSM and 3G standard made mobile solutions for cell phones possible.

30 The Web and the Internet are often used interchangeably, but the Web is just one application of the Internet (along with e-mail, Usenet News, chat and FTP-servers). The web is a system for a standardised format for documents stored on servers that also gives each document a unique name that browsers can localise and retrieve. Unlike previous browsers, Mosiac was not hardware dependent (previous browsers demanded NeXT computers that were rather uncommon) and made it possible to include images in text documents.

The use of computers has a long history in Sweden, especially in research and the public sector where they have been used for e.g. tax purposes and meteorological research (Johansson 1997; Sundberg 2005). For a while, Sweden even had the fastest computer in the world, BESK, used for weather observations. Sweden also had quite a large and growing proportion of PC users during the 1980s, although the most rapid increase coincided with the development of the Internet and interactive media solutions during the 1990s, largely due to the subsidised computers offered by state, labour market and private actors (see below).

Mainly due to Telia and Ericsson, Sweden also had high rates of telephone users early on and Sweden still had 20 per cent higher telephone subscriptions rates per capita than any other country in 1991 and although only seven per cent of the Swedes had a cell phone the same year, one half of a total of 12 million cell phones in the world were owned by Swedes (SCB 1993, pp. 58-9, 61).

There further existed closed systems of networking computers in Sweden before the proper Internet was used, e.g. Datel, Datex, Datapak, ISDN, Videotex and EDI (SCB 1993, pp. 58-9). Televerket developed the Teleguide system, a Swedish copy of the French Minitel system that was later taken over by IBM and Esselte. Posten later bought parts of the Teleguide system and used it for their PostNet system (Hörnfeldt et al 1999, p. 27). Most private users however relied on Bulletin Board Systems (BBSs), computer servers controlled by Site Operators that were accessible over regular telephone wires (for some of its uses, see Lane III 2000; Nissen 1993; Rehn 2001).

When the Internet reached Sweden, it was not just a matter of plugging a telephone cable into the computer. The early establishment of the Internet, roughly 1983 to 1996, was largely driven by a small group of entrepreneurs like the late Björn Eriksen at the company Enea, Peter Löthberg and Yngve Sundblad at KTH, who made the first connections to the Internet, registered the Swedish domain code (.se) and built the Swedish network Sunet (Hamngren and Odhnoff 2003; Mattsson and Carrwik 1998, p. 17). They further fought and succeeded in basing Sunet on the IP technology rather than the Open Systems Interconnection (OSI) protocol. The latter was an international standard developed by ISO that the government agency Statskontoret, after lobbying from Televerket, had decided should be used for all computer communications in Sweden. It is estimated that the choice of IP technology rather than ISO gave Sweden a five year head start compared to the rest of Europe (Hamngren and Odhnoff 2003, p. 27).

The Swedish Network User Society (SNUS) started in 1990 as an interest organisation to foster computer networks. In line with this, SNUS initiated the project BASNÄT 90 and tried to find collaborating partners. Televerket turned down their offer because they wanted the competing x.25 technology as part of their currently existing Datapak solution. SNUS instead contacted Kinnevik-

owned Datametrix and Comvik Skyport, later Tele2, who were willing to collaborate. BASNÄT 90 changed its name to Swipnet (Swedish IP network), Comvik started Swipnet AB and launched Swipnet early 1991, the first installation was made 4th of March 1991. Televerket launched their competitive service TIPnet later the same year and several others followed later (Borg et al 1994). The Internet was in other words accessible to private consumers in Sweden several years before the launch of Mosaic and other more user friendly browsers. This meant that when online solutions like web sites became more common, there already existed people in Sweden that were familiar with the technology.

Although the state indirectly financed parts of the early establishment of the Internet in Sweden through salaries and purchase of equipment, state actors generally came into the process quite late and in the case of e.g. Televerket (which was state owned at the time) fought for alternative developments. This probably contributed to making it less likely that the Internet would have been a state run monopoly: attempts would meet resistance and critique from actors that already were organised and in some respects more knowledgeable than state representatives (cf. Bijker and Law 1992). The state would however make a comeback in terms of increasing the opportunities for interactive media production in Sweden (see next chapter).

As the number of Internet users increased and it became more obvious that they represented a potential source of considerable revenue, state and private Internet providers started to offer potential customers subsidised computers and modems if they signed up for Internet subscriptions. The same subsidising strategy was also used, in some cases by the same companies, for cell phones (but not for e.g. cable TV). The subsidies were important in increasing the number of users of off- and online interactive media and for a sustained hardware and Internet connection speed upgrade (Statskontoret 2005). Within a few years, computers, Internet connections and cell phones went from technical equipment for a minority of professionals to 'have to have' consumer goods for the general population and technofreaks, who earlier had been viewed as nerds, were relabelled as vital early adopters. Interactive media producers could thereby offer more complex and interesting computer games and websites to continuously larger groups of computer and Internet users.

The subsidising seems to have contributed to an increased interest in technology and to the idea that the IT revolution would be a 'free lunch' and that the economic principles of the new economy made sense. Companies could make profits even if they gave things away for free, but profits were a minor concern in the early stages of development (see below). Cell phones and Internet connections became symbols that IT would change everything, artefacts in everyone's hand paid for by others (although the cost eventually ended up with customers).

Visions of Technology

The technological developments and diffusions describe some of the material preconditions for interactive media to exist. As a technology, interactive media further contains ideas, embodied or artefacted logics and visions, that cannot be attributed to the technology itself or its diffusion. When reading reports, books and media coverage and when following debates, it is clear that the technology itself is given diminishing attention over time at the expense of cultural and social, and especially financial, issues. Before 1997, there was very little financial information about interactive media in the media; it was mostly perceived as a technical issue and news was about technical developments like Mac Quicktime released by Apple. There was some discussion about the fast growth of interactive media sectors and how important it was that Sweden did not lag behind, but little about stock valuations.

In the media, focus was seldom on what was done with the current technology, who was using it and how, at that very moment. Instead, attention was largely paid to the possibilities of current technologies, technologies to come and new users and areas of use. The visions, rather than the current reality, contributed to making interactive media legitimate. Too many of the interactive media solutions that currently existed might have consisted of games, pornography and so on, but it was argued that the technology held the potentials of being a means of increased knowledge, democracy and liberation. It is possible to find at least one article a year up until 1997 stating that this or the next year is when interactive media is really going to take off. Following this, the much-hyped interactive media was seen as passé by some of those involved already in the early 1990s. According to the online article archives, the first time the word 'hemsida' (home page) occurs in Swedish media is in fact in a theme article called 'Theme IT-trends: The Great IT hype', published in September 1993 in *Veckans Affärer*.[31] The technology was thus hyped before most firms had even started producing it, a pattern that would later repeat itself for e.g. portals and mobile Internet.

Several government studies and investigations focused on the innovation and diffusion of IT and media, and the development of related sectors were initiated during the 1990s, many of which were not published until after the IT crash (Arbetsmarknadsstyrelsen 2000a; 2000b; ITPS 2003; SCB 2002; SIKA 1998;

31 According to the same online archives, the word 'webbsida' (also web page) first occurs in August 1996. 'IT-företag' (IT firm) occurs three times in 1992, whereas 'Internetföretag' (Internet company) does not occur until September 1994 and then not again until September 1995. Interesting to note is that the Internet, the web and the graphic browser were not seen as important for the breakthrough of interactive media use. Instead, the highest hopes were placed on the development of better and more affordable systems for video conferences, the establishment of the CD-ROM standard and the possibilities of integrating Internet in television sets, most often as an extension of cable TV (Negroponte 1995; Owen 1999).

2001; 2002; 2003). Even official publications concerned with the current state of information technology and use often devoted considerable attention to visions of technology and use, although often described as predictions (SCB 1996; SIKA 2000). There is thus a clear tendency of a shift in focus over time from what *is* to what *will be* as IT goes from being largely a question of technical infrastructure that only concerns specialists, to a broader issue that involves economic, cultural and political agendas (cf. OECD 1999). As IT is increasingly viewed as a crucial factor for most areas during the 1990s, there is paradoxically a reduction of reliable information regarding the current use and users of IT in Sweden. On the one hand, an increased proportion of information and news concerned things to come. On the other hand, almost all empirical data that concerned the current situation used in official reports and investigations (e.g. Statskontoret, Teldok, SIKA and KFB) was originally taken from a few studies performed by Statistics Sweden, several of which were reported *after* the state investments and IT crash (e.g. SCB 2002; Statistics Denmark 2001).

The political visions attributed to the new technology contained the hopes of increased democracy, but also fears of a digital divide fuelled by beliefs in a coming knowledge society where the most crucial separations in society would be between those that did and those that did not master the technology (cf. Sørensen and Stewart 2002). At a time when it was commonly held that we were witnessing the transformation from an industrial to a post-industrial society and in the age of the postmodernist turn, the vision of interactive media was firmly rooted in the Enlightenment project through which the use of technologies should foster and liberate people. From a political perspective, diffusion and use of technologies in a sense came to be sufficient means in themselves to foster this vision, which was evident in the policy: IT for everyone before anyone else. It was not only that all citizens should have the opportunity to use IT, interactive media became viewed as an important educational tool, a means to acquire knowledge about IT use and other relevant competencies in the knowledge society. Through e-learning, virtual classrooms and distance education, interactive media became the tool through which people would learn how to master the innovations in IT.

Curves as Prognoses and Strategy

During the 1990s, descriptions and visions of development and diffusion of IT have frequently been visualised as curves in books, reports and articles related to IT. The by far most well-known and influential curve is based on a prediction made by Gordon Moore, co-founder of Intel, in 1965 regarding the development of computer processor capacity, a doubling of capacity every year.[32] Moore's law

32 To be precise, Moore's observation was that the number of transistors per square inch on integrated circuits had doubled every year since the integrated circuit was invented. The pace has slowed down somewhat in recent years, but data density has doubled approximately every 18 months and is expected to do so for at least another two decades.

described the development of a single (but vital) part of computers, whereas other curves described the diffusion, price and use of more or less any IT related artefacts. The different curves were however commonly confused, used interchangeably and as each other's proof (Willim 2002, pp. 47-9, 98-100). Means and Schneider (2000, p. xv), for instance, argued that 'Moore's law […] now applies to economics and business conditions as much as to technology. The period from 2000 to 2002 will represent the single greatest change in worldwide economic and business conditions'.

The curves depicted the sales and users of PCs, cell phones, the Internet users, the number of hosts or web pages on the Internet, and so on. No matter what the curves were supposed to illustrate, they were almost identical, with an initial slow increase and then a rapid increase followed by saturation at between 90 and 100 per cent of the population. Comparisons were sometimes made with previous technologies, like trains, radios and TVs, to show that the contemporary growth was faster now than it had been ever before and that the total number of users is likely to be higher than for any previous technology (Owen 1999). It is quite often hard to establish the empirical basis for the measurements and to see at what point the curve goes from description to prediction.

Some of the curves are probably correct and it cannot be denied that computers and the Internet have diffused extremely rapidly. The development was however not given, but fuelled and to some extent caused by on the one hand state attempts to limit digital divides and on the other, economic actors' willingness to realise and take advantage of the opportunities that the changed structural preconditions offered. In other words, many curves visualising the development, diffusion and use of IT related technologies were for political and economic reasons not 'allowed' to look differently. Companies further had an interest in 'doping' the curves, i.e. increase the end levels and shorten the time to reach them, to increase their market size and share. To achieve this, they subsidised new users' purchase of artefacts in exchange for lock-in contracts. Beliefs in technical adoption thought to be essential in the technology itself caused actors to act in accordance with ideas and thereby contribute to their realisation.

For this study, the issue is not to what extent the curves depicting descriptions and predictions were correct. Instead, one has to consider what message the curves conveyed, for whom they were interesting and what effects the belief in them had (cf. Lennstrand 2001). I view the curves as one of the most obvious examples of how there were constellations of ideas concerning the practice, social field and firm strategies originating from and ascribed to the actual technical artefacts. The interchangeability of curves meant that a curve portraying the development of Internet users could be used as a predictor of the size of markets for e-business sections. Thereby, any firm that was related to the Internet by reasoning was facing a rapidly growing market and hence should be more valuable in the future. Belief in globalisation and a convergence of markets, coupled with

a lack of reliable empirical figures, made it acceptable to use figures from other countries and IT sectors to illustrate the growth potentials of IT firms. All curves pointed in the same direction and all markets would converge on a global scale anyway, it mattered little which figures were used.

The curves further pointed to several economic principles and strategies that came to have important implications for the organisation of the social field for interactive media production, and especially those firms that entered the stock market. The curves of technological diffusion implied the importance of increasing returns, that relative profits increase with larger market share (Lewin 2002, p. 52 and onwards). Since any market, despite how fast it grows, reaches a maximum level and the most profitable firm is supposed to win over competitors, the number of sales is interchangeable with the proportion of customers one has. A relatively new principle was also added, network externalities, meaning that the value of e.g. a solution or artefact increases with the number of users, with the fax machine as the primary example: owning the first and only fax machine is worthless as there is no others that can receive what is sent, but the value increases with every new user even though no new personal investments are made for the original owner. This implied that all or most markets related to IT would become 'winner takes all' markets or monopolies, that speed was of importance and that there were first mover advantages (Lewin 2002, pp. 156-7). Frequently cited examples included Microsoft's Windows OP, Adobe's Acrobat Reader and Netscape's Navigator. The latter two involved another important strategic principle, to give away solutions for free in order to dominate a market (Negroponte 1995; Uvell 1999, pp. 26-30). Once firms dominated their market, they would find a way to get sales and because the global markets would be huge and profit margins high, the revenues ought to be massive (compare Google).

The picture portrayed by the curves and the economic principles following them meant that novelty and speed became central to firms (Willim 2002). Since firms had to be the first in every market, they had to present their solutions and business ideas as being different from all those already in existence (Holmberg, et al 2002; Strannegård and Friberg 2001). In many cases, it also meant presenting an image of the firm as new and organised in new ways. This probably contributed to the idea that all or at least most interactive media solutions were innovations produced by new and entrepreneurial firms organised in new ways. The believed need for speed is probably best summed up in the famous saying that an Internet year equals three 'normal' months. In a strict interpretation following first mover advantage, speed was related to the development of the actual artefacts and the time it took to put them on the market. Based on how speed was discussed in the media and the accounts given by e.g. Willim (2002; 2003) and Strannegård (2001), it was however given broader meanings and applications and became an end in itself. It was not just a matter of developing certain solutions

before anyone else, but to grow big, reach an IPO and in general take decisions faster than anyone else.

Some of the economic ideas that dominated the idea of the new economy were old, but they were presented as new and examples were mainly taken from new firms on IT related markets. A telling example of how old strategies were attributed to the innovations in IT and the new economy is Jonas Birgersson's references to Napoleon to describe Framfab's strategy of growth and speed, as in: 'In war, there is no making up for lost time' (SvD 001108). He further repeatedly stated in interviews up until 2000 that the fight over the IT related sectors, including the social field for interactive media production could be compared to a game of chess and that 'we are [at this stage] only setting up the pieces, we have not even started playing yet'. It was a matter of growing to become the biggest company and do so faster than anyone else. It did not matter what the costs were or if mistakes were made, as long as time was not lost (cf. Indergaard 2004, p. 66). Birgersson's references to military strategy were more explicit than anyone elses during this period, which probably has to do with his background as one of the initiators of Sverok in 1987, the Swedish society for role playing games, and his reported interest in history (SvD 001108). But the meaning can be sensed in the statements of several other CEOs and firm founders. Marcus Bäcklund of Cell argued in late 2000 that because they started a few years after Icon and Framfab, they had to work twice as hard to catch up (SvD 000801). These were after all people who often had a long experience of using computers and they were familiar with the stories of how Apple and later Netscape lost out to Microsoft and how commodore, Amiga and Sinclair, PC manufacturers that had to cave in to IBMs PC.

In the race fuelled by beliefs in a first mover advantage, the importance of reaching a 'critical mass' was repeatedly pointed out. What that meant in terms of number of employees, international representation or turnover was not certain, but it had to be large enough to make it hard for SAP, IBM and Microsoft, and other producers of large scale semi-standardised business systems to move in and dominate the field or take over the Internet consultants. This shows that the firms producing interactive media solutions as well as others within the IT related areas identified existent companies as competitors (cf. Indergaard 2004, p. 38 on the US: 'the dinosaurs are coming'). Following the theoretical perspective developed in this study, Swedish firms that wanted to produce interactive media acknowledged that the practice and social field might become dominated by existent Swedish or foreign firms from related areas if they did not act quickly, as had happened in other areas. Johan Staël von Holstein was probably the one that during the late 1990s most energetically argued that Sweden had a short window of opportunity to establish a top position in the world market for Internet business and he would after the crash claim that Sweden had missed its opportunity.

The economic principles derived from IT curves were ideas that the firms referred to and used to justify their valuation and strategies of growth and expansion: it made sense that firms had a high valuation despite huge losses and a rapid burn rate. It was a race to the future where the first one would win and all others lose out. The focus on growth among firms producing interactive media solutions was thus not directly caused by economies of scale *per se* and only could be to a limited extent given that many of the solutions were tailored for specific custommers. Instead, the focus on growth was due to beliefs in first mover advantage and the higher valuations that came with growth, as well as reaching a critical mass. As I will show in chapter five, this contributed to a financialisation of the social field for interactive media production. Several politicians, policy makers and employer organisations further contributed to and legitimised ideas of growth among IT companies as something positive, since it was held that new jobs were to be created in new companies within growing knowledge intensive sectors.

Existent IT Related Practices in Sweden

The much talked of interactive media producers were far from the first engaged in computer and telecommunications practices in Sweden. Sweden has a long history as a large IT sector in relative terms and at several points being at the forefront of developments. Sweden is often considered to have a corporativist welfare state system (Fligstein 2001; Swenson 2002) and there are few areas where this is more visible than in the IT related sectors (Berggren and Laestadius 2003). It is an area historically characterised by large-scale infrastructural investments handled by researchers, companies and the state in cooperation (Springdal 2001). From an early stage, the Swedish state took an active role in the construction of nation-wide telephone, radio, TV and cell phone systems. Sweden's defence policy of developing military equipment domestically seems to have played a significant role in this respect as many of the largest companies involved in IT related areas also held substantial military contracts: Volvo, Ericsson, Saab, Bofors and Celsius (Agrell 2002). As in many other countries during the 20th century, having a state owned IT and media infrastructure including e.g. telephones, radio and TV (as well as railways and airlines) came to be viewed as a matter of national interest, security and pride. Televerket, the PTT[33] predecessor of Telia, that merged with Finnish Sonera to form TeliaSonera, was previously more or less what telecommunications *was* in Sweden. Telephones were not a commodity or market, it was a bill for a necessity linked to a standardised telephone. Ericsson has had close connections and collaborations with the state run telephone company Telia all through its history (Helgesson 1999).

33 PTT stands for Post, Telegraph and Telephone and is a term used to describe traditional government monopolies responsible for handling a country's postal and telecommunication services (Meurling and Jeans 1995, p. 292).

During the 1990s Ericsson, grew to become Sweden's largest firm, in large part due to their success with the AXE-system and their developments in NMT and GSM cellular phone systems technology (Vedin 1992). Although Ericsson is active in a range of areas, their main source of income is from telecommunications systems development and production, such as telephone switches. Cellular phones have never been Ericsson's biggest source of income and the company has now placed the development and production of cellular phones in a separate company jointly owned by Sony, SonyEricsson.

When Ericsson was growing fast and skyrocketing on the stock market in the 1990s, there was a rapid increase in the public's and the financers' interest in IT. Given the public attention, the number of news articles and even magazines devoted to cellular phones from the 1990s and onwards, it is hard to remember that there was a time when Ericsson was hardly known to the general public and IT was one of the dullest topics people could think of. But within a few years, IT went from infrastructural negotiations between Ericsson, Televerket and government officials to intense dinner conversations between more or less initiated Swedes. A reason for the increased attention was of course the technical innovations and the economic possibilities of an increased proportion of Swedish people being able to afford cell phones, which up until then had been a status symbol only affordable to an economic elite. Now, Ericsson was in the hand or pocket and investment portfolio of a rapidly growing number of citizens. Cell phones became one of the physical manifestations that the IT revolution was actually happening. Ericsson was further an important investment object and owned by a large proportion of the population as more and more private savers started to invest their money on the stock market.

The visibility of Ericsson as an investment object and important economic agent for Sweden's wealth and export was further fuelled by the general increase in media coverage of economic issues (Elmbrant 2001). The economic recession brought extensive coverage of economic issues and the media later treated the economy as central headline news and Ericsson was the centre of attention. Not a day went by without the news showing the current value of the stock, and for a number of years it seemed as if more or less everyone knew that value. The IT sector became a matter of national pride since it was an area within which we apparently were among the world leaders. Thus, Ericsson was important for the establishment of the social field of interactive media production not so much because of what the firm did, but how it came to be viewed. Ericsson as a symbol proved that the future for Sweden spelt high-tech, knowledge, technical innovations, and above all IT. After a period where nothing seemed to go right, Ericsson framed the meaning of possibility and showed a way forward.

Some viewed Ericsson's innovations in cellular phones as central for the formation of interactive media based on ideas of technical convergence. It was predicted that there was a convergence within the TIME sector due to the digi-

talisation of information. Ericsson has been and still is one of the most important customers for Swedish IT firms, but their involvement in interactive media production has been very limited.

There also existed Swedish firms that produced interactive media solutions before the media hype of the late 1990s, but they hardly received any attention at all and most seem to have been unknown to those not involved in the practice. The lack of knowledge of the few Swedish firms producing interactive media that had a previous existence made it so much easier for a new breed of Internet based interactive media producers to claim that they were in the process of forming a new social field based on a practice that no one had previously engaged in. It seems as if the success of Ericsson influenced the valuation of the new breed of Internet based interactive media firms, partially because there was a limited understanding of the difference between cell phones and interactive media ('it's all IT'), and the focus on technology and technological optimism created by the spread of cell phones diffused into interactive media Borders between social fields are often blurred, as are outsiders' perception of them. In this case, the blurriness had a positive affect on the distribution of resources, like capital and legitimacy, for firms engaged in interactive media production.

A History of Crises

The Swedish computer and telecommunications sectors and firms have repeatedly suffered crises. Examples include FACIT, DataSAAB, RCI, Kommundata, Luxor, Kompis and Ericsson. Ericsson lost almost half of the company through confiscation after the Russian revolution, and made heavy losses on attempts to launch a series of PCs during the 1980s. By following the media attention chronologically, it is apparent that huge ups and downs have been common in the IT related sectors both before the start of the latest boom, roughly 1998, and after the crash in late 2000 (see e.g. DN 920723; VA 920219). There were for instance large downturns or crises for the computer consulting sector and firms in 1991, both April and September of 1992 and again in April 1997, when the IT related firm Frontec lost 40 per cent of its share value in one week. At the same time, there were large upturns as well in March and May of 1992 and the shares for computer and IT consultants increased on average 60 per cent during the first half of 1998. The company WM-Data, later also involved in interactive media production, was a stock market favourite during the early to mid 1990s and together with Mandator and Enator received a lot of media attention until a new breed of interactive media producers, the so-called Internet consultants, placed them in the shadow in terms of both media attention and share valuation.

The stock market fall in 1997 is perhaps hardest to comprehend given the rapid diffusion of technologies and the growth described here, but must be understood in light of several years of extreme growth. Similar occurrences of crises in the

middle of rapid growth can be found in e.g. PCs, disc drives and computer games (cf. Dosi 1984; Kindleberger and Aliber 2005; King and Borland 2003).

The development of the IT related sectors and companies during the 1990s was thus far from one of steady increase or one similar to the curves of technology diffusion described above. It was a sequence of ups and downs with an unpredictable future. Judging from the media coverage, the crises were largely unknown by new investors entering during the IT boom started in 1998 that had only seen the IT related stock go up. The general view seems to have been that IT stocks had been more or less stable and now only could go up. When the media started to pay more attention to interactive media production in late 1997 and 1998, it was already on its way to peaking, although this was of course not known at the time. The general picture that was portrayed during the 1990s was that Sweden had an IT sector coming from nowhere and that experienced a steady growth in size and profits in line with curves depicting technological innovations and diffusion.

The New Economy and the Knowledge Society

The discussions concerning the perceived changes that followed the crisis of the early 1990s as well as the visions of technology gradually came to focus on ideas about a coming knowledge society and a new economy. It was argued that the industrial jobs lost during the crisis would not return. Instead, future jobs would consist of knowledge intensive and innovative work in service sectors and the new economy (cf. Florida 2002). The magnitude of changes had to signify a shift in the functioning of the economy itself rather than a 'normal' correction or recession (Magnusson 2000). The idea of a shift due to innovations in technology was not new, but became more influential (Cronehed 2004, pp. 50-1; Tengström 1987). The new economy is now largely bypassed as an ideal and ridiculed, but it was seriously discussed in the late 1990s. The ideas for a while came to dominate over and embrace more long-standing and diverse discussions concerning a move away from industrialisation and modernity towards e.g. a post industrial, or post modern society (Bell 1976; Vision 001018).

A lot of consultants, business leaders, researchers and politicians were engaged in defining what the new economy was, if it really existed, what caused it and what it would lead to (e.g. Lundgren and Wiberg 2000). Magazines like the American *Wired* and to some extent the Swedish *Vision* became lifestyle bibles for people devoted to the Internet and the new economy. *Vision* had a series of articles where prominent people were given the opportunity to present their views on the new economy. There were several books published about societal shifts and the threats and possibilities of the new economy, e.g. Manuel Castells' three volumes on the information age (1996-2000). Among those that were or wished to be active within the new economy, more 'pop consultancy' books like *New*

Rules for the New Economy by Wired's editor Kevin Kelly (1998) and the Swedish version of the book by Nordström and Ridderstråle (1999), *Funky Business*, however were more influential (cf. Uvell 1999, p. 20).

It is striking that many books and magazines referred to the new economy as something it was desperately important to be a part of and warned about the dangers of not getting there first, but they seldom managed to pinpoint what the new economy really was. Comparing different discussions and publications further shows little consistency apart from that the new economy was to be future-oriented and revolutionary, fast and somehow related to IT and knowledge, implying a sharp break with the current economic state. In the foreword to a book about the coming shift, James Shiro, CEO of the global consultancy firm PriceWaterHouseCoopers, wrote:

> A fundamental transformation of the business model is under way, to which the central precept of Darwinism applies: Companies must either adapt or perish […] businesses have only the narrowest window of opportunity to remake themselves – at most, a few years, and those years are upon us […] the authors leave no room for doubt that they […] must accept the new paradigm (Means and Schneider 2000, p. ix).

Jonas Birgersson summed it up by stating that: 'eighty percent of all economic laws are not valid anymore' (Uvell 1999). Still, many ideas had been around for some time and also existed outside IT related areas, e.g flexibility, project organisation, speed, networks, innovation, resistance towards hierarchies, informality, individualism, less faith in tradition and globalisation (cf. Augustsson and Sandberg 2003a; 2003b). The influences can be traced to e.g. Daniel Bell's talk of the post-industrial society, 'Silicon Valley success stories' and even Marx. There is also a mish-mash of ideas taken from flexibility core competence, globalisation and networks (for more examples, see Davis and Meyer 1998; Dyson 1997; Kaplan 1999; Nordfors and Levin 1999).

The above makes it hard and rather pointless to give a precise definition of the inherent ideas of the new economy or to analyse whether tthey were correct or not. Instead, the idea of the new economy should be understood as a constellation of ideas or a vague container into which people could pour a range of recycled old ideas, definitions and understandings (Orlikowski and Iacono 2000, p. 352). This made it possible for most to agree on the new economy as something positive (as opposed to other visions of the future society and working life, e.g. Fukuyama 1992; Rifkin 1995; Sennett 1999), without always being able to define what it was. Claiming to act in accordance with the new economy – whatever that was – gave legitimacy, something acting according to classic views of business life did not at the time. In some social fields, an important criterion for being considered as a participant is to present an image of having knowledge of what it is all about, and this certainly was the case here (cf. Indergaard 2004, p. 25).

Interactive Media as a Symbol of the New Economy

Although the discussions about the new economy were disparate and often confusing, it is possible to see patterns in the variation, meaning that the new economy was given somewhat alternative meanings in different settings. Many US Economists defined the new economy as economic growth without inflation caused in part by innovations in technology and debates concerned whether the economic growth in the US economy was actually a new economic stage or just part of a regular business cycle (cf. Indergaard 2004; Perkins and Perkins 1999). In Sweden, the discussion about the new economy was more closely linked to the decline of the Swedish model and identified with certain sectors, especially IT and media. From this followed that more attention was paid in Sweden to classify *actors* according to the new or old economy (see more below).

The Swedish discussion made it possible to construct a meaning of the new economy as linked to certain sectors, e.g. interactive media production, dotcoms and IT consultants, often called the TIME sector, that represented a more advanced stage of societal development with more knowledge intensive activities and higher prospects of future economic growth (cf. Thrift 2001, on the new economy as a social movement). It further meant that the old economy could be identified and constructed as that and those that did not belong to IT and media, and therefore represented a less advanced societal stage with lower levels of knowledge intensive work and with prospects of declining economic revenues.

As symbols of the new economy, actors within the social field for interactive media production had a privileged position defining the new economy and the production of the solutions causing changes, although their knowledge claims were rather ambiguous (Augustsson 2005; cf. Bloomfield and Vurdubakis 2002). By presenting themselves successfully as what the new economy was, they could gain access to external resources from investors based on future hopes (cf. Indergaard 2004, p. 59). Actors within the social field for interactive media production distanced themselves from close social fields with potential competitors but made connections to social fields and actors when they seemed beneficial, like Ericsson, whose growth of cell phone sales became a model to value Internet consultants. This seems to have been a dual process whereby interactive media producers were *offered* the role as symbols of the new economy and actively *fought* to get the role as saviours of the future.[34] The confusion regarding what the new economy actually was could be used by interactive media producers to frame out others: we are what the new economy is and if you are not part of us, you will never understand what it is.

[34] In New York, the trade organisation NYNMA (New York New Media Association) played an important role as institutional entrepreneurs that pushed for a prominent role for interactive media producers (Indergaard 2004, pp. 40-42). The Swedish equivalent Promise have not been able to or interested in having the same role.

The old economy became a description of the victims, those that did not understand the potentials of IT and the new economy, and thereby a way to exclude actors (Askonas and Stewart 2000; Hetherington and Munro 1997). As argued by Ingelstam, IT became the technical icon for the new economy and it was up to those that developed IT solutions to decide what to think of it (KFB and TELDOK 1997, p. 8). It was thus not up to the people within the old economy to judge whether they had 'got it' or not, the community of the new economy, determined this (cf. Indergaard 2004, p. 25; Turner 1994, p. 70).

The formation of the social fields related to IT and the ideas of the new economy were further mutually reinforcing, similar to the previously described discussions surrounding curves. The social fields that were being formed were legitimised by the ideas of the new economy, and seemed to prove that ideas were correct. It was a faulty belief in what had to be the case.

Some actors within interactive media production also challenged other social fields. They argued that the differences between actors from alternative fields and the coming convergence of markets would mean that interactive media producers would take over companies from other fields or drive them out of business. At a meeting with analysts in February 2000, Jonas Birgersson challenged Bill Gates and Microsoft's dominating Windows OP with Framfab's Internet based Brikks OP that was under development. In front of hundreds of analysts Birgersson visualised his challenge by throwing a brick through a glass window while wearing a Swedish national ice-hockey team sweater (Willim 2002).[35]

The innovations in IT and the coming of a new economy were argued to bring new markets for producing IT solutions, but also to transform existing markets in the old economy, lead to a convergence between e.g. IT and media and eventually lead to the global convergence of most knowledge intensive sectors handling immaterial goods through digitalisation (see e.g. Burton-Jones 1999; Cairncross 1997; DN 000125; 000206; Negroponte 1995; Sandberg 1998, pp. 11-13). It was repeatedly held that the companies in the old economy would be the losers of the convergences since they lacked competence to handle the new technologies and the opportunities they created (Owen 1999). The firms in the new economy were portrayed as young, fast moving and had the privilege of understanding the technology and the new economy (see e.g. Willim 2003). Beliefs in changes thus created a separation between firms in the old and new economy based on those that did and those that did not understand and it was predicted that the former would cannibalise the latter. Since the Internet is a global medium, there would only be room for a few competitors in each market segment worldwide. Competition was not only a question of the first company to take advantage of IT. New companies, like the dotcoms, emerged that focussed on online sales and therefore lacked some of the costs associated with traditional businesses.

[35] See photo by Lennart Isaksson published in Pettersson and Leigard (2002. p. 55).

The beliefs in change and convergence of markets caused several firms to question their core competencies, alter their direction and merge with or acquire other companies. Companies that acted based on the beliefs in the converging market and changed their direction contributed to and amplified the change that initially might have motivated their actions (cf. McKinley and Scherer 2000). When one media company started their interactive media operations, others followed and either started their own operations or purchased or merged with an interactive media producing firm.

Personalising the New Economy

By identifying those that understood the potentials of IT and the new economy as those active within IT and especially Internet related sectors, understanding and visions about the future became *personalised*, identified with, symbolised by and sometimes nearly equated with particular persons (Lennstrand 2001). Like the prophets described by Weber (1978b), founders, presidents and CEOs of newly started IT related firms became identified as the interpreters of the technology, the new economy and thereby the future. There was to be a growing obsession with ranking the most influential and visionary people within the IT sector.

Jonas Birgersson was portrayed on the cover of *Veckans Affärer's* Christmas issue 1999 dressed in a bright red Helly Hansen sweater. The cover text read 'Us is a saviour born. Instead of Jesus – Jonas Birgersson'. Icon Medialab's most visible founder, Johan Staël von Holstein, with a background marketing text TV solutions in Spain for Jan Stenbeck, consciously attempted to use the media to create external recognition for Icon Medialab. He later stated that he knew reporters called him because they wanted provocative quotes, something he usually delivered but was to later regret. Focus came to be put on him rather than Icon Medialab, and he became portrayed as something of an antithesis to Jonas Birgersson. Birgersson was initially uncritically described as an ascetic fighting philanthropically for the digital *folkhem*. Staël von Holstein, an aristocratic former ski-bum who allegedly had stated his goal of being economically independent by the age of 30, became portrayed as an egoistic hyper capitalist with questionable moral values and potentially criminal, for instance in an award winning series of articles by Peter Kadhammar published in Expressen.

The focus on specific individuals is also visible in media directed to insiders. The first issue in 2000 of the magazine *DNE* (Den Nya Ekonomin; The New Economy) had on its cover and several full-page colour photos inside Jonas Birgersson and other managers and employers with wigs and fake piercings and the front text 'framfab's got soul'. In a later issue, the Presidents and CEOs were referred to as megastars, superstars and super novas of the new economy (DNE 00/3). Vision ran a series of articles that portrayed the personal networks of well-known people mainly within the new economy, which contributed to establish them as the icons of the social field (Vision 000301). In the latter case, people

were also included that had less outside admiration, i.e. indie people. Whereas most people knew of Birgersson and Staël von Holstein, few apart from insiders knew of e.g. Martin Cedergren, one of Sweden's most celebrated web creators who co-founded Starlet Deluxe and later worked at Abel & Baker, or the creative David Sundin from Speedway Digital Army and Out There Communications, which later became Abel & Baker (Resumé 011116; 011122).

People like Birgersson and von Holstein were not recognized by all insiders as their representatives, but were often presented as such by people outside the social field. As representatives of the caste of the future, they had the opportunity to shape the views of what the new economy was. This concludes a loop effect whereby the new economy becomes viewed as caused by IT and attributed to a certain sector and the people wihtin it, who are asked to interpret the meaning of the new economy. It is a dialectic process whereby sectors and individuals become identified with certain ideas and at the same time shape, change and diffuse the ideas attributed to them based on their status as prophets, the ones people listen to and trust to interpret visions.

Some people that came from the old economy were 'upgraded' to the new economy based on their actions and support (cf. Indergaard 2004, p. 28). Former Prime Minister Carl Bildt, who sent a famous first e-mail to Bill Clinton, sat on the board of the firm HiQ (DI 991022; Mattsson and Carrwik 1998, pp. 21-5). Posten's director Ulf Dahlsten, who pushed for Posten's in-house development of Torget, became a member of the board and later President and CEO of Icon Medialab (IconMedialab 1999; SvD 981027). Jan Carlzon, formerly at SAS, started the Internet consultancy Cell together with Per Bystedt, Peter Augustsson, group chief executive and CEO from SKF and Volvo became member of the board in Linné Data (GP 981010), and the former finance minister Erik Åsbrink was on the board of several IT firms. Several other politicians, like Leif Pagrotsky and Björn Rosengren, started to use the term new economy and were flirting with the social field, but the general view among insiders seems to have been that they did not understand what it was all about and lacked vision. A telling example here is Ines Uusmann, minister and head of the IT commission who once said that 'Web surfing is just a fad', something she was heavily ridiculed for (Uvell 1999, pp. 107-110).

The personalisation meant that more focus was placed on the gurus and what they did than e.g. the companies they ran, the solutions they developed or the businesses they made. This would later be identified as a problem by Framfab's succeeding CEO Johan Wall, as well as Ulf Dahlsten from Icon: 'Johan Staël von Holstein often becomes synonymous with Icon, and that is not the case. Johan does not work in the company and only owns a small proportion of shares' (DN 000621). After the crash, investors in Bredbandsbolaget wanted Birgersson to leave as chairman of the board due to bad publicity, despite their beliefs that he cared most about the firm and least about the money (Vision 001004).

Because the gurus were closely watched, their actions and statements were given important and almost symbolic meaning, which also limited their actions. The shares in their companies usually lost value if they tried to sell them or leave daily operations, which happened to the Icon share based on the rumour that Johan Staël von Holstein and Ulf Dahlsten would leave the firm in late 1999 (SvD 991030). In a survey directed at analysts in the summer of 2000 conducted by Vision regarding the CEOs most important for firm valuation, it was estimated that the Framfab share price would fall by 30 per cent if Birgersson left as CEO. Given Framfab's valuation of 30 billion SEK, this meant that he was valued at ten billion SEK. Still, when he left as CEO on the 7th of November 2000, the share price increased by six per cent, roughly 250 MSEK (Vision 001107).

A Nationalist Project and a World in Transition

The relations created between the global ideas of the new economy and the decline of the Swedish model meant that the national changes were in fact a *world* in transition. The Swedish crisis was not due to a country in economic decline, but a sign that Sweden was among the first to make the transition into the new economy and the knowledge society (cf. Indergaard 2004, p. 129 on similar ideas in the US). A Sweden in crisis over time thereby gradually became reconstructed as a Sweden in the frontline, a process that is traceable in the way Sweden and the Swedish economy is presented and discussed in the media, reports and the frequent rankings by e.g. EU and OECD.

The curves depicting diffusion of technologies and increases of users became predictions not only of technological diffusion itself and the potential growth for IT related firms and markets, but signs of *nations'* progression towards and status as knowledge societies and parts of the new economy (cf. Indergaard 2004, p. 129), and thereby a part of a rational line of social development (Cronehed 2004, p. 77). The growth of the Swedish IT sectors constituted a nationalistic project in a globalising world (Willim 2002, pp. 38-9). Discussions about the transition to the knowledge economy repeatedly point to needs for rapid alterations. Changes were happening faster than before and this made it necessary for Sweden to be more flexible and as a national innovation system constantly stay ahead of the foreign competitors (NUTEK 1996b). First mover advantage was thus not only something that applied to firms, but also to nations (Porter 1998). Those that could not stay ahead of their competitors were bound to lose out and, as shown elsewhere, it was repeatedly argued that Sweden was already behind, we just did not understand it (Augustsson and Sandberg 2004b). The paradoxical idea of at the same time being ahead of most other countries but still lagging behind was a way to gain support for the new economy by pointing to the risks of not adhering to it. There was a faulty belief in technology dependent stage models that had consequences for the support and formation of the social field.

5. The Formation of a Field

The discussions that followed the economic crisis in Sweden thus came to centre on ideas about a transition into a knowledge intensive new economy. The actors that produced and utilised the technological solutions that were thought to cause the transition came to be seen as symbols of the new economy and by some as a sign of what all of society would be like in the future. Following the theoretical discussion, there were opportunity structures for the formation of the practice of producing interactive media solutions and some ideas favoured that the practice would constitute a social field made up of new firms, rather than performed internally by existing organisations. In this chapter, I initially describe how state initiatives, increased demands and investments and the media contributed to supplying resources that further aided the formation of a social field for interactive media production. The chapter then turns to a discussion of how the results of the allocation and mixture of resources through a process of *financialisation* turns the social field into a speculative object and thereby causes a bubble. The available resources and the financialisation make it more interesting for firms to become involved in interactive media production. But as is shown in this chapter, it is more important to be recognised as part of the social field than to be involved in the practice to get access to certain types of external resources, resulting in a struggle over participation and classifications. The chapter ends with a description of how the formation of the social field over time further involves a growth, expansion and alteration of the firms that produce interactive media solutions for external customers, causing a lack of personnel and a corporate cannibalism, as well as a growth in in-house production.

State Initiatives

Given the previous economic crisis and the beliefs in IT as a central aspect of the coming knowledge society, it is little wonder that there was a pressure on and a felt need for the state to act. The all-encompassing meaning given to IT meant that it was to just about any area: culture, democracy, state efficiency, education, regional development, unemployment, changed work and organisation, research, and so on. The generally held view was that IT changed everything, a view that came to have influence on state policy and actions. It was a subject that could not be neglected, and it far from was. There are few other areas that have received so much state attention in such a short period of time as IT. The government set up a series of IT commissions, a huge number of local, regional and national projects, policies, investments, investigations and agencies were created. The state funded and developed some of the first on-line interactive media solutions, subsidised

the purchase of computers, encouraged unemployed to start new businesses, increased funds for research in IT and engaged in the creation of clusters and science parks. In response to the high levels of unemployment during the 1990s and the perceived needs for a general raise in levels of formal competence, especially in IT, to make people employable in the coming knowledge society (Garsten and Jacobsson 2004), the government also made huge investments in formal education and competence development. Many government support activities were not aimed directly at interactive media production, or even the broader IT sector, but did in different ways create resources that benefited the formation of the social field.

Still, much of the early media debate concerning the state's initiatives pointed to a lack of clear policy and engagement. The role of politicians and the state is commonly downplayed in accounts of the development of IT related areas, and the Swedish government has been under criticism for their lack of support for the establishment of new firms, even during the rapid increase in newly started IT related firms during the 1990s. This section describes a selection of relevant state initiatives that contributed to increasing the material and ideal opportunities for interactive media production and other IT related areas to form. Many relevant state initiatives are not discussed here due to the limits of space, among them the 24 hour government, the establishment of a computer drivers licence (datorkörkortet) and Datortek, the private pension reform (PPM-reformen), policy and investments in IT infrastructure, increased funds for IT related research and support for IT clusters and incubators. Several of the initiatives, e.g. clusters, seem to have had limited direct effects for interactive media production in terms of economic support, but they signalled the official significance attributed to the forming a social field and legitimised it as something worthy of recognition and support. As in most areas related to government aid and policy, it is hard to determine the exact impact on changes or development, especially given the magnitude of initiatives (Lundgren 2003).

IT in Schools (ITiS)

Before the 1990s, computers generally had little influence in basic and secondary school education. Most students hardly ever saw a computer except perhaps in the teachers' offices, and the computer had a tendency of being used as an electric typewriter with a screen during the few classes in 'computer knowledge' that occurred.[36] The situation was not all that different in many secondary schools (and in some cases universities) at the time and well into the mid 1990s: compu-

36 My own high school education in computer knowledge (datakunskap) on a Compis computer in the late 1980s consisted of sitting with a piece of plastic covering my keyboard and hands trying to repeat the text on the computer screen. Grades where mainly based on the speed and accuracy of typing (and not being caught playing games).

ters were placed in locked rooms and were only to be used for special occasions and for predefined tasks.

In light of the rapid increase in Internet diffusion, the growing awareness of the need for IT skills and the concerns for a future digital divide, the Swedish government launched an IT in Schools project (the ItiS project) at a total cost of 3.2 billion SEK (CS 041105). Christer Sturmark, who later became involved in the interactive media firm Cell, was active in a school tour sponsored by KK-stiftelsen.[37] The ITiS project aimed at placing a computer in each class room, educating teachers in computer and IT-literacy, giving students basic computer and IT education and integrating IT as a pedagogical tool in the teaching. In April 1994, it was further decided that a school computer network, called Skoldatanätet should be set up (Borg et al 1994). This created a large market for companies involved in hardware and software sales and support, network technicians and private training companies for teachers and other staff, but to some extent also developers of web pages and web and computer based learning software, i.e. interactive media.

The Adult Education Initiative (Kunskapslyftet)

The Adult Education Initiative was a five-year government competence development programme started in 1997 that aimed at raising general levels of formal competence among the population by giving adults that lacked gymnasium (secondary school) qualifications the possibility to go to community school and study for degrees. The programme specifically targeted unemployed, but it was also possible for people with jobs to attend if their employer agreed to hire an unemployed person to fill in for them during the study-period.

The Swedish National Agency for Education (Skolverket) does not single out the Adult Education Initiative from other forms of non-university adult education in their statistics, making it impossible to see the number of students that attended the programme. Still, the total number of students attending non-university education was roughly 170,000 in 1997, peaked at about 230,000 in the autumn of 1998/spring of 1999 and then gradually decreased to 155,000 in the autumn of 2002. This is equivalent to about 110,000 full year seats in 1997, a peak at 155,000 in the spring of 1999 and then gradual decline to just below 100,000 in the autumn of 2002. It is generally held that a large proportion of the growth in the number of students can be attributed to the adult education initiative.

Computer science was the largest or second largest subject studied all years between 1997 and 2002, equivalent to more than ten per cent of the courses, and together with mathematics and natural sciences more than twenty per cent of the

[37] KK-stiftelsen (Stiftelsen för Kunskap och Kommunikation, the Knowledge Foundation) distributes funds for research, development and practical implementation of projects related to IT. It was started by the former Prime Minister Carl Bildt in 1994 with 3.6 billion SEK from the closed down wage earners funds, löntagarfonderna, (Mattsson and Carrwik 1998).

courses. Many of the courses in computer science do not seem to have been that advanced, they rather provided students with a rudimentary knowledge on the basic parts of a computer, how to handle it and how to get online. There were, however, some courses that also involved programming in e.g. C++ and Java.

A large, but over time falling, proportion of the students attending the program was given government aid rather than student loans during their education. Some of those that read subjects related to technology and the natural sciences later had their student loans written off if they went on to study technology or the natural sciences at university.[38] Hence, the government subsidised a general increase in competence and helped to create a pool of workers with sufficient knowledge to work in areas related to interactive media production.

Increased University Educations

The Swedish government has partial control over the labour supply of workers with university level education within different areas by directing funds for education and deciding the total number of places for each program. During the 1990s, much emphasis was placed on trying to increase the proportion of the population that attended university education, the goal being that 50 per cent of inhabitants should attend university before the age of 25, which was reached in 2002/03 (Högskoleverket 2004b, p. 15). Even though levels of unemployment were high, there was a lack of educated workers within computer related areas that was mainly due to a lack of places in university computer courses (Jacobsson et al 1999). In 1990/1, 1,050 people graduated from University educations in IT in Sweden, 35,000 studied IT at Komvux and 50,000 in evening courses. To reach the general goals and increase the number of qualified IT workers, several colleges in smaller towns and rural areas received University status and the total number of available university places was increased. The number of students that started what the National Agency for Higher Education terms 'ICT related university education' increased by roughly 40 per cent from 1996/7 to 2000/1. At the same time, the number of applicants for these courses grew by about 50 per cent from 1996/7 to 1998/9 and then declined by about 70 per cent by 2003/04 (Högskoleverket 2004a, p. 27). For the 2005 term, there were only 98 applicants, as compared to 2,100 in 2000 (CS 041101). In line with the theory, one can argue that the lack of prestige associated with interactive media production after the crash caused a reduction of resources in term of competent personnel.

38 The most common aids were UBS (Särskilt utbildningsbidrag), Svuxa (Särskilt vuxenstudiestöd för arbetslösa) and Svux (Särskilt vuxenstudiestöd). I have no information on the exact proportion of students that were financed by the state, since there is a large proportion of students that had an 'other' form of financing (Skolverket 2003).

Business Start-Up Aids (Starta eget-bidrag)

Business start-up aids (Starta eget-bidrag) are a government initiative that make it possible for people that are, or are in immediate risk of being, unemployed to receive public financing equivalent to unemployment benefits (aktivitetsstöd) for six months to start their own company (from 1994, women and immigrants could get an additional six months). The number of recipients of the business start-up aid was very low from 1985 to 1991, roughly 2,000 a year, as compared to between 20-28,000 newly started firms in total those years. The number of recipients grew rapidly to 9,000 in 1993 and roughly 20,600 in 1994, a level it stayed at until 1997. The total number of newly started companies increased from a little over 20,000 in 1993 to 35,000 in 1994, and then increased to about 38,000 in 1997. Thus, the number of companies started with business start-up aid increased rapidly both in actual and proportionate numbers (from less than ten to more than 50 per cent). A reason for the latter growth was a change in policy, which stated that employment through self-employment should be supported (Okeke 1999, p. 3). Nearly 30 per cent of the companies started with aid in 1994 that still existed in 1997 belonged to the category 'financial and business services' (SNI J-K), which cover many interactive media producers. Although the exact number of firms producing interactive media solutions started with start-up aid cannot be determined, it is probable that the aid had some effect given the large proportion of all firms started that received public funding.

Tax Deduction on Personal Computers

Considering the perceived importance of IT skills in the imminent knowledge society, Swedish government and union officials were concerned about a digital divide that would lessen the possibilities for e.g. people from the working class, unemployed, women and immigrants to remain employable and participate in democratic society. To avoid this, it was decided in 1997 to introduce a tax deduction on PCs and related equipment.[39] The so-called home PCs are in practice owned by employers who lend them to their employees, a system that is beneficial for both employees and employers. The employees do not have to pay tax on the benefit, and pay for the computer through a reduction in salary before income tax is drawn for a predetermined period of time, after which they can purchase the equipment at a reduced price. Employers, on the other hand, do not have to pay social security and taxes for the part of the employees' salaries that is reduced.[40]

[39] The immediate problem that raised the issue was however that employees were taxed for the benefits of having access to a computer at home when they participated in IT courses paid by their employer (Statskontoret 2005, p. 17).

[40] Similar initiatives were also established in Norway and Denmark. The Swedish unions later started an equivalent system, the so-called LO computers, aimed at their members in order to also include those currently unemployed or whose employers did not offer home PCs.

Between 1.3 and 1.7 million computers were state subsidised through the home PC system between 1998 and 2004, the majority during the early years. The home PC system is estimated to have cost the state between eight and twelve billion SEK between 1998 and 2004, but the actual cost is debated (CS 050919). The net effects are estimated to be no more than 2-300,000 PCs (Statskontoret 2005, p. 88). Despite the minor net effects, the subsidised computers contributed to a high proportion of computer and Internet users at an early stage.

Growth in Demand

The market for interactive media solutions broadly consists of offline (i.e. stored) and online (including wireless and mobile) solutions aimed at private consumers and organisations.[41] A rough description of the development of the market segments shows that offline solutions aimed at private consumers grew big first, largely through computer games (Kent 2001; King and Borland 2003). After that came offline solutions aimed at organisations, online solutions aimed at organisations and finally online solutions for private consumers. The Swedish producers of offline solutions aimed at the private consumer market has never been influential apart from occasional hits like Digital Illusion's *Battlefield* series and Pan Vision's *Backpacker*. Offline solutions aimed at organisations, such as company presentations and solutions used for marketing, seem to have been more important. Still, offline interactive media solutions accounted for no more than 16 per cent of productions in 1997 according to the firm level survey.

Figures from Statistics Sweden show that the Swedish online market had 800 to 900 MSEK in annual revenues already in 1991. The vast majority of this however consisted of mainly foreign databases aimed at e.g. journalists, like Reuters, and did not constitute interactive media solutions (SCB 1993). In 1993, the Mosaic browser had a menu called Hotlist that contained every known website in the world, which was less than 20 at the time, including the Swedish interactive media producing firm Lysator (Mattsson and Carrwik 1998, p. 59). During the mid and late 1990s, several books and lists with web addresses to companies and other organisations, much like telephone books, were published (e.g. McClellan 1999). Although there initially were few sites to visit, the books soon became outdated as the number of sites grew dramatically and sometimes changed web address and soon, the whole idea of publishing books with printed links to addresses on the web was deemed obsolete. This captures the development in the demand for online interactive media solutions quite well: it was initially low but rapidly increased in a short period of time.

[41] The categorisation is not definite. Many solutions are purchased by organisations and used by non-members, as in the case of Internet banking. It is also possible to make finer distinctions and the categorisation ignores solutions that are not developed for economic reasons.

A growing number of companies wanted to be on the Internet, although some do not seem to have known how to directly benefit from it. Customers' lack of knowledge was in the early days in fact seen as one of the major impediments to growth among firms producing interactive media (Sandberg 1998, p. 29). I would argue that all firms and government agencies that invested in interactive media solutions perceived it would benefit them somehow, but that the decisions were better founded and the needs more immediate for some than for others. Whereas some saw direct economic gains, others felt increasing demand due to legitimacy. In the case of government agencies, there was a direct demand due to state policy regarding the 24 hour government agency, i.e. coercive isomorphism. As Internet usage became more common, some magazines published lists of all larger Swedish companies that did not have a website and ratings of the websites that did exist (e.g. IA 1998). The explicit message was that firms ought to get a website and the implicit that they were losers who had not seen the light of the new economy. They were questioned and more or less openly criticised as being stuck in the old economy.

The PC reform and the subsidised computers offered by Internet providers meant that an increasing proportion of Swedes purchased computers and modems and surfed the web. This created online markets aimed at private consumers built on interactive media solutions. It also meant that there were more potential customers of computer games and other offline interactive media products. The producers of interactive media solutions could thus indirectly benefit from the need of Internet providers to increase their number of users and market shares to finance the high costs of infrastructure, showing that one social field can sponsor the development of another.

Many companies that only focussed on e-business, the so-called dotcoms, were started and several already existing firms initiated e-business ventures not to be side-stepped on the perceived converging and globalising markets. This provided interactive media producers with a customer basis that wanted to purchase more complex, and thereby more costly, solutions. The dotcoms usually lacked income from sales as their operations would not begin until the interactive media solution was up and running. To solve this, they commonly used a combination of venture capital and shares (often supplied through directed offerings of new shares) as payment to contract firms producing interactive media solutions. Some also used shares (i.e. options) and/or venture capital to hire interactive media workers to develop their own solutions internally (Eckerstein et al 2002; Lindstedt 2001). This only worked as long as the company could find alternative sources to provide resources for their daily expenditures (either through sales or by releasing more shares) and was only attractive as long as the market value of the other company increased. The shares given as payment would later prove to be hard to sell and in some cases worthless as many dotcoms went bankrupt with little or no assets that could be claimed.

Revenues Besides Interactive Media

A considerable proportion of firms that produce interactive media solutions have been and still are involved in other areas besides interactive media. In many cases, the revenues from other areas were larger than from interactive media and they could be used to finance expansion within interactive media (cf. Aldrich and Auster 1986, p. 178). But when the demand for interactive media solutions exceeded the supply of producers, the are was more profitable than most others.

Web sites and other online solutions came to dominate the view of growing demands during the 1990s. But they were not the only IT solutions required at the time. Due to earlier technical limits of computer capacity, and later conventions, years were previously coded into software using only the last two digits (i.e. 99 for 1999), causing the so-called Y2K problem. As the turn of the millennium approached, the potential problems this could cause for e.g. banks and the public sector that used old mainframe computers became more apparent.[42] The Y2K problem created needs for many companies and government agencies to alter computer systems. Although this generally did not apply to interactive media solutions, it still had an impact for firms producing interactive media solutions. First, it created a steady demand and secure source of revenue for IT consultants, including some firms that also produced interactive media solutions, in much the same way as more standardised computer installation, updating and support did. Thus, some firms that were viewed as interactive media producers in reality largely worked with other tasks that were not as hip or highly valued (see Ågerup 2002 on Connecta).

Securing old computer systems against Y2K problems was further a convenient opportunity for customer organisations to rethink their computer system as a whole and analyse in what ways it could be adjusted to the Internet and intranet solutions: why spend a lot of money fixing an obsolete computer system that did not work the way you wanted? And if you were going to keep and go through the whole computer system, why not update it and make it compatible with the Internet? Since experienced IT consultants were hard to find at the time and the procurement of IT expertise is complicated (Augustsson 2005), it made sense for firms to use the same company for handling the Y2K problem, update the computer system and create an online solution. It was further not uncommon among the IT consultants themselves to point out needs and suggestions for change as they were handling the Y2K problem. For a while, the Y2K problem also created legitimacy for the firms that were involved as they solutions they were working on were not only games or for fun, but were vital to make the technology work.

[42] The computer systems could for instance not tell the difference between 1901 and 2001 (both coded 01) and they were not designed to understand that 2000 (coded 00) was a higher figure than 1999 (coded 99). There were fears that this would cause some computer systems to crash altogether as the results of some calculations would render illogical results.

From Actual to Predicted Growth in Sales

The total number of existent firms producing interactive media in different years is uncertain, making it complicated to estimate the overall size of the market for interactive media solutions in Sweden (see further down). It is however possible to analyse changes over time in the actual and predicted average annual turnover, both in total and from interactive media production, for firms based on the firm level surveys from 1997 and 2001 (table 5.1). This provides interesting information about the available resources, but also regarding the changed composition of the field (the latter is dealt with later in this chapter).

According to the table, there is a considerable difference between the mean and median figures for turnover. There are a small proportion of firms with a high turnover in total and from interactive media, and a vast majority of actors with much smaller turnover in both cases. From this can be concluded that most producers of interactive media solutions received limited resources through sales. This also concerns average turnover per employee according to figures presented in *Veckans Affärer* (991004), consultants at Razorfish and Framfab reportedly made an average of between 650-750,000 SEK for their firms in 1998, which was lower than traditional IT consultants and hardly paid their salaries. By comparing the average annual turnover and salary levels for employees reported in the firm level surveys, it is clear that several firms could not receive enough from sales to cover even the salaries of their employees.

Firms that responded to the 1997 survey on average report a much higher turnover, but the proportion of turnover from interactive media production for the group of firms is lower, as compared to firms responding in 2001. The proportions reported for 1996 are however somewhat misleading as the small group of firms with the highest turnover has the lowest proportion of it coming from interactive media, which is not the case for 1999 and 2000. Average proportion of turnover coming from interactive media counted at the firm level for 1996 is 65 per cent. As will be discussed later in this chapter, the differences between the former and latter years are due to a change in the demography of firms involved in interactive media production over time, i.e. the group of firms that responded to the 1997 survey differ from those responding in 2001.

Table 5.1. Firms' average annual turnover in MSEK in total and from interactive media 1996-2001. Source: 1997 and 2001 firm level surveys.

Year	Total turnover		From interactive media, Actual (per cent)	
	Mean	median	mean	median
1996	81.8	2.5	3.4 (4)	1
1999	10.8	2	5.8 (54)	1
2000	13.7	3	7.9 (58)	1.5

According to the surveys, firms repeatedly predicted an increase in turnover from interactive media production, even right after the crash in late 2000. By comparing responses regarding predicted and actual turnover for cohorts of firms, one can see that firms on average overestimated their future turnover. The average turnover in 1999 was twelve per cent lower than what was predicted for the year before, 1998, and this was almost at the height of the boom when firms predicted a continued growth. The actual turnover in 2001 managed to reach 86 per cent of what was previously predicted. In conclusion, actual sales from interactive media production have on average been a limited (albeit growing) source of external resources. Still, firms predicted that future turnover would increase right up to and even after the crash in late 2000, even though many firms could not live up to their previous predictions. Although it is probably more or less an instinct or reflex among firm owners and managers to hope for higher future profits, the beliefs in turnover growth might in part also signal that firms themselves held beliefs in the curves of growth despite being repeatedly let down.

Investments

Thus, although the demand for IT solutions grew, the revenues that interactive media producing firms made through sales were rather low and in most cases not enough to expand. The volume of available investment capital and the willingness to invest in IT however increased in the late 1990s. This caused some firms that produced interactive media solutions to position themselves more towards financial rather than production markets to secure external resources (cf. Indergaard 2004, pp. 65-6 on the US situation; Ågerup 2002, pp. 24-9)

The IT bubble has become the great symbol of the 1990s financial speculation, just like real estate was for the 1980s. But the resources given to interactive media firms and other IT related fields through financial investments has to be understood as part of a broader economisation of society and a more active financial system (Larsson and Sjögren 1995). The 1990s can be viewed as the decade in Sweden when the common people were socialised into caring about the economy to a greater extent than previously was the case (Elmbrant 2001; Lindqvist 2001). Economy came to take up a larger proportion of the media and became more like entertainment (Indergaard 2004, p. 75; Shiller 2000, pp. 28-9). Several new business papers were established, existing ones like *Veckans affärer* and *Dagens Industri* increased their circulation and new online media papers with real-time business content were established.

The lowered interest rates offered by banks made it more favourable to invest in the stock market, either directly by purchasing stocks or indirectly by investing in stock funds. By 2000, 5.6 million Swedish citizens out of a population of roughly nine million were share owners (SsD 000219). The dramatic growth in Ericsson's share value during the mid 1990s probably had an impact on people's

willingness to invest and contributed to legitimising investing in IT related companies. IT firms themselves further contributed to the stock ownership movement by developing solutions for online trading aimed at private investors. This meant that the increasing proportion of the population with computers and a modem could trade stock in the comfort of their own home, so-called daytrading. The state contributed by privatising and selling out companies like Telia. Through the PPM reform, parts of the state pension fund were further redistributed as people were allowed to decide for themselves how it should be invested. This caused a redistribution of investment capital as a considerable proportion of the funds were invested in funds aimed at Swedish IT related sectors. The interactive media producers could benefit from timing effects, but they were also skilled in convincing private investors to by shares (Ågerup 2002, p. 78). In light of the sums invested and the firms they were placed in, private share holders became more risk willing and speculative, but do not seem to have perceived this themselves.

An Active Financial System

As in all capitalist societies, investment capital in Sweden is partially mediated through a financial system. The financial system has over time grown and moved towards increased professionalisation and specialisation (Heilbron 2005). In part due to increased competition and potential profits, actors within the financial system have further changed their strategies to become more active. Corporate finance departments do not just carry out deals suggested by their customers, but try to 'pitch' ideas for IPOs, mergers, and acquisitions to potential customers who might not previously have considered any such changes (Svedberg Nilsson and Winroth 2005). Analysts further targeted small savers more actively than before. Sweden was rapidly experiencing this process at the time when interactive media production gained attention, partially due to previous restrictions regarding certain financial services and the crisis in the 1990s that delayed the development of such services (Affärsvärlden 1992; Elmbrant 2005). According to some analysts and commentators, the Stockholm stock exchange, one of the most central actors within the financial system, lowered the demands put on companies that wanted to be listed. If they had made a more rigorous interpretation of the rules and regulations, several IT and media related firms would not have been accepted.

Among the financial actors that received the most attention during the late 1990s were venture capitalists (VCs) who initially were glorified as business angels that supported the IT entrepreneurs with resources to realise ideas (Shelton Hunt and Aldrich 1998, pp. 284-5). Several Swedish interactive media firms, like Spray, Framfab and Cell also started VC firms of their own (DI 010423). Some VCs, and Kjell Spångberg in particular, received iconic status based on their track records and perceived abilities to pick winners. The status and value of some companies increased and they could more easily attract other investors just because they made deals with certain VCs (Lindstedt 2001; cf. Perkins and

Perkins 1999, p. 91-8). Several VCs had an abundance of capital they had to invest, or return to the owners, which also happened in some cases.

Commentators and some of the actors involved in interactive media start-ups would later criticise VCs and the advice they gave. A repeated criticism was that the VCs pushed for far greater growth than entrepreneurs themselves wanted, invested more money than sought for, did not try to keep burn rates down, wanted companies to make a premature Initial Public Offering (IPO, see more below) and ceased funding with short notice. One reason for this can be that many Swedish VCs came from the financial sector and their main expertise was in evaluating, financing and managing IPOs (Eckerstein et al 2002, chapt. 12). Another reason was that many VCs invested in a number of IT related companies and due to the rapid pace of repeated emissions, mergers and acquisitions, the number of board meetings in each company was high. The VCs themselves in many cases contributed to this fast pace. According to Joseph Mark, President of the VC firm Tower Hill Capitol 'The length of a company's life cycle has collapsed due to the Internet. Instead of a traditional perspective of 30-40 years, we now have a perspective of a couple of years' (DI 990602). He further stated that companies often just had six months to become famous and create a known brand, something that Boo.com was good at according to him.

The financial role of VCs has probably been somewhat overrated compared to other sources of financing, at least during the early stages of formation. Data from the 1997 firm level survey shows that just about three per cent of firms producing interactive media had venture capital and although on average it made up roughly 30 per cent of their financing, it constituted less than one per cent of all capital invested in interactive media production in Sweden in 1997. 48 per cent of firms producing interactive media had some form of external capital, e.g. other firms, private investors and institutional owners, which made up an average of 39 per cent of invested capital. Still, the media attention centred on venture capitalists which came to be symbols of external financing during the IT boom.

Going Public – Again and Again

A central aspect in the process of growth was to reach an IPO, to become a 'real' company traded on the stock exchange (Indergaard 2004, pp. 9, 68-71).[43] The IPO became a symbolic stepping stone in the race to be first and it was argued that it was better to get there as soon as possible than to wait until a firm was solid (Indergaard 2004, pp. 56, 66; Vision 000524). The IPO was not just a symbolic rite of passage into future glory, it had significant economic gains for practically all those related to the firm in question, with the probable exception of

[43] An IPO is the first sale of a company's shares to public investors. The IPO is usually handled by investment bankers who underwrite the offering and corporate lawyers who assist in drafting a prospectus. The IPO is overseen by financial regulators and in some cases a stock exchange (Lidén 2005).

customers and post IPO investors. Firms could tap into the sources of capital channelled through the stock market, venture capitalists, founders and employees with options could realise their investments, the stock market and traders got a new share to trade and journalists and analysts a new share to write about.

The IPO of some firms producing interactive media became anticipated major events, as in the case of Linné who made an IPO in April 1999 and merged with the firm Cell the same month and Framfab's IPO in the end of June the same year (DI 001101; Resumé 990527; TT 990407). The question was not if a stock would increase in value when it was traded, but how many times it would be covered and how much it would climb. It was repeatedly expected that every new IPO would be a record breaker compared to earlier ones. The race towards an IPO received a lot of media attention, but it was something that only a small minority of firms producing interactive media aimed at and even fewer accomplished.

The firms that reached an IPO often attracted vast amounts of capital, but much of it went to VCs and other investors, to purchase other firms or to cover burn rate in the form of salaries, rent and advertising. As a result, some firms made several new emissions of shares, sometimes also involving a split of shares: at least 13 new emissions were made by firms producing interactive media solutions in 2000 (Vision 000223). Spray delivered a new emission of shares in June 1997 that gave them 25 MSEK for 15 per cent of the firm (DI 970812). Although the new emission of shares in essence often was proof that firms could not live up to the promises delivered in the IPO, they repeatedly caused a further increase in share valuation, at least until anticipations of an imminent crash grew. Icon Medialab, for instance, made a new emission directed to a small group of investors in November 2000, just before reporting large problems, and borrowed another 225 MSEK in early 2001, but this had limited positive effects on their share valuation (Vision 010125).

The similarities between what happened in Sweden and in Silicon Valley and New York are quite striking, and the situation in the US was influential in Sweden (Eckerstein et al 2002; Kaplan 1999; Levy 1994). The growing number of IPOs and the rapid increases in share value on the NYSE and Nasdaq were constantly reported and came to be role models in Sweden. Furthermore, Icon Medialab, Cell and Adcore all wanted to be traded on foreign markets with even higher valuations, especially the German Neuer Markt and the Nasdaq, than the Swedish stock exchange (DI 990903).

Financing the New Economy

The positive development of Ericsson's shares, the connections made between those that produced new IT solutions and future new economy, as well as the US example, meant that firms identified as producing interactive media were to gain a large proportion of the investment capital at the time. More companies than before were financed and the amount given to each company increased as com-

pared to earlier times (cf. Perkins and Perkins 2001, p. 81). There was also a shortage in supply of IT related stocks that pushed up the value of firms, which further made capital cheap (cf. Indergaard 2004, p. 69; Ågerup 2002, p. 80). The surplus, together with the weak links to sales for firms' resources, further made efficient organisation and use of resources less of a priority for the stock market firms. As a result, many of the stock market firms focussed more on growth than on cost control, sales or profits, which meant a high burn rate and a repeated dependence on new emissions of shares to increase the firms' capital. The flows of capital going to IT and media related companies meant that people with business ideas and firms that were *not* related to IT increasingly experienced problems in getting resources through venture capitalists or the stock market during the IT boom. An example is the field of biomedicine, which due to the developments in genetics research did look promising during the 1990s (Ågerup 2002, p. 78). Social fields can thus compete for the same external resources and the attention one field receives can place others in the shadow.

The Great Financialisation and the IT Boom

What is generally referred to as the IT boom is very short, roughly from the middle of 1998 to the middle or end of 2000 when the final crash for IT and interactive media stocks occurred. The number of firms producing interactive media solutions however started to increase earlier than the boom started and problems and downturns occurred already in late 1999 and early 2000, i.e. before the crash. In 1998, the media attention surrounding interactive media production and related IT and media fields increased dramatically and quickly became focussed on financial aspects. Interactive media production became *financialisated*, turned from a field centred on the practice of producing certain artefacts to a financial object for speculation. As argued by Indergaard (2004, p. 17) 'The new economy was as much about financialisation […] as it was about digitalization' (cf. du Gay et al 1996 on 'businessing' people and Marx 1867/1990 on separation between use and exchange value and commodification).

The financialisation of interactive media does not signal an increased importance of the economic logic, which like the technical and the aesthetic logics, concerns the artefacts and the practice, since financialisation involves a *neglect* of the artefacts and the practice. It is a decoupling of the valuation of the field from what is being produced whereby companies are valued not for substantial values, but beliefs in what others are willing to pay for shares. Companies are thereby turned into commodities that are bought and sold, rather than units of production and the most relevant aspect is whether actors are part of the financialisated social field or not. Contributing factors that also increased the risks of a bubble were the new economic principles of valuating firms based on perceived future value rather than e.g. p/e numbers, the price-earnings ratio (Stiglitz 1990).

Following the above, the financialisation caused an ideal *reduction* of the social field, especially in terms of media attention, as only aspects and actors related to financialisation and valuation were of interest. Other issues, like technical innovations, were neglected or turned into questions of valuation: how much is it worth? The only firms of interest were in principle those that were on their way to the stock market, those that already were there and those being bought up by a publicly traded company. At least 95 per cent of firms producing interactive media and large parts of what firms that actually ended up in the media were doing was deemed as uninteresting. The picture of the social field and the firms within it that outsiders received thereby became limited and distorted. Certain firms were identified as insiders and became the role models other firms were compared to and therefore given a higher valuation. If firms were like Framfab, they were viewed as insiders. But most companies were not as large or grew as rapidly as those portrayed in the media, they were not as highly valued and did not make either huge profits or losses. Although IT was seen as being everywhere and part of the general news, it was reduced as an object to matters of finance and identified with a highly limited group of actors.

Debates over Valuation

Valuation is a central aspect of financialisation as commodities need to be worth something to be traded. The analyses and discussions surrounding the valuations of firms during the IT boom have been massive, they make up a vast majority of the collected media coverage. This makes it impossible to describe the discussions in any detail here, but I would like to sketch the contours of the debate in order to show how it came to play a role in the formation and in some cases also organisation of the social field. The IT boom had most or all of the classic ingredients of a stock market bubble, like the tulips, railways, disc drives and real estate bubbles, and comparisons were made with previous bubbles (Kindleberger and Aliber 2005). But it was frequently argued that IT was different since it had substantial effects, a neglect of the financialisation that probably was necessary to create a bubble and justify valuations (Sylla 2001). Although some of the companies would not make it, the technology could not be neglected.

The valuation of firms producing interactive media solutions followed a pattern from the time they received attention until the crash. Initially, firms were treated as a group and anyone identified as related to Internet based interactive media was highly valued, which was seen as justified. Specific companies were analysed but it was largely a question of whether they belonged to interactive media producers or not. Valuation was thus based on the perceived positive potentials of the field as a whole, rather than the merits of the inherent actors. The first downturns on the stock market in late 1999 did not alter the general view that the field was successful and rightly valued, but it was argued among analysts that *some* firms were valued too high and that it was important to

separate the good from the bad companies. According to several analysts, the field as a whole and most of the firms deserved a high valuation, a position that changed after the crash when the whole social field and all those within it were viewed as valued too high.

The valuation of firms related to IT and media deviated considerably compared to all other firms on the stock market based on fundamental economic values. Although the deviation was referred to as both boom and bubble, it was mainly presented in the media as an opportunity to get rich and was hardly questioned before the crash. Still, there were discussions about the valuation of firms producing interactive media solutions regarding relative valuation, fundamental valuation, and systems of valuation. These discussions of valuation were a questioning of the decoupling between what is being done and how it is valued, where the latter came to take the upper hand.

The first dimension concerns whether a particular firm producing interactive media solutions was rightly valued in relation to a particular other firm or interactive media producers in general, comparisons between all firms producing interactive media and firms from other sectors, or domestic and foreign interactive media producers. Several discussions concerned according to which classification a firm should be valued and it was in some cases concluded that the same firm was rightly valued *and* undervalued based on how it was classified (e.g. CS 000426; cf. Sanders and Boivie 2004; Ågerup 2002, p. 96). The important thing was how other actors on the stock market would label and value a certain company and the consequences that had for the decision to buy, sell or hang on to it. Whether the label was correct or not did not matter (Eckerstein et al 2002, p. 117). When valuing firms identified as producers of interactive media, the most highly valued firms were seen as guiding principles for the levels at which all firms should be valued rather than extreme cases. The question was not why the highest valued company was valued so high, but why other companies did not have the same valuation.

Comparative valuation was not only a matter of identity. Firms could reach a higher valuation by winning certain contracts, be involved in particular projects and have high status customers. An example here is Framfab, who reached a higher valuation by having Volvo and IKEA as customers and whose stock fell when there were rumours that Volvo would cancel collaborations. Valuation was further dependent on the size and growth of companies, but it was not the number of employees in itself that was of importance. Size and growth had a symbolic value as it implied that the firms were the largest and the fastest moving, and thereby those that were most likely to survive. Growth was an indicator of success and thereby justified valuation.

The second dimension, fundamental valuation concerned whether specific firms or interactive media firms in general were correctly valued given economic fundamentals as calculated in generally accepted theories. There were questions

raised about the sanity of the levels compared to fundamental values already in early 1996 and 1997, i.e. before the boom, but the discussions often went unnoticed. Around October 1999, roughly a year before the final crash, media discussions of the overrated interactive media producers and the risks of a bubble grew as some firms experienced problems and a downturn on the stock market occurred. This did however not scare of investors. The firm Connecta made an IPO that was covered 17 times at the time (Ågerup 2002).

As shown by Shiller (2000), Perkins and Perkins (2001) and Elmbrant (2005), stock analysts in both Sweden and the US were positively biased, almost always recommending purchase even when companies where known to be in problem and their shares fell. Analysts knew the valuation of companies was high compared to fundamentals such as turnover, but at the same time they were dependent on the companies remaining highly valued since they had them in their funds.

There were also debates concerning whether the models used to value firms were correct, either in general or for a particular group of firms (Fagerfjäll 2003). Although some critical voices were heard regarding the critiques of previous theoretical models to valuate firms and interactive media producers as belonging to that group, the general picture was that it was impossible to determine if there really was a new economy or not. This meant that there *could* be a fundamental basis for the valuation of interactive media producers (Shiller 2000, pp. 175-80).

The three dimensions concerning the valuation of interactive media firms are directly linked to discussion about whether or not the IT boom constituted a stock market bubble. Given the stock market crash for IT and media related firms in 2000, it seems obvious that it constituted a bubble (Perkins and Perkins 2001). According to Stiglitz (1990, p. 13):

> If the reason that the price is high today is only because investors believe that the selling price will be high tomorrow – when 'fundamental' factors do not seem to justify such a price – then a bubble exists.

The key dilemma in Stiglitz' definition concerns 'fundamental factors' and is related to the three dimensions above. As argued by e.g. Garber (1990; 2000, p. 6) and Lind (1998), the fundamental factors are dependent on the economic theory as well as accounting methods used and there are cases where actors have reasons to believe that accepted theories should be replaced because the object that is valued differs in important respects from objects classified differently. To label something a bubble requires attention to actors' knowledge and the theories assuming certain fundamentals (Garber 2000).

In relation to the IT boom during the late 1990s, it was obvious to everyone that in relation to firms from other sectors and according to the fundamentals commonly assumed to be important in valuing firms, the stock market prices for interactive media producers were exceptionally high, which would mean that it was a bubble. On the other hand, it was argued by many that the common funda-

mentals were insignificant since the economic theories they were built on did not apply in the new economy (cf. Shiller 2000, pp. 111-7 for a discussion).

A result of the financialisation and the principles according to which firms were valued was that those identified as producers of interactive media received external recognition and a large part of the capital from investors and VCs, whereas those that did not receive the same attention mainly could rely on the resources they received from customers. There was a brief window of opportunity for external resources through investments from the time the social field became widely recognised to some time before the crash, i.e. roughly 1997-8 to mid 2000. Firms that had been represented on the stock market longer than the new breed of firms and those that did not want to or managed to reach an IPO during the window of opportunity were to a smaller extent and more seldom identified as the core group of the social field for interactive media production. The firms that did not reach an IPO had less possibilities of pursuing a strategy of growth, although some were thrown into it through mergers and acquisitions. The media attention and the access to new sources for external resources that a small proportion of companies received created possibilities, but also demands, for growth as it was a signal for success that increased valuation at a time when most firms could not show profits. Data from the 1997 firm level survey support this, as it shows that the higher the proportion of external capital a firm had, the more it predicted that it would grow in terms of turnover and an increasing proportion of the turnover would come from interactive media in 1998 and 1999.

The Role of the Media

The media played an important role in the formation of the social field for interactive media production, which most likely would not have received the same resources without the attention (Shelton Hunt and Aldrich 1998, p 291; Shiller 2000, pp. 71-95). The media is the arena where the new economy and interactive media production becomes framed, where confusion is used in struggles over labelling, classifications and valuations (Rössler 2001). The media is however not passive, it is made up of actors that confused their roles and contributed to the image of the new economy and the financialisation of interactive media production.

Apart from shorter articles in specialist magazines that mainly focussed on technical developments presented at computer conventions, there was hardly any media coverage of interactive media production in Sweden before 1997. That year a first wave of articles about interactive media and the Internet written from a perspective of curiosity and amused scepticism regarding the visions for future growth, the importance of the Internet and the 'new economy' that those interviewed held appeared in general business papers and magazines. It is clear that the reporters had limited knowledge about what the Internet and interactive media

was and it is commonly confused with, for instance, virtual reality and cable TV. The initial curiosity was later supplemented by attempts to understand the change potentials of the technology. The quotation marks around the term new economy disappeared as it went from something questioned and uncertain to a reality to be considered (Pettersson and Leigard 2002, p. 11-2).

The volume of IT related news grew rapidly from 1998 and onwards and it received media attention that by far exceeded its economic, cultural or political importance. The media was pushing for fascinating stories and several actors within the social field were more than willing to offer them, and there was a massive interest from the readers. Several papers focussed on issues related to IT and the new economy was founded and increased sales, e.g. *DNE*, *Industry Standard*, *Vision*, *Computer Sweden* and *Resumé*. *Vision*, calling itself the paper for the new economy, grew from an annual average of 12,500 daily copies in 1999 to 25,000 in 2000 and some days sold as many as 35,000 copies.

Together with other parts of IT, interactive media production became 'normal' news that was covered by general papers and not only in the economy section. *Dagens Nyheter*, for instance, started an eDN section, and included articles about interactive media production in its first section. But even though interactive media became part of normal news coverage, it was not treated as a normal subject. The words commonly used in headlines for articles concerning the social field say a lot about how it was reported: race, rally, towards the sky and hysteria. There further was an increased attention to financial aspects and papers repeatedly included tips on how small savers could become rich by trading shares during the IT boom. Computer Sweden, for instance, reintroduced their financial papers and stock market analyses in 1997 after several years of absence. The attention interactive media received meant that it could tap into the massive source of financial resources of the increasing numbers of small private investors. This further meant that analysts had to pay increased attention to IT related firms, funds needed to include IT related shares and it became easier for VCs to complete IPOs (Elmbrant 2005; Pettersson and Leigard 2002, p. 15).

Framfab exemplifies the media attention well. Whereas meetings between companies and the media are usually quite dull and seldom reported at length in the media, Framfab got massive coverage at their half year annual report in August 1999 when they served Big Macs to analysts and February 2000 when they launched the Brikks. It was the height of the boom but several Internet related shares in both Sweden and on the Nasdaq had fallen, and some e.g. e-business firms had already gone under (Perkins and Perkins 2001). Still, the reports from the meeting were overwhelmingly positive.

The media profession itself changed towards a higher proportion of freelance journalists that often supplemented their journalistic assignments with jobs as 'narrators' of business events. Online news publishing, developed by the firms that journalists were set to investigate, further created demands for faster publica-

tion (Alström et al. 2001; Owen 1999; Pettersson and Leigard 2002, pp. 11-2). To be first was rapidly reduced from a matter of days to hours and minutes, which gave less time for cross checking stories, critical evaluation and elaborated analyses. It seems as if journalists fell into the pace and the attitude of the social field they were set to report. It had to happen fast and the inevitable mistakes could be corrected later. It was more important to report *anything* from breaking news than nothing at all. Online publication after all permitted real-time updates and the possibilities of being more correct later.

A Confusion of Roles

When reviewing and analysing the media coverage of interactive media, it is clear that there is confusion between the roles of journalists, analysts, venture capitalists, entrepreneurs and investors. A group of key names frequently reoccur and several persons occupy several positions at once. Journalism and media, PR and advertising came closer to each other, which meant that objective (i.e. non-partial) positions were disappearing. It became hard to determine the current position and basis for argumentation of the core group of actors: were they speaking or writing as journalists, entrepreneurs or analysts? Many less familiar with the social field probably did not even know that some persons had other interests than their currently presented title or position. The potential problems associated with the conflicts of interests made *Vision* publish a statement about their official policy for journalists, saying that they should not own shares in any of the companies that they were writing about in the paper.

A telling example of confusion between positions is Christer Sturmark. He started out as just interested in computers, went on to write books about and review software in the press, debated Sweden's role as an IT nation and the need for state initiatives, became involved in the ITiS programme, in the company Cell together with Jan Carlzon and Marcus Bäcklund and later became part of the IT political strategy group that replaced the IT commission in 2003 (DN 030804).

It is easy to interpret the initial lack of negative articles and the confusion of roles as a conspiracy or fraud through which a limited group of actors tried to make money out of IT by convincing others to invest in it. But I believe that most of them had a sincere belief in and embraced the potentials that IT had (cf. Calhoun 1991b; Indergaard 2004). Jonas Birgersson seemed concerned in creating a digital folkhem and Staël von Holstein wanted Sweden to be an exporter rather than importer within IT (SvD 970224). They believed in the gospel of IT, tried to preach it and in several cases were successful. The initial lack of critical evaluations of the social field does not seem to be because such comments were oppressed, there simply were not many who held and had an interest in expressing them. The public was roughly divided into those that did not care, those that did not understand and those that wanted it. Few were against the developments in IT and the forming social field (Pettersson and Leigard 2002, p. 10).

The World Around

A lot of attention was paid to following what was written abroad about the Swedish IT sector, companies and people. It seems to have been more important to see what foreigners wrote about Sweden than to investigate what they were doing abroad. International comparisons thereby came to function as mirrors that reflected back the image of Sweden and Swedish IT related companies as a success. The international comparisons normalised and legitimated the social field and showed that Sweden was well off: whatever happened here might seem extraordinary, but it was part of an international process in which we more or less had pole position.

The most important country for comparisons has no doubt been the US. In 1997, *SvD* and *Månadens Affärer* ran separate series of articles that described the development of multimedia production and Internet related businesses in the US, with a special focus on New York and what had come to be called 'Silicon Alley'. The articles pointed to Silicon Alley as a vision of the future and opportunity for Sweden as well. Although it was perhaps accepted in the articles that the US had a larger sector for interactive media production than Sweden, the qualitative differences and the American dominance was questioned: Sweden could and should be number one in the world.

BAS, Business Arena Stockholm IT-news, an e-mail newsletter written in English by the Stockholm city agency for regional development, was intended as a way for potential foreign investors to know about Stockholm and Sweden. It also had mirroring effects, whereby Swedish subscribers to the newsletter could see what the outside world wrote about Sweden and the national news about IT that BAS wanted to present to foreigners. It contributed to and legitimised a positive image of Sweden and a circulation and quantification of positive accounts of IT related sectors and practices in Sweden (cf. SOU 1999:150, pp. 27-8).

Struggles for Participation and Recognition

The process of field formation was a mix between changed activities, changed identities, mergers of fields and a redefinition of the field itself. This makes it hard to say when a company has actually entered or left the social field. It becomes a question of practice, identification and recognition, without making it possible to reduce status as insider or outsider to either the material or ideal aspects of inclusion and exclusion. The confusion was an important part in the formation of the social field as it affected legitimacy and access to resources. It further made it easier to perform a labour of division whereby certain actors could exclude others by labelling them as not being interactive media producers.

There are entry and mobility barriers to practices, actors have limited possibilities of changing the activities they are involved in or the way they carry them out (Dosi 1984, pp. 101-2, 115). The technical knowledge that firms producing

interactive media solutions had was rather easy to replicate for e.g. existent firms (Dosi 1984, p. 84). The main possibility firms had of trying to keep outside competitors away was to present themselves as something else and their knowledge as different from the established companies.

The plurality of actors thus brought struggles for participating in the practice and to be recognised as producers of interactive media solutions, i.e. insiders to the social field (cf. Stryker 1994). Those that were not recognised as insiders could however not alter the ideas of interactive media and in several cases instead tried to alter themselves in practice and image to fit the ideas (Ågerup 2002, p. 111). There were good reasons to not only produce but to be recognised as an interactive media producer since it attracted investors and raised analyst valuations of companies, made it possible to grow, easier to hire competent workers and attract customers (DN 991207; Indergaard 2004, pp. 58, 81; Lee 2001). As an example, the value of the mining company Svenska Koppar increased from 0.3 to 56 SEK a share when it was announced that the insider Franco Fedeli, with a background from Tele2, Swipnet and Icon Medialab, would run the company and change direction towards IT investments. A company with one MSEK in assets became valued at 450 MSEK (DN 000621; TT 991209). Given the higher valuation for companies that became labelled the new breed of Internet based interactive media producers, they did succeed at dominating the picture of the social field, at least for a while, but they could not control the actual practice of producing interactive media solutions.

According to Mattsson and Carrwik (1998, pp. 57-60), the first Swedish firm that produced interactive media solutions for the Internet was a firm called Informationsvävarna founded on the 31st of October 1994, (the firm was also called Infovav and was previously active as Lysator). Several firms produced interactive media solutions before that, but most likely not for the Internet. The first Swedish interactive media producer to receive wider attention was Spray Interactive Media Agency, founded by Johan Ihrfeldt, Jonas Svensson, Gunnar Lindberg, Michael Daun, Patrik Stymne and Lars T Andersson in 1995 (all apart from Ihrfeldt were from the firm Everyday Communications). Framfab was started as Framtidsfabriken in 1995 by Jonas Birgersson and Icon Medialab was founded by Jesper Jos Olsson, Magnus Lindhal, Erik Wickström and Johan Staël von Holstein in 1996. At about the same time, other firms like Information Highway, Mind and Cell were created. Together, they came to be symbols of a new breed of more Internet focussed interactive media producers.

The new breed of firms was presented in the media as different from those already in existence: newly started firms doing something new related to the Internet in novel ways. The firms contributed to the image of novelty, which can be seen in the ways that they presented themselves on their web sites, annual reports and in interviews, as difference was a means of keeping others away from interactive media production (cf. Augustsson 2004). It was argued by the foun-

ders of the new breed of Internet firms that existing firms in related fields that moved into interactive media production lacked the necessary competence to make use of the Internet and develop good solutions. The advertising and traditional media firms, described as dominated by an aesthetic logic, were accused of lacking the technical competence to handle interactive media. The computer and IT consultants were identified as strictly technical and argued not to understand aesthetics. Business consultants and other firms dominated by the economic logic were seldom mentioned in this fight over the meaning and resources attached to the social field. It seems like the business consultants were not seen as competitors to the same extent as the advertisers, media firms and IT consultants, although the former contributed to IT diffusion and in some cases were involved in related areas (cf. Bloomfield and Danieli 1995). The new breed of firms thus used alternative logics in their attempts to fight of companies from related fields. Further, in order to present themselves as a new breed of firms as compared to those previously existing already producing interactive media solutions, the new firms focussed on the Internet and downplayed stored interactive media like CD-ROMs. There was less talk of hypertext and more discussion on whether a solution was online or not (Mattsson and Carrwik 1998, pp. 104-5).

Differentiating Interactive Media Producers

Some of the firms producing interactive media solutions were dominated by an aesthetic logic and viewed interactive media production as an aesthetic activity more closely related to advertising and media. Others viewed interactive media production and the artefacts mainly as something technical, related to general computer and IT development. A third group had an economic perspective on interactive media, viewing it as a business tool that would change the way business was run. The logics were important bases for status and admiration. The firms and solutions that have won prizes in the Swedish web awards, for instance, have dominantly been more aesthetic and to some extent technical than economic. During the boom years, the logics would however largely step back into the shadows and give way to a financialisation of the social field, whereby interactive media became viewed as an investment object rather than the production of certain solutions influenced by logics.

The firms and CEOs further differed in whom they compared themselves to. Johan Staël von Holstein wanted Icon Medialab to be the McKinsey of Internet related areas (SvD 970224). With the launch of the Brikks development, Jonas Birgersson identified Microsoft as one of Framfab's most important competitors. But he also presented a vision of Framfab as major investors in the new digital *folkhem*, thereby writing himself into the tradition of social democracy welfare state development and some of Sweden's largest companies: the labour movement created the foundations for the folkhem, IKEA furnished it, H&M dressed it, Volvo gave it wheels and Ericsson telephones. Framfabs role was to make

Internet connections available to all Swedish citizens and Internet representation a reality for all companies. It was IT for everyone before anyone else; a state policy turned into corporate strategy. There is little wonder then than both the former Prime Minister Carl Bildt and the present Prime Minister Göran Persson chose to visit Birgersson in Lund, rather than Staël von Holstein in Frihamnen or the skyscrapers at Hötorget in Stockholm City (Willim 2002, pp. 38-41).

The companies that Birgersson and Staël von Holstein compared themselves to are representative of different logics, economy and technology, respectively. This also helps to explain why they later chose to act differently. Jonas Birgersson started Bredbandsbolaget as a broadband project within Framfab in May 1998. It was launched as a separate company called B2 Bredbandsbolaget in May 1999, merged with Bostream in May 2004 and was announced to have been bought by Norwegian Telenor for six billion SEK on the 23rd of May 2005. Birgersson would further later leave the CEO post of Framfab and start Labs2, which housed the technical Brikks project among other things. Staël von Holstein, on the other hand, became involved in the e-business firm Letsbuyit and established Icon in Kuala Lumpur, Malaysia. Letsbuyit was shut down during the dotcom crash, but resurfaced again in 2005 and the Asian office closed following a rather fierce struggle between Staël von Holstein and Ulf Dahlsten (E24 010125).

Strategies for Inclusion

Some firms that were not identified as part of the new breed of interactive media producers did not accept the labels put on them, they fought over the systems of classification and changed what they were doing to become identified as interactive media producers, attract customers and let them know they could perform the practice. There were also fears that the interactive media producers would use their highly valued stocks to take control over existing companies, something the merger between AOL and Times Warner on the 11th of January 2000 proved to be a possibility. As an example, Framfab was for a while valued more highly than Volvo and each of their consultants were valued at 15-20 MSEK (Vision 010308). As shown below, the established firms used alternative strategies to counter this threat of the new breed of firms and their valuation.

WM-data tried to build more of an Internet profile by changing their appearance through e.g. advertising, but was labelled as a computer consultancy and therefore had a lower valuation in relation to p/e-numbers, number of employees and sales than the new breed of interactive media producers identified with the Internet. Still, WM-data was involved in most of the same areas and also had a lot of experience in computer areas that were not related to the Internet. Mandator, a previously existent computer consultancy, tried, just like WM-data, to build more of an Internet and interactive media profile, but their strategy was not successful and the company instead decided to merge with the Internet consultancy Cell on the 30th of May 2000 to acquire the sought after labelling. The merger between

the two companies proved to be highly problematic and the merged company, called Cell Network, was later viewed in the media as a new Mandator, which also became its name at the annual meeting 19th of May 2003. Connecta merged with Information Highway of the new breed to become Adcore. The merger was presented as the first between two real Internet consultancies, which was not the case since Connectas largest area was temporary staffing. Representatives of the company hardly ever mentioned this part of the company in interviews in the press and according to Ågerup (2002), they avoided the subject in contacts with analysts and in prospects to potential investors before their IPO (Vision 991124).

The computer games companies, who used the Internet rather early to deliver patches and develop online games, did not seem to push for a label as interactive media producers. Still, they became identified with the social field due to ideas of a convergence of markets and the growth in on-line and cell phone games. Instead of giving them the same outside recognition as the better-known Internet consultants, the new label meant that the games companies became shadowed out by the Internet consultants. They were established firms that in several cases had already gone public, in one sense too early. A later IPO during the boom would most likely have given them more attention and resources, but would probably have forced them to focus more on growth due to the financialisation of the field.

It was not only firms involved in more or less the same areas as the new breed of interactive media producers that fought for a label as part of the new economy. ABB, one of Sweden's largest firms with a long tradition in advanced engineering and construction of e.g. industrial robots, nuclear power plants and processing tools, publicly announced that they now were an IT company, rather than part of industry (i.e. the old economy). Bonnier, one of the oldest and largest traditional media companies in Sweden, established interactive media operations internally in their multimedia division. They were one of the major players on the CD-ROM market, but experienced problems when moving into the Internet market. After large investments and losses, the venture was deemed a failure and shut down. KF, a membership owned consumer association often viewed as part of the welfare state or labour movement, established KF Media, bought the Internet book retailer Bokus in 1998 from Ernst Malmsten and Kajsa Leander (who later founded Boo.com together with Patrik Hedelin). KF Media Interactive was also established and later given the name PAN Vision AB, consisting of Levande Böcker, PAN Interactive and Vision Park. But although KF produced interactive media, they were never viewed as part of the new economy.

The above points to firms' wish to be associated with interactive media producers and the new economy. Existent actors needed to take emerging social fields into account and in this case many strived to become viewed as part of it. When the social field was hit by a crash, companies instead tried to distance themselves and become identified as something else. Framfab's CEO at the time, Johan Wall, proclaimed after the crash that Framfab should become an advertising agency.

Production for Internal Needs

All those that started to produce interactive media did not push for recognition as part of the social field. Many firms and government agencies started their own in-house interactive media operations to cater for the need for such solutions. Banks and other firms in the financial sectors were early adopters of computer and networking solutions to link bank offices and customers together. Swedish banks had started to develop closed interactive IT systems for customers already in the 1970s and in 1984, 80 per cent of employees within the Swedish financial sector used computers, a proportion unmatched by most other parts of the economy at the time (SCB 1993, p. 49).

Posten and Telia,[44] both subject to the decisive board Post och Telestyrelsen, played a roles for interactive media production in Sweden. For Posten, Internet and financial interactive media solutions could mean a reduction in the numbers of letters sent and the end of their biggest source of income, Postgirot. It was evident in the word e-mail that Internet was an extension of the services they were currently involved in and hence something they should be part of. But it was far from certain what they should actually do during the process of development or even after they had set up the portal Torget (www.torget.se), or how it related to their other services (Hörnfeldt et al 1999). Telia's project was an Internet portal called Passagen (www.passagen.se) and very similar to Posten's Torget.[45] Telia argued that interactive media was something *they* should handle since e-mails and websites could replace their source of revenues, phone calls. Furthermore, since Internet ran through the telephone wires already owned and operated by Telia, it was within their jurisdiction. The two projects were no small-scale attempts, they involved extensive resources and skilled people that developed complex solutions. Mattsson and Carrwik (1998, p. 204) estimates that the cost for Torget was 150 MSEK. The projects further led to the establishment of interactive media producing and e-business firms, as well as served as early customers for some of the new breed of interactive media producers. Despite massive investments, Posten and Telia did however not extend their involvements in interactive media production by e.g. producing solutions for others.

Telia and Posten's involvement in interactive media can be viewed as a combination of organisations with a tradition of being government agencies deeply involved in major technical infrastructural changes, and newly transformed organisations searching for a position during a time of major transition. Telia's involvement is easily understood given their tradition (Ekström and Lindqvist 2001; Helgesson 1999) and there are comparable cases like BT in the UK.

44 The Swedish postal service, Posten, changed from government agency to state owned company in 1994 (Löfström 2003). Telia had made the same change one year earlier, in 1993, when it changed name from Televerket.

45 Torget is Swedish for 'the square', referring to a town square. Passagen translates to the passage, gateway or portal to the Internet (Mattsson and Carrwik 1998, chapt. 13).

Posten's involvement was largely due to a small group of convinced employees, among them Ulf Dahlsten.

If the Internet had reached Sweden before the end of the 1970s, or perhaps into the 1980s, it might be that Internet, e-mail and online interactive media solutions would have been handled by either Posten or Telia, the two in combination or perhaps a newly started government agency. Internet connection might have been handled like telephone subscriptions and e-mail addresses perhaps like telephone numbers: you were assigned an address rather than choose it. It is possible that firms would have had to apply for websites from the state and then have pre-designed pages into which the content was added. It is further likely that either Posten or Telia would have been deeply involved in the 24h government project.

The French Minitel system, developed in the 1970s, serves as an example of how it might have looked. The Minitel system was closed and the state had control over all subscribers and the content. The system had 5.6 million users in France in 1990, which was 90 per cent of all terminals in EU at the time. It covered 19 per cent of the private market and 80 per cent of offices in France and 1.5 billion calls were made that year (SCB 1993, p. 40).

Growth and Expansion of Interactive Media Firms

Growing demands and high valuations caused an increase in the number of firms producing interactive media solutions for external customers in Sweden. As in many other countries, the increase was rapid. Although there previously had been firms active in producing interactive solutions, it was nothing compared to the number of firms entering the practice within a few years time. According to the 2001 firm level survey, 30 per cent of the firms producing interactive media solutions were established in either 1997 or 1998, and 60 per cent between 1995 and 1999 (see Braczyk et al 1999a, p. 406 for international comparisons). Looking at when firms began producing interactive media solutions (which is not necessarily the same year the firms were established), 40 per cent of firms started producing solutions in 1997 or 1998 and 80 per cent between 1995 and 1999.

The exact number of firms that have been active in producing interactive media solutions over time is however not known. But based on work searching for firms for the firm level surveys conducted in 1997, 2001 and 2003, it is estimated that there were 600 firms in Sweden in 1997, most likely more than 1,500 during the boom, and between 750 and 1,000 in 2001. After 2001, there was probably a continued decrease in the number of firms until 2003, when the situation somewhat stabilised. According to these estimates, there were quite a lot of firms active before the IT boom really took off and even though the IT crash wiped out a lot of them, there were still more firms active after it than before the boom. Most firms that still are active (i.e. in late 2005) however have fewer employees than they had during the boom.

Table 5.2. Average year of establishment, starting year for interactive media production, proportion existing before producing interactive media and time from establishment to start of interactive media production. Source: 1997 and 2001 firm level surveys.

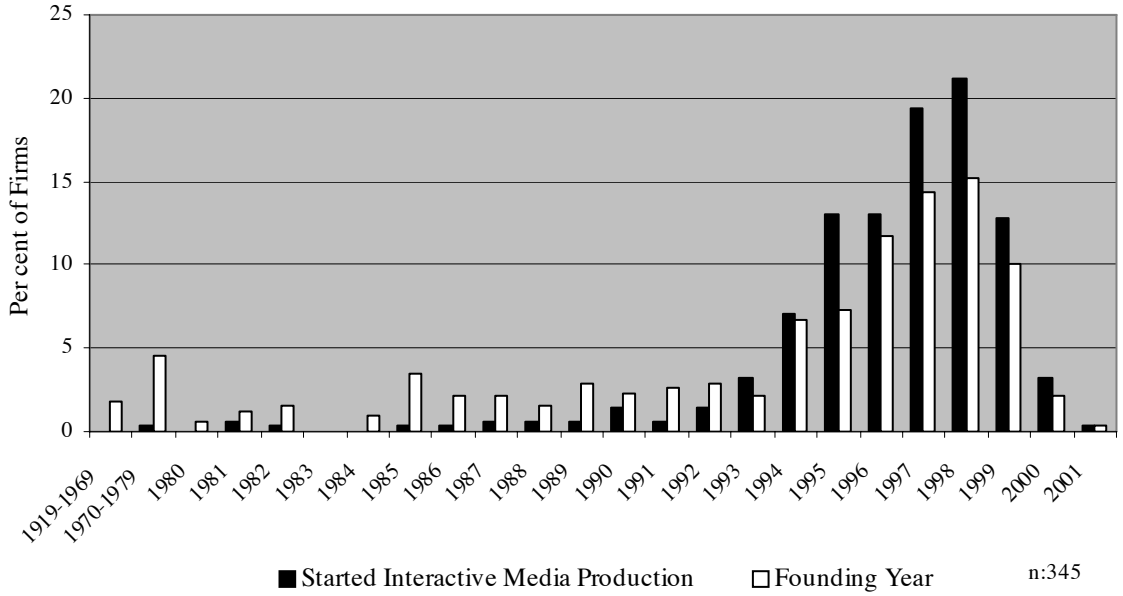
	1997	2001
Establishment of firm	1992	1992
Started interactive media production	1994	1996
Proportion existing before production	45%	37%
Years from establishment to interactive media production	2.6	3.4

The firm level surveys from 1997 and 2001 make it possible to analyse changes in the composition of firms that produce interactive media solutions for external firms over time, and thereby of the social field itself. According to the results from 1997, the majority of firms were young, on average started in 1992. The average starting year was the same according to the 2001 survey, although the number of firms had increased (table 5.2). There is however a difference in the year firms on average started producing interactive media solutions and thus the average time taken from when a firm is established to when it started producing interactive media solutions. In 2001, the population of firms had on average started producing interactive media roughly two years later and it took them about one year longer from the time of establishment until they started producing interactive media solutions, as compared to firms in 1997. At the same time, the proportion of firms that existed before they started to produce interactive media solutions went down from 45 per cent in 1997 to 37 per cent in 2001. Correlations also show that the later a firm has been established, the less likely it is that it existed before it started to produce interactive media solutions. Firms started later further have a lower average turnover, but a larger proportion of it coming from interactive media production.

An interpretation of this data suggests that the increase of the population of firms producing interactive media solutions for external customers between 1997 and 2001 consist of on the one hand older firms previously active in other social fields that have moved into the field and on the other hand newly started firms that predominantly produce interactive media solutions from the outset. As a result, the average starting year of firms before the IT boom and after the crash remained stable, whereas the average age increased from five to nine years.

Before offering a fuller analysis of expansion over time and changes in the demography of firms engaged in interactive media production, I will briefly expand on and present findings from three areas of importance. First, the growing number of firms that were established and that became involved in interactive media production. Second, the background and current areas of business for these firms and, third, the increase in size and the size distribution of the firms.

Figure 5.1. Founding year of firms and starting year of producing interactive media solutions for external customers. Source: 2001 firm level survey.



When looking at the founding years and the starting year for interactive media production among firms that were still active after the crash in 2001, there is a sharp decline in the number of established firms and the ones that had started to produce interactive media solutions already in 1999, a period when many new firms were still started according to media sources and work surrounding firm level surveys. This suggests that firms founded later, who were more prone to focus on interactive media from the outset, had lower possibilities of surviving the crash or withdrew from interactive media production. Some previously existent firms that started to produce interactive media solutions during the later stages of the boom have further withdrawn or not been able to survive.

Firms producing interactive media for external customers thus consisted of four groups: 1) newly started firms that only produced interactive media; 2) newly started firms that produced interactive media as well as provided other services or goods; 3) previously active firms that moved into interactive media production that continued to produce other things; and 4) previously existent firms that ceased to produce other things (table 5.3). 37 per cent of firms had been active before starting to produce interactive media and 74 per cent produced other things than interactive media in 2001. Very few firms with a previous existence changed their activity to only include interactive media production, meaning that they generally expanded into interactive media production. This shows that although firms are characterised by inertia, they are capable of changing and entering new social fields. It further shows that the new breed of interactive media firms were not able to keep existent firms from other areas from moving into the *practice*, even though they dominated ideas.

Table 5.3. Classification of firms producing interactive media for external customers and their background, per cent of firms. Source: 2001 firm level survey.

		Produce more than interactive media		
		Yes	No	Total
Previous Existence	Yes	34	3	37
	No	40	23	63
n: 329	Total	74	26	100

Of the firms that produced interactive media solutions from the outset, 63 per cent were involved in other areas as well. They did not restrict themselves to one social field or core competence, meaning that they either simultaneously became active in several social fields or expanded into other fields from interactive media production. Thus, interactive media production was a forming practice and social field that existent firms from other areas could move into. But the production of interactive media solutions could also function as a platform to move into other practices and social fields.

These empirical findings support and to some extent extend the theoretical argument: opportunities, whether caused by change or not, can be realised by both newly started and already established firms. Furthermore, newly started firms that engage in a forming practice and social field might also become involved in areas with a longer history, areas that to some extent already are occupied by others (see chapter six on the most common activities besides interactive media production that firms are engaged in). This differs from the view portrayed in evolutionary economics where new firms are thought to focus on new markets and fight off existent firms, but not move 'back' into previously existent markets using the new one as a base. It also complicates the commonly held idea within organisation theory that new firms and entrepreneurs aim for niches not to compete with already established companies (see Aldrich 1999 for a discussion).

Expansion

Firm expansion was argued to be important to win large contracts, to get into new markets, raise the value of shares, avoid external and international competition and takeovers and to get a first mover advantage (cf. Perkins and Perkins 1999). Owners and CEOs of firms were however not always in agreement regarding rates of expansion. The 200 per cent of annual growth that Icon Medialab's CEO Fedeli saw as sufficient was not satisfactory to owners, who fired Fedeli and replaced him with Ulf Dahlsten who pushed more for growth (DI 990903; DN 990903). With the financialisation, growth became a demand and viewed as beneficial in itself, regardless of its strategic or organisational rationale and consequences (Ågerup 2002, p. 82). Growth became a sign that a company would be one of the survivors that would come to dominate the social field in the future,

hence one that should be highly valued. The high valuation further contributed to growth by providing firms with the necessary resources for purchasing other firms and employ more workers.

Firms producing interactive media solutions on average had a total of 17 employees in the spring of 1997. They estimated that they would have 21 by the end of 1997 and 27 in 1998, report to have had about 13 employees in 2000 and 16 in 2001. The median numbers for the same years were six, seven, ten and four, respectively.[46] There was thus a decrease in the average number of employees within firms producing interactive media solutions between 1998 and 2000.[47] The correlations between starting year of firms and number of employees show that firms started later on average have fewer employees than those started earlier. This means that the decrease is due to changes in the composition of firms, and not that firms have decreased their number of employees. In other words, firms on average did not decrease the number of employees during the boom, but a large number of smaller firms were started in this period, which makes the average number of employees go down.

Comparing figures for firms that responded in both 1997 and 2001 gives an average increase of 18 employees but a median of just one. 49 per cent of firms increased and 29 per cent decreased the number of employees between the two years, leaving 18 per cent that left it unchanged. Comparing the years 2001 and 2003 shows an average decrease of one employee, from ten to nine. 28 per cent of firms increased and 52 per cent decreased the number of employees between 2001 and 2003. The analyses involve some limits since the comparison is only made between firms that existed, were included and answered both years. A number of other firms were started or closed down during the period and their average numbers of employees might alter the results. The period has been characterised by a rapid growth in newly started firms with fewer employees. At the same time, a few companies have grown to become very large.

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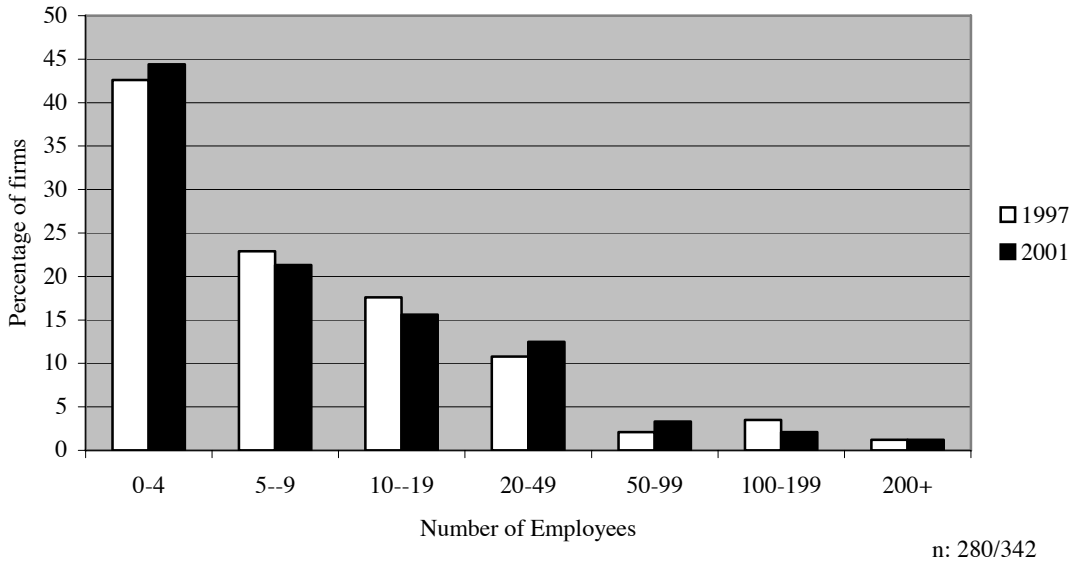
[46] The 1997 survey asked for the number of employees, without specifying the status of their employment contract. In the 2001 survey, companies were asked for the number of *permanent* employees and workers with short time contracts separately. The 2001 figures above are for permanent employees. Including short-time employees makes little difference, since average firms only had six per cent of their workers focussing on interactive media on short-term contracts. The figures for December 1997 and December 1998 are based on firms' predictions in spring 1997. The figures for 2000 and 2002 are calculated based on the reported employee turnover the previous year. 2004 is based on estimates made in 2003.

[47] The visible decrease is partially due to limits in comparability between samples since more small companies were found in the 2001 survey as compared to 1997 (Sandberg and Augustsson 2002). This lowers the difference somewhat, but does not alter the argument. Firms with no employees are calculated as having one employee in calculations for statistical purposes. In some cases, this is an underestimate given that there are firms with more than one working part owner. The overall affects of this are limited, however.

Figure 5.2. Size distribution of Swedish interactive media producing firms based on number of employees. Source: 1997 and 2001 firm level surveys.



In both 1997 and 2001, a large proportion of the Swedish firms that produced interactive media solutions had very low or moderate numbers of employees. But at the same time, there were a few firms that had several hundreds or even thousands employed (see figure 5.2). This combination of a large number of very small interactive media producing firms and a few large ones is commonly found in other countries as well (Braczyk et al 1999b). In Sweden, almost 25 per cent of firms had no employees at all in 2001, although they might consist of several working part-owners and so at least have one person working within the firm. Large firms producing interactive media existed in both 1997 and 2001, but it is argued here that they were not the same types of firms.

The vast majority of interactive media producing firms have employees that are not focussed on interactive media *production* specifically. Some of them are involved in support work, but even if they are excluded, there are employees that produce or deal with other things than interactive media. In the 1997 survey, it is not possible to distinguish employees focussing on interactive media from other types of employees but figures on the proportion of firms' total turnover from interactive media indicate that only a minority of employees focus on interactive media production. In 1996 only five percent of turnover came from interactive media as compared to 58 in 2001 and the proportion of employees focussing on interactive media had grown significantly to more roughly 50 per cent. The proportional increase of interactive media production and the decrease in average total number of employees within firms appears because a new breed of firms evolved during the late 1990s that were smaller, with lower turnover, but more focussed on interactive media production.

Analysing Change and Expansion

The results from 1997 and 2001 indicate changes in the number of firms and starting year of interactive media production, average number of employees, size and proportion of turnover from interactive media production. At the same time, average starting year and size distribution of firms is more or less intact over time. To recapitulate, the number of firms producing interactive media solutions increased over time, firms in 1997 on average have more employees and higher turnover, but a lower proportion of it coming from interactive media than firms had in 2001. The question becomes how this should be interpreted.

Given differences in sampling and the level of non-response in the surveys, it could be argued that it is simply a statistical effect due to low reliability. Since the search process was far more extensive the latter year, it is highly unlikely that any firms that were approached and/or participated in 1997 and still were potentially active within interactive media in 2001 were excluded. Further, although only 44 per cent of firms responded to the second survey, 90 per cent of the firms have been classified. An analysis of non-respondents in 2001 shows that there were few respondents from the 1997 survey who identified themselves as interactive media producers in 2001 but denied participation.

The above points to a second possible explanation for the apparent differences: some firms identified themselves as interactive media producers in 1997 but not in 2001, without changing their activities (they may or may not have been active within interactive media production both years). This second interpretation has some merits to it and is consistent with the struggles over practice and recognition. There are firms that in 1997 claimed to produce interactive media that in 2001 denied doing so, a few of which are quite surprising in light of other descriptions regarding what they do (from e.g. annual reports, their web sites and the media), but for the most part firms in fact do appear to have ceased their interactive media operations.

Statistical shortcomings and willingness to be identified with interactive media production can thus account for some differences, but I would argue that it is not sufficient to explain all of it. This leaves two possible explanations: either there was a change in the existing firms, or the distribution of firms changed over time. Based on the statistical data and in relation to empirical findings from media coverage, I would argue that the most credible description of the development of interactive media production in Sweden between 1997, i.e. the very beginning of the IT boom, and roughly six months after the crash in 2001 is as follows:

Both years are characterised by a large number of small and a few considerably larger firms producing interactive media solutions. In 1997, large firms generally have a small proportion of interactive media operations in terms of number of employees and turnover and their main businesses are within other areas. The smaller firms that existed in 1997 were however on average largely

involved in interactive media. Although some of the larger firms extended their involvement in interactive media during the boom years, none of them came to predominantly focus on it and several firms chose to withdraw from the field completely. Between 1997 and 2001, a number of firms that previously had been active in other areas for quite some time entered interactive media production and expanded their current activities. A large number of firms that predominantly focused on interactive media production were also started during this period. A small portion of this new breed of firms came to focus on growth and increased considerably in size. Although several of them did not survive the IT crash in late 2000, some prevailed. Together, this caused a reconfiguration of the demography of firms producing interactive media for external customers, at the same time as a small proportion of firms altered their structure (cf. Carroll and Hannan 2000).

Lack of Personnel

Since the demands for interactive media solutions and firms' willingness to grow was more rapid than the development of formal educations aimed at producing interactive media production, a shortage of competent interactive media workers arose during the years of growth. One consequence of the initial lack of formally educated people was that many without suitable education but with some form of experience were hired (Augustsson and Sandberg 2004b). The state increased the number of places in education related to or of relevance for interactive media workers, but the educational system could not adjust to the rapidly increased demands in time for the boom (Jacobsson, Sjöberg and Wahlström 1999). The majority of students did not graduate until after the crash, contributing to an increased unemployment among people with an education in computer science and IT engineering.

The lack of personnel meant that firms tried to attract workers from other firms within and outside the social field (Ågerup 2002, pp. 49-51). Another reason to target experienced people from other firms was the cost of introducing new employees coming straight out of school, which was estimated to cost 0.5-1 MSEK before they became productive (CS 980911). People further left firms that produced interactive media solutions or were involved in related areas to start their own interactive media firms, something that reportedly became more common closer to the crash partially due to failed stock option programmes (CS 000927; 970902). Merkantildata Syd lost 80 of 150 employees to other firms or new start-ups despite offers of higher salaries if workers stayed (CS 001030; SsD 001027). The people that left sometimes took others with them, as in the case of Resco and Pir (DI 971213; Resumé 990208). The firm Houdini, for instance, was started by people from Resco who disagreed with the latter firm's focus on technology and who wanted to focus more on the aesthetics of interactive media (Resumé 991104). On the other hand, interactive media firms that received positive media attention and had a high external recognition attracted a lot of spontaneous appli-

cations. In late 1999, when Framfab had about 500 employees, they reportedly received 3-400 spontaneous applications a month and many of the people they hired were from the traditional IT consultants like Mandator and Enator.

Peoples' willingness to work in some of the firms producing interactive media solutions initially meant that the firms did not have to compete for workers using higher salaries (VA 991004). Increased wage levels and use of options and promises of competence development would however soon be a reality (Augustsson and Sandberg 2004b). The wage levels were much talked about but there was only a small group of workers that received high salaries, most employees had earnings on par with other comparable jobs (Sandberg et al 2005). Still, salaries were the highest cost for many firms producing interactive media and in some cases higher than what the firms were bringing in. Options became one way to keep down salary levels and increasingly also something demanded by employees, probably because of the frequent stories in the media about employees who became rich after IPOs (Vision 991208). It has been argued that promises of higher salaries, options and perks caused workers within interactive media to constantly change jobs, but a majority of workers were employed within the same firm more or less all through the boom years (Sandberg et al. 2005).

Mergers and Acquisitions

The lack of competent personnel was one reason why organic growth could not meet the levels of expectation put on the interactive media firms. As a result, some inside firms turned on each other through acquisitions and mergers, especially from late 1999 and onwards. Highly valued shares could in these cases replace capital and resources from sales. It further made it easier and quicker for the firms that were established on the stock market to purchase other firms than to grow organically, even though several firms used both strategies. As previously pointed out, it was however just a small proportion of firms that were involved in mergers and acquisitions, as well as grew large.

The purchase of other firms as a means to grow larger in some cases however led to a loss of personnel as they were unwilling to work for the new firm. When Linné Group bought Propello, at least eleven of 20 employees left, which according to some employees was partially due to differences in logics between the two firms, and about 20 consultants left Cell after the merger with Mandator for similar reasons (cf. CS 980911; DI 000728; ND 000728; Resumé 980507). Firms tried to defend themselves against rumours and accusations of employee losses in the media as it lowered their valuations. An example is Framfab, who according to an article in the business paper *Dagens Industri* lost about nine per cent of its share value due to workers leaving after the merger with the firm Guide (DI 000607; ND 000606). One way to limit the loss of workers in relation to mergers and acquisitions was by including paragraphs stating that the working owners of the purchased company had to stay and work for the company and

were not allowed to sell the shares they had been paid for their company for a specified period of time.

Among the most written about mergers and acquisitions related to interactive media were Spray's merger with Tetre in June 1999 (DI 970818), their purchase of the American firm Razorfish and later the sale of Spray to Lycos, the merger between Connecta and Information Highway, and Cell's merger with Mandator. Framfab merged and purchased Guide and Netsolutions in May 1999 (started by Johan Wall who later became CEO of Framfab). Icon purchased Multimedia Productions and was later itself bought by Dutch firm Lost Boys. Optosof's merged with Bonnier associated firm Clockwork and bought Linewise, Grape and Base8 in 1999 and another five firms in 2000, including Mogul (which later became its name, Dagens IT 000301). Cell merged with Linné Group and New Media Science in 1999 and later with Mandator (Resumé 990527). A small proportion of firms producing interactive media reached a considerable size at their peak, usually in late 2000 or early 2001.[48] Icon Medialab for instance had approximately 1,700 employees in 19 countries in 2001 and Framfab had about 1,500 employees in 22 offices after the merger with Guide, and nearly 3,000 employees in late 2000 (E24 001031).

The acquisitions and mergers did not always work smoothly or prove to be successful, sometimes because leaks or rumours of mergers were enough to alter the share valuations and thus making deals impossible (Ågerup 2002, pp. 84-5). Marcus Bäcklund, CEO of Cell, claimed that Linné and Cell complemented each other since 'Linné has a broad technical knowledge, while we at Cell consulting are strong within business development and design' (Resumé 990527). Similar words were said in relation to the merger with Mandator in 2000. Bäcklund predicted that both mergers would go smoothly because the cultures were similar. The latter one however proved to be highly problematic, which allegedly was because Cell had financial troubles that Mandator were unaware of at the time of the merger (DI 000927; SvD 000209;Vision 000615).

Since valuation was largely based on size and growth during the boom years, firms that would release new shares to purchase another company, and thereby nominally dilute the value of each share, could expect their shares to increase in value. In some cases, valuation of the shares increased more than the price that had been paid for a company. This in principle meant that firms did not have to use capital resources to grow. The practice however often resulted in large goodwill posts, since the compensation exceeded the purchased firm's substantial

[48] The firm level surveys contain data on the number of employees for some of the largest Swedish firms producing interactive media solutions, but they are not reported here for matters of confidentiality. Instead, figures are taken from publicly available sources, like media coverage and annual reports.

value (cf. Eckerstein et al 2002).[49] The goodwill posts were initially neglected or treated as insignificant by those involved and many analysts. Jonas Birgersson, for instance, stated that goodwill was only paper money and Staël von Holstein said that it was not even an issue. In a reply to a reporter's question concerning the 1.5 billion SEK goodwill post after Framfab's purchase of Guide, Birgersson stated 'I don't give a damn about goodwill as long as we have positive cash flow' (SvD 030930). Several firms would however later be criticised for how goodwill was accounted (DI 000419; DN 991114). To avoid negative figures in the annual reports, some firms dramatically prolonged the period during which it was written off, or chose only to present results before goodwill write offs (SvD 000503).

The Formation of In-house Production

The growth of the practice of producing interactive media solutions did not only occur among firms that identified themselves and were recognised as part of the social field. The previously described projects handled by Telia and Posten were not the only interactive media operations among government agencies, and there were also many firms that held similar operations. 40 per cent of Swedish organisations with more than 200 employees produced interactive media solutions internally in 2001. Eight per cent handled all of it and the other 32 per cent handled part of it themselves, while outsourcing parts to other companies (table 5.4).[50]

Table 5.4. Involvement in interactive media among Swedish firms and government agencies with more than 200 employees. Source: 2002 survey of in-house production.

	Firms	Government Agencies	All organisations
Produce all	6 (12)	12 (18)	8 (30)
Produce some	28 (63)	36 (54)	32 (117)
Purchase	43 (95)	29 (43)	37 (138)
Do not use	23 (50)	23 (35)	23 (85)
Total	100 (220)	100 (150)	100 (370)

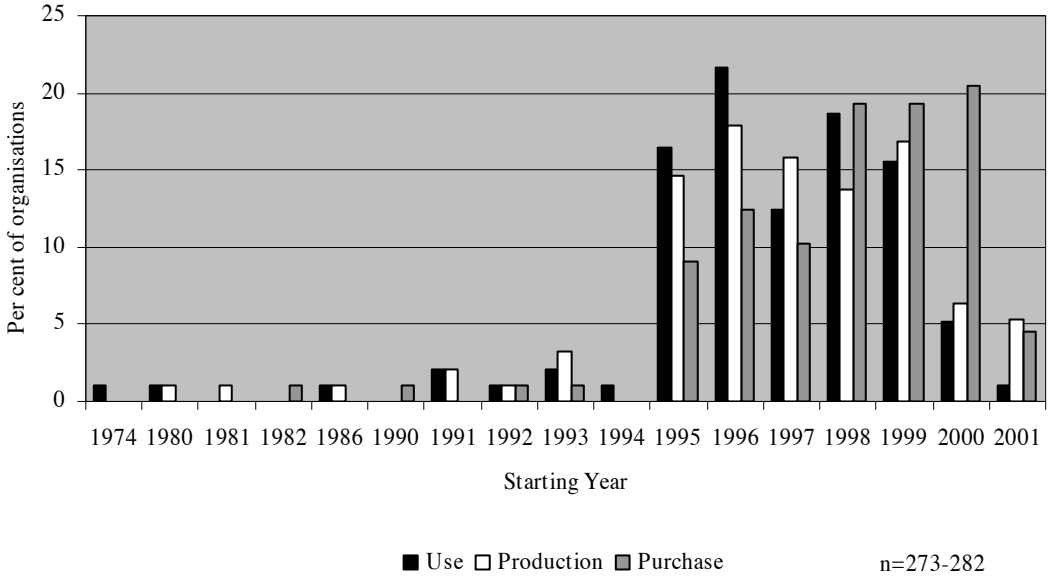
[49] Goodwill is a rest post to handle the difference between what a buyer has paid for a company and the capital of the purchased firm. This can be avoided by so-called pooling between firms of equal size. The goodwill can be due to e.g. the purchased firm's brand name, the knowledge of workers and expected future earnings. The goodwill post is written off over time, but according to the Swedish accounting principles not for a longer period than 20 years. The write off affected the results, but not the cash flow of the purchasing firm. Accounting procedures for goodwill posts has changed since the period described here.

[50] The knowledge of interactive media production among these respondents was however limited, which means that calculations most likely are underestimates (Augustsson and Sandberg 2004a; SCB 2003).

Although the proportion of firms and government agencies that claim to use interactive media solutions is the same (77 per cent), there is a larger proportion of government agencies that choose to handle some or all of it internally. I think this can be explained on the one hand by the contemporary management ideas mainly directed at firms concerning the need to focus on core competencies. The demand put on government agencies regarding the 24 hour agency, on the other hand, was probably by some interpreted as a need to have interactive media competence internally (Augustsson 2005).

Swedish organisations that produce all of their interactive media internally on average started doing so in 1996. Organisations that produce part of their interactive media solutions and outsource the rest started doing so in 1997, and organisations that purchase all of their interactive media solutions started to do so in 1998 (figure 5.3). Thus, it was not only that firms from other social fields related to interactive media production moved in and expanded their practices to include interactive media production during the 1990s, a large proportion of larger Swedish firms and government agencies developed their own in-house interactive media operations without being considered part of the social field. The timing of entrance further shows that organisations with in-house production in many cases were not slow movers, they took advantage of the opportunities for interactive media production at on average the same time as the firms producing interactive media solutions for external customers. This early adoption further decreased possibilities for foreign firms producing interactive media solutions to move into the Swedish market.

Figure 5.3. Starting year of interactive media operations among Swedish firms and government agencies. Source: 2002 survey of in-house production.



Given that the period of measurement is after the crash, it could be argued that there was a movement from firms producing interactive media solutions for external customers to in-house production. As shown elsewhere (Augustsson and Sandberg 2004a), this was however not the case. There was a growth in both the number of firms producing interactive media solutions for external customers and the number of organisations that produced their own solutions internally.

Swedish organisations with internal interactive media operations further increased the number of employees engaged in the operations over time (Augustsson and Sandberg 2004a). Most organisations with in-house interactive media operations had a small number of employees working with interactive media, most likely maintaining, up-dating and making minor adjustments to already existing solutions. But there were a few organisations with large numbers of employees focussing on interactive media production, comparable to some of the largest specialised interactive media producers, especially banks and financial firms, and major Swedish firms active in social fields related to interactive media.

Swedish organisations in general are by definition more common than Swedish firms producing interactive media solutions (since the latter is a subclass of the former). This means that it is likely that the part of the practice of producing interactive media solutions that is handled in-house is just as large and probably larger than the practice taking place among firms that produce interactive media solutions for external customers, measured as number of organisations and employees (Augustsson and Sandberg 2004a). The new breed of newly started devoted interactive media producers, which made up 23 per cent of firms producing interactive media solutions for external customers (see table 5.3) but dominated outsiders' perception of the social field for interactive media production and became a symbol for the new economy, probably made up less than ten per cent of all those organisations engaged in the practice of producing interactive media solutions.

Calculating the extent of the practice based on firms considered to belong to the social field, and even more so the new breed of interactive media producers that dominated the outside perception of the social field and practice, is thus a poor estimate of the total number of organisations involved in interactive media production. The firms that produce interactive media for external customers, made up of several different organisational forms, could potentially all disappear without a reduction in the amount of interactive media produced (Aldrich 1999). This would mean that the way production is organised changed from one form, specialised firms that produce for external actors, to another, organisations that handle their production in-house.

6. The Structure of Production

The previous chapters have mainly dealt with the formation of interactive media production as a practice and social field. How then is the production of interactive media solutions organised? The available empirical data makes it possible to cover many areas in closer detail than is done here. I have refrained from doing so in order to focus on one aspect, division and integration, which in itself contains several areas that are only briefly touched upon. This chapter starts with a discussion about the role that visions of organisational novelty had for the organisation of interactive media production. It then turns to the internal organisation of firms, including vertical and horizontal division of labour, which is followed by an examination of firms' involvement in interactive media production. The chapter then turns to the division and integration of labour *between* firms by focussing on the organisation of interactive media production between firms, including the work of customers. This is followed by a discussion of stability and variation in the organisation of production. The final part of the chapter concerns the overall formation of interactive media as practice and social field as the partial outcome of a labour of division concerning the overall organisation of interactive media production, as well as the structuring and relations between positions involved in the practice and social field for interactive media production.

Novelty in Organisation

In the media attention surrounding interactive media production and the new economy, the actual organisation of production has been given limited attention. Researchers and consultants paid more attention to presumed novelty in organisation and have had stronger beliefs in the significance paid to the issue in the media (cf. Indergaard 2004, p. 17). The presumed needs for new forms of organisation were a recurrent theme in research and policy documents, something that many researchers adapted to for e.g. funding purposes, and novelty in organisation often came to be the starting point for researching interactive media and the IT sector (Brenner and Sandström 2000; Cronehed 2004; NUTEK 1996b).[51]

A large proportion of the few discussions concerning novelty that appeared in the media concern books and seminars *about* novelty, and several books have as their main evidence *other* books about novelty and newspapers articles about

[51] The research project this dissertation is written within is after all called 'Media, IT and innovation in organisation and work', a name not chosen without considering the contemporary trends in research and funding. Still, the reason for its initiation was to critically evaluate the empirical bases for the claims of novelty.

repeatedly cited extreme cases or about other books about novelty. There are next to no descriptions based on actual cases of what the presumed novelty in the organisation of interactive media producers consisted of, in what ways it differed from companies in the old economy or any recognition of the differences in organisation between companies within the old economy as well as the new. In lack of more profound findings, the novelty was sometimes exemplified by the interior design of interactive media producing firms' offices, like the bunk beds at Spray or the pinball and arcade machines found in some offices (Mattsson and Carrwik 1998, p. 165). An example involves a manager at Framfab demonstrating how an office glass door can be electronically modified to offer privacy by reducing transparency (VA 991004). Creative decorating became a sign of deeper creative novelties in organisation and management similar to how employees' dress code signalled a new type of workers (cf. Indergaard 2004, pp. 108-9).

The vision of novelty thus seems to be if not based on then at least greatly amplified by cross references and circulation of examples consisting of second hand information. One can find similarities in the way that the previously descrybed international mirroring, the use of curves depicting technological diffusion and beliefs in organisational novelty worked. All three were based on a circulation and quantification of second hand accounts of case studies that under closer scrutiny often were not completely applicable. In the case of organisation, it was however a discussion that was dominated by outsiders, although insiders also participated. The vision of novelty is further an example of stage models that although faulty came to have an impact as outsiders assumed that the firms producing interactive media solutions, the practice and the social field were new, the solutions produced innovative and the ways the firms were organised was novel (for examples, see Burton-Jones 1999; Davis and Meyer 1998; van Dijk 1999, for discussions Augustsson and Sandberg 2003b; Sayer and Walker 1992).

The ideas of novelty in organisation are characterised by the same inconsistency and vagueness as the overall discussions of the new economy, making it hard to pinpoint the expectations in detail. Still, one can distinguish some reoccurring ideas in the talks of network, virtual, imaginary and digital organisations: there was a need for more flexible organisations due to more rapid changes and innovations, which would cause bureaucratic structures to be replaced by more fluent network and project forms of organisations (Uvell 1999, chapt. 5). Following this, firms would become flatter and more decentralised, creating more responsibility for workers. The boundaries of firms would decrease in importance as firms collaborated more with other actors in networks and people moved in and out of firms. Employees would become more loosely tied to firms, meaning that they would stay for shorter periods in firms and have more loose forms of contracts. The ideas were not always new, which can be seen by comparing the discussions about novelty in organisation in the new economy to arguments in older (forgotten) management books (see e.g. Furusten 1999; Sandberg 2003a).

Few insiders confronted with the ideas of novelty publicly rejected them. Instead, they more often supported the ideas and in some cases claimed that the novelty was a necessity. They pointed to differences compared to old economy companies, which were given negative attributes such as hierarchical, bureaucratic and slow. Some of those that founded interactive media producing firms probably viewed their companies as different from the ones they had previously worked in, if they had worked anywhere else at all. For people coming from large companies with a long history in more mature parts of IT and media related areas, the small companies producing interactive media they helped found in a new and rapidly changing social field certainly were *different* from what they left (Eckerstein et al 2002, pp. 59-66). But the difference does not seem to be based so much on any novel ways of organisation limited to the forming social field, as they were based on the firms being small and newly started in a turbulent environment. Those workers that had experience from working in other knowledge intensive firms were further aware of this. As a consultant at Framfab stated in an article during the hype years:

> This is just like any other damn consulting firm. And we do the same old thing, help customers to – to be honest – make more money. But most [employees] are just on their first or second job, they are extremely ambitious and lack the general overview and distance (VA 991004).

The perceived novelty was more based on the ideal than material aspects of reality and visions came to play a more important role as a management strategy than was previously the case. As shown by e.g. Strannegård (2001), Holmberg et al (2002) and Willim (2002; 2003), to be first into the future was a guiding principle for managers within interactive media producing firms due to beliefs in the principles of the curves regarding technical diffusion, coupled with a more general shift in managerial discourse towards 'softer' forms of control (Garsten and Jacobsson 2004; Sandberg 2003b; Thompson and Warhurst 1998).

The vision of novelty in organisation further functioned to separate the companies within the social field from firms in the old economy (some of which produced interactive media solutions) and those from related fields that threatened to move. As novelty in organisation mostly was attributed to the new breed of firms, it made them appear as different from the already existent firms producing interactive media solutions, and could thus be used as a way of separating between different types of firms within the social field, and not just outside competitors. As many of the older breed of firms were largely unknown to most outsiders, this was easy: not many knew what it was like working in a firm producing interactive media before the hype years. Thereby, it became possible for firms perceived insiders to claim that existent outsider firms and the old breed of interactive media producers lacked not only the competence and understanding to

handle interactive media production, but also the *organisation* to do so. Ideas of novelty in organisation were thus supported to benefit material aspects through a labour of division intended to exclude others by pointing to the ways they differed from oneself and certain ideas (Askonas and Stewart 2000; Luhmann 1982).

It was an image of novelty holding promises of a different, more playful, working life that further benefited firms producing interactive media as it attracted competent workers, who enjoyed the parts of interactive media jobs that least recognised traditional work the most (Sandberg et al. 2005). Interactive media firms were among the most highly ranked preferred employers for students in several surveys during the boom years according to lists compiled by universities and recruitment companies. Of interest here is that many of those that the firms tried to attract came straight out of college and university, meaning that they usually had no or limited work-life experience. To differentiate interactive media firms from the old economy and bad mouthing the latter as bureaucratic, rigid and stiff was a successful strategy made easier by the sought after persons' limited working life experience (compare the quote above).

Internal Organisation

The first aspect of the overall organisation of production concerns the internal organisation of firms producing interactive media solutions, which I describe in terms of employee relations and the horizontal and vertical division of labour, i.e. how were people connected to the firms in which they worked, what were they doing and what could they influence.

Forms of Employment and Movements of Workers

According to managers responding to firm level surveys, an average of nine per cent of interactive media workers were temporary employees in 1997, and 62 per cent of firms had no temporary employees at all. Equivalent figures for 2001 and 2003 are an average of six and seven per cent temporary employees and 81 and 77 per cent per cent of firms without any temporary employees at all, respectively. In 2003, the vast majority of workers themselves reported to be either permanent employees (69 per cent) or working owners (26 per cent) in the individual level survey. Five per cent were either temporary employees or freelancers. The overall proportion of freelancers engaged in interactive media production is however probably somewhat underestimated as up to a quarter of firms producing interactive media had none or just one employee in 2001 according to the firm level survey conducted that year. Further, hired consultants were working with interactive media production in 33 per cent of firms in 1997 and 23 per cent of firms in 2001. Still, the prevalence of temporary employees within interactive media production has been low and gone down within average firms.

According to the 2003 individual level survey, 94 per cent of the permanent employees had been working in the same firm one year ago and 46 per cent three years ago. Among working owners, 95 per cent worked in the same firm one year ago and 84 three years ago. The main reason why some working owners did not work in the same firm one or three years ago is simply that the firm was not started then. The labour turnover among firms producing interactive media solutions is thus not specifically high, especially considering that roughly half of the firms had only been in existence for seven years (since 1995) at the time. It is further mainly workers that move around, while owners generally stay for longer periods of time in firms (see more in Sandberg et al 2005). The low levels of short term employments and relatively low labour turnover and previous figures on average changes in the number of employees show that firms generally do not handle flexibility numerically, i.e. by altering the number of workers.

Working Tasks and Groups of Workers

Not everyone in firms producing interactive media solutions works with interactive media, not even in firms that lack any substantial activities besides producing interactive media solutions. In the 2001 firm level survey, managers estimated that 50 per cent of employees mainly worked with the production of interactive media solutions. In the equivalent survey from 2003, 79 per cent of employees were *to some extent* involved in interactive media production and 51 per cent worked mainly with it. Responding firms active in both 2001 and 2003 shifted from 65 to 61 per cent of employees focussing on interactive media production. A third of the firms kept the proportion of workers focussing on interactive media production intact between the two years, but changes range from a reduction of roughly 80 per cent in some firms to an increase of about 70 per cent in other firms. Although the average firm has made minor changes, focus on interactive media production is thus not stable over time. Firms do not just enter or exit social fields, they alter their focus on different social fields relative to others, which also functions as a way to reach stability.

Comparing individual and firm level data shows that not all workers seen by managers as involved in interactive media operations are engaged in any of the activities perceived as inherent in the practice, and some of those workers that consider themselves involved in interactive media and perform some of the activities as part of their job are not recognised by management as involved in the practice. Thus, although there is a shared view on what constitutes interactive media production, there is not full agreement even between positions within the same firms. This further seems to be a source of excluding certain groups of workers, like women, from internal upwards mobility in these firms (Augustsson and Sandberg Forthcoming/2006).

Table 6.1. Percentage of workers that are engaged in different activities within interactive media operations. Source: Individual level survey 2003.

Activities	Main task	Part of job	Not part of job	Total	n
Systems development, programming	22	13	65	100	369
Graphic design/content	17	36	47	100	368
Project management	17	39	44	100	367
Marketing and sales	14	36	50	100	369
HRM, economy, administration	13	22	65	100	369
Business management	12	17	71	100	369
Other activities	10	9	81	100	369

Focussing on the workers that were involved in interactive media production (based on their own judgement in the 2003 individual level survey), the most common broader working tasks are project management, content production and marketing and sales, which roughly half of workers are involved in (table 6.1). Systems development and programming ranks lower, with 34 per cent of workers, and least common is business management, which 29 per cent are involved in. The reason why systems development and programming ranks comparatively low is mainly because there is only a small proportion that has it as *part* of their job. The level of specialisation among workers is thus relative and those that perform some activities, like programming and systems development, are less likely to also handle other activities than those involved in other tasks.

On a more detailed level, the activities that most workers involved in interactive media production perform are usability and HCI, graphic and web design and concept development. Least common activities are sound and music production, video and film production and photo. Usability is an integrated part of several other activities and graphic design and concept development are necessary in all solutions which explains why such a large proportion handles it. Sound and music production and the other latter activities are more peripheral to interactive media production as they are not always included in solutions and a smaller proportion of workers (and firms) are involved in them. Certain activities are thus more central to a practice and social field than others.

Some activities tend to go together, meaning that workers who are engaged in one activity are more likely to be involved in certain others. Using factor analysis, it is possible to explore underlying patterns and detect clusters of activities based on the responses to the 2003 individual level survey.[52] There are two clusters of broad activities and three clusters on a more detailed level. On the broader level, the first cluster of activities consists of project management, marketing and sales,

[52] For a similar approach, see Scott (1995a). Results of factor analyses are found in the table appendix and the method is discussed in the methods appendix.

HRM, and business management. The second cluster consists of systems development and graphic design (see table 6.2). Systems development and graphic design are actually not related, they are grouped together since they are both negatively related to the other cluster of activities. One can thus talk of two major groups of workers based on the broad activities that they are involved in. The first group handles managerial and supportive economic tasks. The other major group, which is made up of two subgroups, consists of workers that are involved in producing the aesthetic content or the technical systems for interactive media solutions, but not managerial and economic tasks.

Similar patterns are also found for the more detailed separation between activities in the production of solutions where three groups of workers can be distinguished according to the activities they are involved in: technology, aesthetics, and overall concept and management (cf. Ågerup 2002, p. 114; Willim 2002, p. 54). One group of workers is thus in charge of managerial and other activities related to the overall concept of producing interactive media solutions. They give customers advice on their needs, conduct research and draw up the general contours of solutions, manage their completion and educate customers on how to use them. The other two groups of workers transform the overall ideas into different types of aesthetic content and working technical solutions, respectively. This shows a horizontal division of labour between different activeties and a vertical separation where some have more creative and managerial control (cf. Coopers & Lybrand 1997).

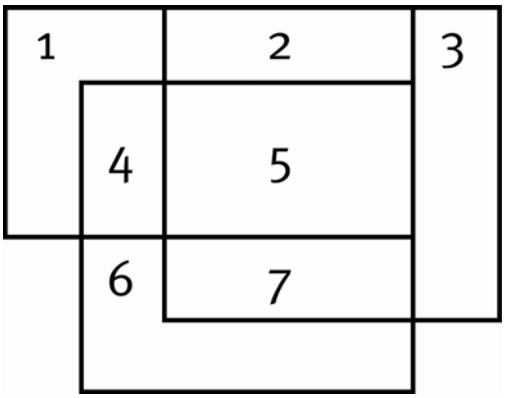
Table 6.2. Clusters of activities on broad and detailed level among interactive media workers. Source: Individual level survey 2003.

Broad clusters of activities	
Economy and management	Workers
Project management Marketing and sales HRM, economy, administration Business management	Systems development Graphic design/Content

Detailed clusters of activities		
Overall concept and management	Aesthetics	Technology
Concept, storyboard Content research Copy Educating customers Project management Strategic advice Usability	Graphics, web-design Sound/music production Video/film production Photo Animations Illustrations Providing actors	Programming Systems development

There is however no sharp division of labour between the clusters of activities, they are rather positions that workers might hold. If they are involved in one activity within a cluster, it is more likely that they are involved in other activities within that cluster than in activities within other clusters. Calculations show that 94 per cent of workers are engaged in overall concept and management, 69 per cent are involved in aesthetics, and 51 per cent in technology. Only one in five workers are restricted to one cluster of activities and roughly a third are involved in all three of them.[53] It is very uncommon that workers are only involved in technology, aesthetics or a combination of the two, most are to some extent involved in overall concept and management. It is however less common that workers involved in the cluster of technical activities take part in overall concept and management, it is mainly if they are also involved in aesthetics that they are involved in this. This again shows that technology, i.e. programming and systems development, is a more specialised task within interactive media. A visualisation of the relations between and integration of clusters of activities can be depicted as in figure 6.1. The figure is basically a Venn diagram where areas two, four, five and seven refer to common variance and one, three and six to unique variation (Bryman and Cramer 1994, pp. 259-261).

Figure 6.1. Division and integration of clusters of activities among interactive media workers. Source: 2003 individual level survey.



n: 263

1: Overall concept and management -technology, 13%
2: Technology, 2%
3: Overall concept and management, 16%
4: Aesthetics - technology, 1%
5: Overall concept and management - aesthetics - technology, 35%
6: Overall concept and management - aesthetics, 30%
7: Aesthetics, 3%

[53] The relative size of factors is partially an effect of the number of variables assigned to a factor. It is further enough if a worker *sometimes* performs one activity that is included in a cluster to be considered involved in it.

Levels of Management and Managerial Tasks[54]

Given that the majority of firms that produce interactive media solutions are small, levels of management are generally quite few. According to the firm level surveys, roughly 40 per cent of firms just had one level of management in 2001 and about 50 per cent had two levels the same year. Equivalent figures for 2003 are 65 and 16 per cent, respectively, and 76 per cent of firms active both years had either one or two levels of management in both 2001 and 2003, including shifts between them. As expected based on theories of bureaucracy, the number of management levels increases with the number of employees and offices that a firm has, although the correlation is moderate and no firm has more than four levels of management. The majority of firms thus have a flat structure, i.e. few levels of management, which is largely due to their small size.

The proportion of workers with managerial or supervisory tasks is large, 52 per cent, and those that have managerial tasks are on average supervising 5.3 persons (three in median). Managerial positions are not confined to owners, even though the majority of firms are rather small, 77 per cent of owners are managers, 39 per cent of managers are owners and 45 per cent of permanent employees have managerial tasks. Firms producing interactive media solutions in fact have such high proportions of managers that it hardly adds up, i.e. there are not that many employees left to manage when the number of managers is related to the number of employees and the levels of management within firms. Accordingly, 21 per cent of managers state that they are not manager over any other workers. This implies that the meaning of managerial tasks differs from the traditional view of being manager over other employees (Sandberg et al 2005). Based on discussions with people active within interactive media production and other IT related areas, my interpretation is that some workers do not always separate between having managerial tasks and being *responsible* for a certain area, like the functioning or development of a technical system.

The firms that produce interactive media solutions are thus decentralised in the meaning that a large proportion of workers have managerial tasks. But those that are not managers usually have limited influence over the decision-making process concerning other areas than their daily planning and own job. The individual level data shows that 92 per cent of workers that are not owners or partners state that they can decide how to carry out their job and 66 per cent can decide their work pace at least mostly (equivalent figures for owners are 99 and 81 per cent, respectively). 95 per cent of those that have managerial positions can decide how

[54] The analyses in this section are only made on firms that have at least two workers, making a division of labour possible.

to carry out their job and 73 per cent can decide their work pace, as compared to 92 and 66 per cent of those that do not have managerial tasks.

Apart from the above, individual workers mainly seem to have responsibilities for maintaining their own equipment and introducing new employees according to firm level data from 2001 (table 6.3), a pattern of decision-making that further seems rather consistent over time given the reported firm level data from 2003.[55] Project managers decide over daily and weekly planning and quality control, and higher managers follow up results, plan competence development and handle recruitment and other aspects of personnel administration. Given that project and higher management is handled by the same person in many firms, the two activities are often in fact just one position. At the same time, it is a position held by a large proportion of workers.

Decision-making is more centralised in larger firms, meaning that it is less common that individual workers and project groups are involved, and more common that managers handle it. It is further more common that project and higher management is handled by separate persons in larger firms. To some extent, project and higher managers increase their involvement at each others expense: the proportional increase is higher for project managers than for higher managers in the areas where the former already dominates, and vice versa.

Table 6.3. Proportion of firms where different actors commonly participate in decision-making in alternative areas. More than one answer possible, most common in bold. Source: firm level survey 2001.

Area	Individual worker	Project group	Project manager	Higher manager	Someone else
Daily planning	41	23	**48**	22	4
Weekly planning	18	26	**55**	30	4
Quality control	18	23	**55**	29	8
Results follow-up	7	11	52	**57**	3
Planning of competence development	23	13	27	**55**	4
Introduction of new employees	**38**	21	**38**	33	7
HRM, e.g. recruitment	7	8	20	**79**	7
Personnel administration	11	5	17	**56**	24
Maintenance of technical equipment	**59**	11	11	15	28

n=230-241

[55] The questions differ somewhat in design for 2001 and 2003, which also applies to table 6.4. The years are thus not fully comparable, but answers are rather consistent over time.

Table 6.4. Proportion of firms where different groups of actors commonly have contact with alternative outside actors. More than one answer possible, most common in bold. Source: firm level survey 2001.

Type of actor	Individual worker	Project group	Project manager	Higher manager	Someone else/ varies
Subcontractors	48	13	**63**	31	7
Customers	46	20	**72**	41	7
Other companies	40	20	**55**	54	9
Universities	20	8	34	**59**	9
Government actors	14	4	29	**67**	7

n=234-239

Besides their dominance over internal decisions, project and higher managers most frequently have contact with external actors (table 6.4). Project managers keep contact with subcontractors, customers and other companies whereas higher managers most often have contact with universities and other government actors (if that occurs). This does not mean that interactive media workers that are not either project or higher managers lack any external contacts. There are for instance a larger proportion of firms where individual workers usually have had more contact with subcontractors and customers than higher managers have had.

Taken together, firms that produce interactive media solutions are generally characterised by a flat structure with few managerial levels, which is expected given their on average small size. Large proportions of workers are working owners and/or have a managerial position, meaning that there is a diffusion of ownership and control. But the majority of influence over internal decisions and external contacts rests with project managers and higher managers, who most of the time also are owners of the firms. Those that are excluded from managerial positions mainly have control over some issues that only concern their own work situation, i.e. daily planning, work pace and how to perform their working tasks. In many firms, employees without managerial positions further have responsibilities for the introduction of new employees and the maintenance of technical equipment, like their computers.

Considering this, firms producing interactive media solutions for external customers can be said to be partially decentralised, or more often decentralised in some areas than others. The main principle for decentralisation within these firms is to make large proportions managers, rather than increase all workers influence. It should of course be recognised that the findings reported here are based on workers perception of their possibilities to participate in and influence decisions as reported in questionnaires. Case studies of the labour and production process within firms producing interactive media solutions might reveal other patterns that complicate the picture given here.

Firms' Involvement in Interactive Media

An analysis of the web sites and annual reports from firms producing interactive media, as well as several statements in the media, show that a considerable proportion of firms claim to be full service bureaux, meaning that they can and usually perform all of the activities that are considered to be part of producing interactive media solutions. Presentations to outsiders as full service bureaux can be understood as an attempt to construct interactive media as a practice of integrated activities that should be kept together and handled by a single firm. If successful, this gives firms more control and lowers risks that customers will choose other suppliers for certain parts or handle them internally.

The presentations of the services delivered by firms however show that it is generally only a proportion of the inherent activities that they consider to be part of interactive media production, and the inclusion and exclusion of activities is quite consistent. Firms that are dominated by a certain logic perform all activities that are in line with that logic and therefore claim to do everything. It might be that some of them also perform other activities, or outsource them to other firms or let customers handle them. In any case, this shows that what firms view as core activities within interactive media production is influenced by the logics that dominate them and that firms engaged in certain activities tend to view them as the most central ones. Following this, it is possible to understand the presentations of activities that firms perform as directed also to others within the field and as attempts to influence the definition of interactive media as practice, and thereby to gain a more central position within the social field (Augustsson 2004).

Still, it is just a proportion of firms that actually are full service bureaux and even fewer that are *devoted* full service bureaux, meaning that they are engaged in all activities part of interactive media production but nothing besides that and do not outsource production to other firms. Twelve per cent of firms are engaged in all 15 activities part of interactive media production, the average number of activities is eleven. 74 per cent of firms performed activities besides interactive media production and 65 per cent outsourced production in 2001.

According to the 2001 firm level survey, the most common activities that interactive media producing firms are engaged in are graphic design, programming and illustration/graphics (table 6.5). The least common activities are providing actors, sound/music and video/film. The most common activities can be understood as constituting the core activities of interactive media production or those that most actors agree or part of the practice, and the less common activities are more peripheral and closer to being defined as not 'really' part of interactive media production. The proportion of firms that *sometimes* deliver a certain activity is in some cases just as high or even higher than those that usually deliver it. Thus, firms are characterised by flexibility, i.e. they can and sometimes are engaged in other areas than they currently might be.

Table 6.5. Firms' performance of activities included in interactive media production. Source: 2001 firm level survey.[56]

Activities	Yes, usually deliver	Sometimes, can deliver	No, do not deliver	Total (n)
Concept, storyboard	41	28	31	100 (335)
Graphics	86	11	3	100 (342)
Programming (HTML, etc)	83	10	7	100 (342)
Systems development, data-bases, programming	63	17	20	100 (336)
Content research	37	31	32	100 (335)
Copy	32	27	41	100 (333)
Sound/music production	20	26	54	100 (332)
Video/film production	21	24	55	100 (329)
Photo	36	33	31	100 (338)
Animations	47	32	21	100 (337)
Illustrations, graphics	63	23	14	100 (335)
Providing actors	12	18	70	100 (331)
Educating customers	39	41	20	100 (331)
Project management	53	28	19	100 (336)
Strategic advice	42	33	25	100 (336)

All firms are involved in more than one activity inherent in interactive media and most firms are engaged in the majority of them, but all combinations of activities are not as common, there is not a complete variation in what firms do at each point in time. A firm that performs one activity has a larger chance of also performing certain other activities, while being less likely to perform certain others. The performances of activities are also somewhat coherent over time, meaning that firms engaged in certain activities in 2001 are more likely to be engaged in the same activities 2003.[57] As for workers, one can identify three clusters of activities constituting positions that firms might hold. One group of firms often perform aesthetic activities, another handles overall concept and management and a third handles technological tasks. Although it is possible to categorise firms into different groups depending on the cluster of activities they perform, most firms can and do engage in other activities within interactive media production. Practically no firms are confined to one cluster and the vast majority is at least sometimes involved in all of the clusters. In order to give an overview and show the relations between different positions, all firm level clusters of activities are presented in table 6.8 below.

[56] More detailed tables like this one, also concerning outsourcing, subcontracting and activities handled by customers are found in Sandberg and Augustsson (2002).

[57] Due to different questions in 1997 and the other years, it is less possible to determine whether the same holds true for the period 1997 to 2001, which would be more interesting.

The clusters of activities that firms perform are correlated to the proportional distribution of employees in respective interactive media related areas. In other words, firms where a large proportion of the employees are engaged in activities identified as technical are more likely to be involved in the technical cluster of activities than in the economic or aesthetic clusters. This is in a sense obvious: a car manufacturer usually has more car workers than a hospital, but few nurses and doctors. This however concerns correlations between different levels within a single practice and show that variations in involvement are consistent on firm and worker level, which need not be the case due to alternative strategies to handle flexibility (cf. Augustsson and Sandberg 2003a and below).

Logics and Clusters of Activities

The three groups of firms active in alternative activities correspond to the three logics that ideally structure the social field: aesthetics, economy and technology. Although nearly all firms are involved in all three clusters of activities, the level of involvement in each differs. By measuring the relative extent to which firms are involved in clusters of activities based on firm level data from 2001 and comparing this to how they present themselves on their web sites, a certain coherence can be detected. The method is rather inexact and crude, but it seems as if firms more deeply involved in one cluster of activities to a larger extent present themselves in accordance with the logic corresponding to that cluster. This means that the ideal and material horizontal structuring of social fields are related at the firm level: firms that to a larger extent perform technical tasks involved in interactive media production, like programming and systems development, are likely to present themselves as technically oriented firms and interactive media solutions as a mainly technical artefact and do so following distinct visual patterns in line with the technical logic (Augustsson 2004). Following this, it seems as if the ideas concerning compatible activities within interactive media production also are influenced by logics and e.g. identity (Kogut and Zander 1996).

Supportive Activities

Most firms producing interactive media solutions are also involved in supportive activities for interactive media, the most common of which are publishing on the Internet or running a portal, and providing server space. The least common activities are related to either publishing offline interactive media or using interactive media solutions for e-business and learning. Less than ten per cent of all firms that produce interactive media solutions for external customers are engaged in any of the latter areas according to firm level data, which shows that overlaps between firms *producing* solutions for the Internet and those using *such* solutions as a means of conducting business are limited and that they make up two distinct groups of firms in terms of practice and identity, but perhaps not in terms of

outside recognition since e-business and producers of interactive media solutions have repeatedly been confused in media reports. The term 'dotcom death' was for instance also used with reference to interactive media producers.

The supportive activities represent areas that *could* have been viewed as part of the social field for interactive media production, areas that many *thought* would become part of the social field, and areas that the media at times *presented* as part of the social field. There are several alternative activities that very well might become part of a social field, but it is uncertain which activities eventually will be. Whether or not a particular activity will be included is, as previously argued, an aspect of formation and depend on the struggles over field framing. In this respect, the supportive activities are some of those that lost out. The activities within interactive media production that firms are engaged in are further related to the supportive activities that they perform, as well as the type of practices besides interactive media production they are involved in. Given this and how firms present themselves, alternative types of firms have interests in framing the alternative activities inherent in the field differently and to include particular other activities in order to be more central actors.

Activities Besides Interactive Media

In addition to the activities seen as part of interactive media production, firms might perform a range of other activities, like the work surrounding the Y2K problem. Some of the activities can be done both as part of an interactive media solution, or separate from it. As an example, every interactive media solution has a graphic interface, and thereby a graphic that is designed. But firms can also design the graphics for things that are not part of an interactive media solution, like a magazine.

The firm level surveys show that 56 per cent of firms were active in areas other than interactive media production in 1997. By 2001, this figure rose to 74 per cent. The increase is in part due the different ways the question was asked. While the earlier survey asked for other *substantial* activities, the 2001 survey only asked for other activities *excluding interactive media*. Although it is impossible to determine exactly how much a respondent interprets that an activity has to be performed in order to be substantial, it is likely that they will be more reluctant to answer yes compared to when they are only asked if they perform it or not. Nevertheless, this shows that less than half of the firms were not devoted interactive media producers, as they also were involved in other areas.

The activities that firms perform besides interactive media production can be grouped together into clusters of activities. One group of firms that also other activities more often work as general IT and management consultants, a second group perform activities related to advertising and design, and a third smaller group handle still and moving pictures. Firms engaged in one cluster of activities *within* interactive media production are more likely to be engaged in similar

clusters of activities *besides* interactive media production. The companies within the social field for interactive media production thus have alternative outward directions, meaning that the likelihood of being engaged in a certain other social field differs for firms depending on the clusters of activities they perform within the social field for interactive media production. This does not mean that the position within interactive media production *causes* engagement in other social fields. For firms that have been engaged in other areas before starting to produce interactive media, it signifies the direction of entrance into the social field and probably the views they have of interactive media production and solutions.

There is thus a pattern in the firms' involvement in interactive media production and other social fields. Firms that produce interactive media are not engaged in just any other areas, but practices that are related to what they do within interactive media. It further indicates that it was mainly firms from nearby social fields that entered interactive media production (Helfat and Lieberman 2002).

Organisation Between Firms

The above shows the internal organisation of firms and their engagement in interactive media production. The organisation of production is however not confined internally in firms and attempts to understand the structuring of interactive media production by only looking at the division of labour within firms gives an incomplete picture. There is a division of labour *between* firms involved in the practice of producing interactive media solutions that also spans beyond the social field, meaning that organisation has to be understood in broader terms than single organisations and even fields (Augustsson 2001; 2002a; 2002b).

Firm level data from 2001 shows that 65 per cent of firms outsourced parts of production to other firms during the previous year (roughly corresponding to from the yearly/mid 2000 to early/mid 2001). 53 per cent of the firms worked as subcontractors to other firms producing interactive media solutions during the same period, and 73 per cent of firms reported that customers took an active part in the production of interactive media solutions. 42 per cent of firms both outsourced interactive media production and worked as subcontractors for other firms (table 6.6).

Table 6.6. Interactive media producing firms role as subcontractors and outsourcers of production. Source: 2001 firm level survey.

		Work as subcontractor		
		Yes	No	
Outsource production	Yes	42	23	65
	No	12	23	35
n: 331		54	46	100

A majority of firms thus collaborate with other firms and those that do collaborate often both outsource and work as subcontractors for other firms. The two forms of collaboration are further related, meaning that firms that outsource production are more likely to work as subcontractors to other firms, and vice versa. To work as a subcontractor or outsource production to other firms producing interactive media is not dependent on the size of firms, meaning that large firms are just as likely as small to hold either of the two positions. This means that the organisation of interactive media production is not characterised by a hierarchical structure in the sense that one type of larger firms function as central or dominant producers that regularly outsource parts of production to a number of smaller subcontractors. Instead, a majority of firms of all sizes use a strategy of collaborating with other firms, whereas a smaller proportion of firms handle all production themselves.

Calculations of the extent of interactive media production outsourced and subcontracted do not add up, the total amount outsourced is twice as high as that gained from subcontracting. This is because Swedish firms producing interactive media solutions do not make up a closed social system consisting of subcontractors and outsourcing firms. Some of the activities are outsourced to firms that are not recognised as part of the practice and that do not consider themselves to be interactive media producers. They might be photographers, graphics companies, music producers, etc. The same is also true for firms' role as subcontractor of interactive media activities. The actual activity might be considered to be part of interactive media, but the firm they work for need not be a firm recognised as an interactive media producer. Thus, the division of labour in the production of interactive media production also crosses the borders of the social field, showing that some social fields and practices are related, overlap and are economically interdependent.

Distribution and Integration of Activities

As argued in the theoretical chapter and following the empirical findings presented so far, it should be clear that a description of the organisation of interactive media production cannot be restricted to the working tasks handled by single workers and firms. The division of labour between firms within and outside the social field for interactive media production, including customers, creates a number of alternative positions that firms might occupy at different points in time and simultaneously if they are engaged in several projects. There is in other words both a distribution and an integration of activities inherent in interactive media production between firms. I first present the distribution of activities and then the integration of clusters of activities before discussing the positions in more detail.

Table 6.7. Percentage of firms within each position that handle different interactive media activities. Source: 2001 firm level survey.

Activities	Perform oneself	Outsource the activities	Perform as subcontractor	Customers perform
Concept, storyboard	69	26	24	51
Graphics	97	30	45	22
Programming (HTML, etc)	93	36	42	12
Systems development, data-bases, programming	80	43	34	14
Content research	68	23	19	56
Copy	59	39	18	49
Sound/music production	46	46	12	16
Video/film production	45	44	13	18
Photo	69	49	22	44
Animations	79	38	31	15
Illustrations, graphics	86	34	35	27
Providing actors	30	40	6	21
Educating customers	80	24	20	31
Project management	81	-	-	31
Strategic advice	75	-	-	28

Table 6.7 shows the proportion of firms producing interactive media solutions that usually or always handle different activities themselves, the proportion of firms that outsource them, those that handle the activities as subcontractors to other interactive media firms, and the proportion of firms stating that customers take part in different activities. As can be seen from the table, the distribution of the performance of activities between firms in alternative positions (i.e. each row) exceeds one hundred per cent. This is because it is quite common that the same firm occupies several positions and sometimes performs activities and sometimes leaves them to others, i.e. a certain fluidity in the division and integration of labour. The table further shows that the activities a firm performs are related to its position in the process of production and vice versa, if a firm is engaged in certain activities, it is more likely that it will have a certain position.

As in the case of workers, it is possible to detect three clusters of activities for each position. To give an overview, all firm level clusters of activities are presented in table 6.8. As can be seen by comparing the distribution of activities into clusters here for firms and previously for workers, they are not completely coherent. Graphics and web design, for instance, shift between being grouped with other aesthetic and technical activities respectively, which is because it is an activity with inherent aesthetic *and* technical aspects. The overall patterns are however stable enough to justify talking of a coherence in the clusters of activities making up positions that workers and firms hold in different situations when producing interactive media solutions.

Table 6.8. Distribution of clusters of activities among firms involved in interactive media production. Source: 2001 firm level survey and 2002 in-house production survey.

Firms' performance of clusters of activities included in interactive media production.		
Aesthetics	Overall concept and management	Technology
Sound/music production	Concept development	Graphics
Video/film production	Content research	Programming
Photo	Copy	Systems development
Animations	Educating customers	
Illustrations	Project management	
Providing actors	Strategic advice	
Clusters of activities firms perform besides interactive media production.		
Aesthetics/advertising	Management and IT	Still and moving pictures
Advertising	Software development	Video/Film/Television
Publishing in print	IT consulting	Audio/Music production
Graphics production	Management consulting	
Design	Education	
Clusters of interactive media activities that firms outsource.		
Analogue aesthetics	Technology and digital aesthetics	Overall concept
Sound/music production	Graphic design	Concept, storyboard
Video/film production	Programming	Content research
Photo	Systems development	Copy
Providing actors	Animations	
Educating customers	Illustrations, graphics	

Table 6.8. continued on next page

Outsourcing

65 per cent of firms producing interactive media solutions outsource parts of production to other firms according to the 2001 firm level survey. Those firms that outsourced production estimate that it corresponded to 18 per cent of their turnover the previous year. Roughly one fifth of the revenues firms receives are thus directly transferred to other firms. According to the survey findings from 2001, the average proportion of production outsourced to firms outside Sweden was just five per cent, but there are indications that this figure has increased since then. The activities that the largest proportions of firms usually or sometimes outsource are photo, sound and music and video and film production and the least common are content research, concept and storyboard and educating customers.

When firms outsource, digital aesthetics and technology are combined, meaning that if firms outsource technical activities, they are likely to outsource the

Table 6.8. Continued from previous page.

Clusters of activities that firms perform as subcontractor.		
Analogue aesthetics	Overall concept	Technology
Sound/music production	Concept, storyboard	Graphic design
Video/film production	Content research	Programming
Photo	Copy	Systems development
Animations	Illustrations, graphics	Educating customers
Actors		
Clusters of activities that customers in general perform		
Aesthetics	Technology and planning	Overall concept
Sound/music production	Graphic design	Concept, storyboard
Video/film production	Programming	Content research
Photo	Systems development	Copy
Animations	Educating customers	
Illustrations, graphics	Project management	
Providing actors	Strategic advice	
Clusters of activities that larger Swedish firms and government agencies perfom		
Analogue aesthetics and planning	Technology and digital aesthetics	Overall concept
Sound/music production	Programming	Concept, storyboard
Video/film production	Systems development	Graphic design
Photo	Animations	Content research
Actors	Illustrations, graphics	Copy
Educating customers		
Project management		
Strategic advice		

aesthetic activities that require deeper knowledge of digital solutions. Technology and aesthetics are further the largest cluster of activities outsourced, 92 per cent of the firms that outsourced production during the last year outsourced activities inherent in this cluster. Of more or less equal size is analogue aesthetics, with 90 per cent. Fewer firms outsource overall concept, which implies that these are activities viewed as central that firms are unwilling to hand over to other interactive media firms.

The clusters of activities outsourced need not concern the same solution and the activities can be outsourced to different firms. A firm might in the production of one solution outsource more technical tasks involved in the cluster of technology and digital aesthetics, but in another choose to outsource aesthetic ones within the same cluster due to e.g. lack of time, meaning that the two would make

up one cluster of activities. A firm might further decide to outsource both inherent parts of the cluster, but do so to different firms.

There is a detectable pattern connecting the clusters of activities produced and those outsourced, in that the more a firm is engaged in a cluster of activities, the less likely they are to outsource the same cluster to other firms. Given that there is a correspondence between the material and ideal aspects of structures, it follows that firms dominated by one logic tend to outsource production to firms dominated by other logics and hence collaborate with firms that are likely to have different views of interactive media as practice and solutions, which might be a source of conflicts over what constitutes a good solution.

Work as subcontractor

In 2001, 53 per cent of firms produced parts of interactive media solutions as subcontractors to other firms, i.e. not directly for the end customer, and they gained on average 25 per cent of their annual turnover from this. The activities inherent in interactive media that the largest proportion of firms performs as subcontractor are graphics and web design, and systems development. It is a much smaller proportion of firms that produce sound and music, video and film, and provide actors for these productions. This again points to the limited size of these activities within the practice and social field.

As for other positions, the activities performed as subcontractor are related to each other into three clusters: analogue aesthetics, overall concept and technology. Of the firms that functioned as subcontractors in 2001, 96 per cent performed activities within the technological cluster of activities, 78 per cent were delivered parts of overall concept and 67 per cent were involved in analogue aesthetics. The reason why such a large proportion of firms handled overall concept as subcontractor despite firms usually being unwilling to outsource this cluster of activities to other interactive media firms is that they did it as part of broader commissions, quite often involving more or less all activities, i.e. the production of a complete solution as subcontractor to another interactive media firm.

The clusters of activities that firms produce as subcontractor to other interactive media firms are positively related to the clusters of activities within interactive media that they perform overall, which is logical: what you do as subcontractor is roughly what you do, although there are some variations. The firms that outsource production to you might want to keep certain activities for themselves that you commonly perform due to e.g. keeping control, relative gains or just because they are more fun. It might of course also be that firms are unwilling to accept certain activities as subcontractors because they are tedious, and only carry them out as part of broader assignments. Thus, although a firm is usually active within a range of activities, they commonly only perform some of these activities as subcontractor to other firms.

Customer Work and In-house Production

Customer involvement points to an alternative form of organising the production of interactive media solutions: those that use interactive media solutions can make their own internally. In the 2001 firm level survey, 73 per cent of firms that produced interactive media solutions state that customer organisations have taken an active part in production, and among these they have done so in 42 per cent of cases, equivalent to 31 per cent of all cases. Larger Swedish firms and government agencies themselves claim to subcontract production in 32 per cent of cases according to the 2002 survey of in-house production. There are methodological limitations in comparing the figure from on the one hand the number of cases where customer organisations are involved in the actual production based on the estimates of interactive media firms in the 2001 survey, and on the other hand the large Swedish organisations' own claim that they outsource part of interactive media production to interactive media producing firms in the 2002 survey. Still, the estimates are fairly in line with each other making it possible to estimate that customers of firms producing interactive media solutions took an active part in production in roughly a third of cases.

Firms that produce interactive media solutions for external customers state in the 2001 survey that the most common activities that customers handle themselves are content research, concept and storyboard, and copy. According to responses from the 2002 survey of in-house production, large Swedish firms and government agencies differ somewhat in this respect in that they quite commonly also handle graphic design and basic programming themselves. This is probably because they generally have internal IT and information departments and these two organisational units are most commonly involved in the in-house production, subcontracting and procurement of interactive media solutions (Augustsson 2005; Augustsson and Sandberg 2004a).

The activities that larger Swedish firms and government agencies are least involved in according to the 2002 survey are providing actors, video/film and sound/music, mainly because they are often not relevant for the solution being developed. Still, when it is relevant more than half of organisations subcontract it. Excluding these activities, the least common tasks are systems development, education of customers and strategic consulting. The pattern is here quite consistent for customers in general according to interactive media producers' responses to the 2001 survey: they seldom perform programming, systems development, sound and music, video and film and providing actors.

Although there are some variations between customers in general, who e.g. might be of any size, and larger Swedish firms and government agencies, a clustering of the activities they perform shows some coherency. The clusters of activities for customers in general are made up of aesthetics, technology and planning, and overall concept. The clusters of activities for larger Swedish firms

and government agencies consist of analogue aesthetics and planning, technology and digital aesthetics and overall concept. The main difference between customers in general and larger Swedish organisations is that planning activities among customers in general are performed together with technical tasks, whereas they among larger organisations end up with analogue aesthetics.

There is a variation regarding what each organisation chooses to handle internally and what they subcontract to external firms. The proportion of organisations that 'sometimes' performs an activity is in many cases just as high, or even higher, than those that usually perform it internally or subcontract it, respectively. It is thus for organisations in general not just a question of whether to get involved in interactive media production or not, but also what to do in specific productions, and customers generally have a broader knowledge of interactive media than they take advantage of in every single project: they can do it, but choose not to. According to respondents in organisations with in-house interactive media operations, the most important reasons to keep interactive media within the organisation is the simplicity of updating, beliefs that the functions require specific knowledge about the organisation, that it is cheaper to produce internally and to secure deliverance. The most important reasons to hand over production to other firms are the ability to focus on the core competences, to gain technical and design competence and to increase service towards end users.

Organisations that produce everything internally point to the need for control over the development process and seem to have less need to acquire external expert knowledge. Organisations that subcontract parts of production and those that purchase everything emphasises the importance of focussing on core competencies, apparently not including interactive media production. They also stress the need to acquire expertise within technology and design, partially in order to improve the security and smooth operations of their solutions. These organisations do not have sufficient knowledge to produce all or parts of interactive media solutions, they do not view such knowledge as their core competence, and hence turn to external providers to obtain solutions that work properly. These organisations seem more willing to accept the cost for this, both economically and in terms of security. In essence, this means that organisations purchase what they lack the knowledge or willingness to produce themselves. This introduces questions about how practices and knowledge involved in interactive media production become established as a specific kind of expert knowledge, that can either be defined as a core competence implying its internal development or a peripheral competence implying its purchase (Augustsson 2005).

Organisations that handle their own interactive media operations further differ in how they organise production according to the 2002 survey of in-house production. In 38 per cent of organisations, it is organised as projects, 15 per cent have created separate units for interactive media production, 13 per cent included it in other units and in 34 per cent of organisations it is organised as a network

between different units. It is thus only in a minority of cases that organisations handling interactive media internally add to the structural complexity by creating a new department. In most cases, it is included in existing units or handled in project form. It is thus not only firms producing interactive media solutions that belong to the social field that might differ in the way they have organised production, i.e. in terms of division of labour within and between firms. There are also alternative organisational choices of the practice *outside* the social field, at least in terms of the internal structure and division of labour of organisations with in-house operations. There might also be a division of labour between different firms that are outside the field in question, e.g. several government agencies can collaborate in the production of interactive media solutions, but this cannot be detected using the available data.

Flexibility, Stability and Variation in Organisation

The division and integration of activities inherent in interactive media production is fluent, there is variation at all levels where workers and firms sometimes do things and sometimes not. But there are also patterns in what is done and what is left to others. These struggles between flexibility and stability, between focus on core competence and variation in production, are central aspects of organising and organisations.

It is always uncertain how a practice and social field will form and change, and whether there will be demand for activities. Not all activities are preferable to combine and not all forms of organisation will prove fruitful. All firms are dependent on finding ways to handle variations and flexibility, at the same time as they have to develop structures and routines that create stability and hold the organisation together. This especially concerns firms involved in practices that are project based and characterised by continuous alterations rather than routine tasks (cf. Woodward 1965), as is the case for firms producing interactive media solutions. Firms that become engaged in too many areas might find it hard to develop in-depth knowledge whereas firms that focus on a limited set of core competencies might find that they become too rigid and their services unwanted (cf. Holmqvist 2000). Actors cannot know the activities that are possible and preferable to combine within the limits of a single firm in advance. Forms to handle flexibility and the core competencies of firms are not given, they have to be found and might have to change over time, which is part of formation (Piore and Sabel 1984; Prahalad and Hamel 1990; Wenger 1998).

As shown previously, Swedish firms producing interactive media solutions in general have a high proportion of permanent employees and a relatively low labour turnover, a form of stability that differs from the general image of the new economy. The reported shifts in firms' and workers' involvement in interactive media activities together with the low labour turnover of interactive media

workers and limited use of short-term employment and consultants show that flexibility in interactive media production in Sweden is mainly handled at the firm and worker level using variations in the division and integration of labour. Workers in firms that produce interactive media solutions do different things dependent on the solutions the firm is currently producing. Between projects, the firms further differ in what they do themselves and what they outsource to others and have customers do. A considerable proportion of firms also alter their level of involvement in interactive media production as compared to other practices.

In other words, firms choose to cope with changes by altering what their workers and the firms as a whole perform, rather than to change those working in the firms. To this should be added that quite a large proportion of interactive media firms have no employees at all, indicating that the labour contract is sometimes substituted for market contracts as a way to create numerical flexibility of firms (cf. Hart 1989; Williamson 1985). The project organised production of interactive media itself sets limits and favours some solutions, but they need to be understood in light of a higher level of ideal structures that favour specific outcomes.

The Swedish situation differs from the US, where firms producing interactive media solutions at least for a period largely functioned as more or less empty containers preliminary filled with workers having the necessary competence to handle specific tasks (Batt et al. 2001; Indergaard 2004, pp. 92-3; Sandberg and Augustsson 2004; Scott 1995a, pp. 16-17). This largely seems to be due to differences in labour market traditions and regulations in Sweden and the US that create lower mandatory and voluntary labour mobility in the former country (Fligstein 2001; Swenson 2002; von Otter 2003; 2004).

Higher level material and ideal structures like labour market and tax regulations thus contribute to different strategies for firms to handle demands for flexibility (cf. Hall and Soskice 2001). Some choices are hardly possible, or at least more costly (monetary, legally, due to legitimacy, etc.) in Sweden as compared to the US, and vice versa. Firms, as well as workers, in both Sweden and the US of course have some possibilities of fighting the structures using e.g. the strategies pointed out in chapter three, which was done in relation to handling redundancies after the crash (see next chapter). But firms cannot deny that the structures are there and the differences and similarities in choices of strategy between firms in Sweden and the US cannot be understood without paying attention to the material and ideal structures that the respective firms confront.

Apart from a variation and division of labour between firms, inter-firm collaborations create relations between *known* actors involved in the practice (Sayer 1995). As a means of securing some stability and limit the costs of finding collaborators, most firms turn to a limited number of other firms when they outsource production and they generally receive subcontracting assignments from a small number of other firms. In 2001, firms that outsourced parts of their production to other firms on average repeatedly outsourced production to 3.4 firms and

those firms that worked as subcontractors repeatedly received such assignments from 4.4 other interactive media firms. Roughly 70 per cent of larger Swedish firms and government agencies that purchased all or parts of a solution turned to previous suppliers and generally had stable relations with less than five firms.

The use of small numbers of firms means that all collaborating firms are identifiable and known, that there are possibilities for control and that collaborating firms in different positions might become and feel dependent on each other (Alter and Hage 1993; White 1992a; 1992b). Firms producing interactive media solutions for external customers were asked in the 2001 firm level survey whether they believe that they and the firm they outsource production to or function as subcontractor to would experience problems if collaborations seized. The results show that most firms view collaborations as fairly egalitarian, but that they generally feel more dependent when in the position as subcontractor as compared to the position of outsourcing production.

Interestingly, larger Swedish firms and government agencies responding to the 2002 survey of in-house production that either purchased complete solutions or outsourced parts to other firms generally felt that they were more dependent on the interactive media producing firm they collaborated with or purchased a solution from, than the other firm was dependent on them. The firms inside the social field that produce interactive media solutions were able to convince outside customers, even those that produce parts of interactive media solutions themselves, that they have expert knowledge that makes them hard to substitute, even for other firms within the social field (Augustsson 2005).

The Formation and Structure of Production

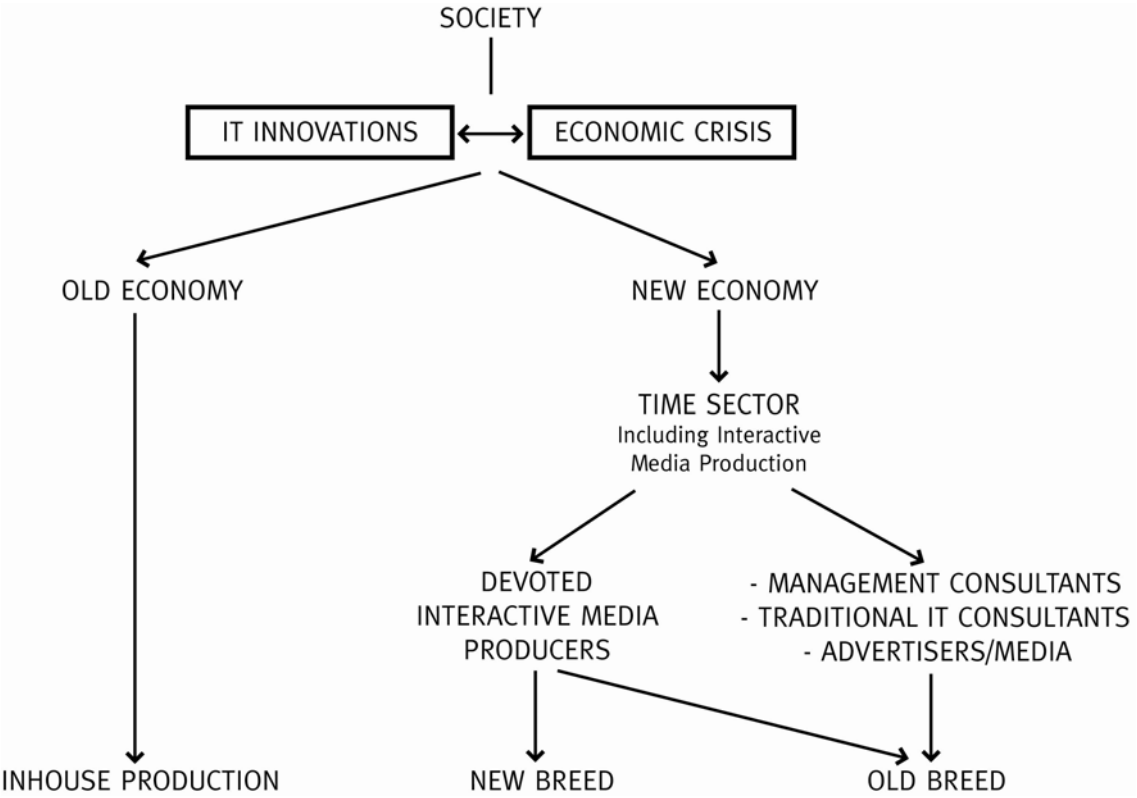
The results presented in this and previous chapters show the labour of division and the division of labour causing a certain structure of production. Based on these findings, it is possible to describe on a more general level, first, the the *formation* of the ideas of a social field for interactive media production as centred around a certain group of firms. In relation to the theoretical model, this first aspect mainly refers to the issues concerning ideal and material structural configurations, the existence of opportunity structures and their realisation as well as uncertainty and aspects of formation. The identification of interactive media producers as symbols of the new economy and struggles over participation and recognition here stand out. Regarding the empirical findings, this mainly refers to what has been said in chapters four and five.

Second, it is possible to describe and visualise the overall structure of production, which in the theoretical model has been conceputalised as the division and integration of labour within and between firms as well as the ideal structuring into logics and status. The empirical material this is based on is largely that which has been previously presented in this chapter.

Creating a New Breed of Firms

Figure 6.2 show how classification and labour of division over time created an image of the new breed of Internet focussed interactive media producers as symbols of the IT revolution and the new economy and those that made up the social field for interactive media production.

Figure 6.2. Process of ideal classification and labour of division making the new breed of interactive media firms symbols of the new economy.



The innovations in IT created an ideal separation of a society in crisis into an old declining and a new promising economy. The new economy became associated with certain practices that were labelled the TIME sector, which among other things included interactive media production. The practice of producing interactive media solutions was then attributed to certain firms that became divided into assumed devoted interactive media firms and firms coming from and/or active within other related social fields. Previously existent devoted interactive media producing firms and those coming from related social fields become labelled as the old breed of firms (and to some extent less part of the new economy), while the newly started firms that were seen as devoted interactive media producers focussing on the Internet become the new breed of firms (icons and sell-outs). Outsiders came to identify the social field largely with the new breed of firms, but insiders recognised that the field also consisted of an old breed of interactive

media producing firms and firms that had moved in from other fields as well as small new breed firms that did not get external recognition (amateurs and indies). The practice of producing interactive media also consisted of existent firms from the old economy that produced their own solutions internally but they were generally not recognised as involved in the practice. The new breed of firms, as well as all those within the social field further differed internally as they were dominated by different logics, such as aesthetics and status.

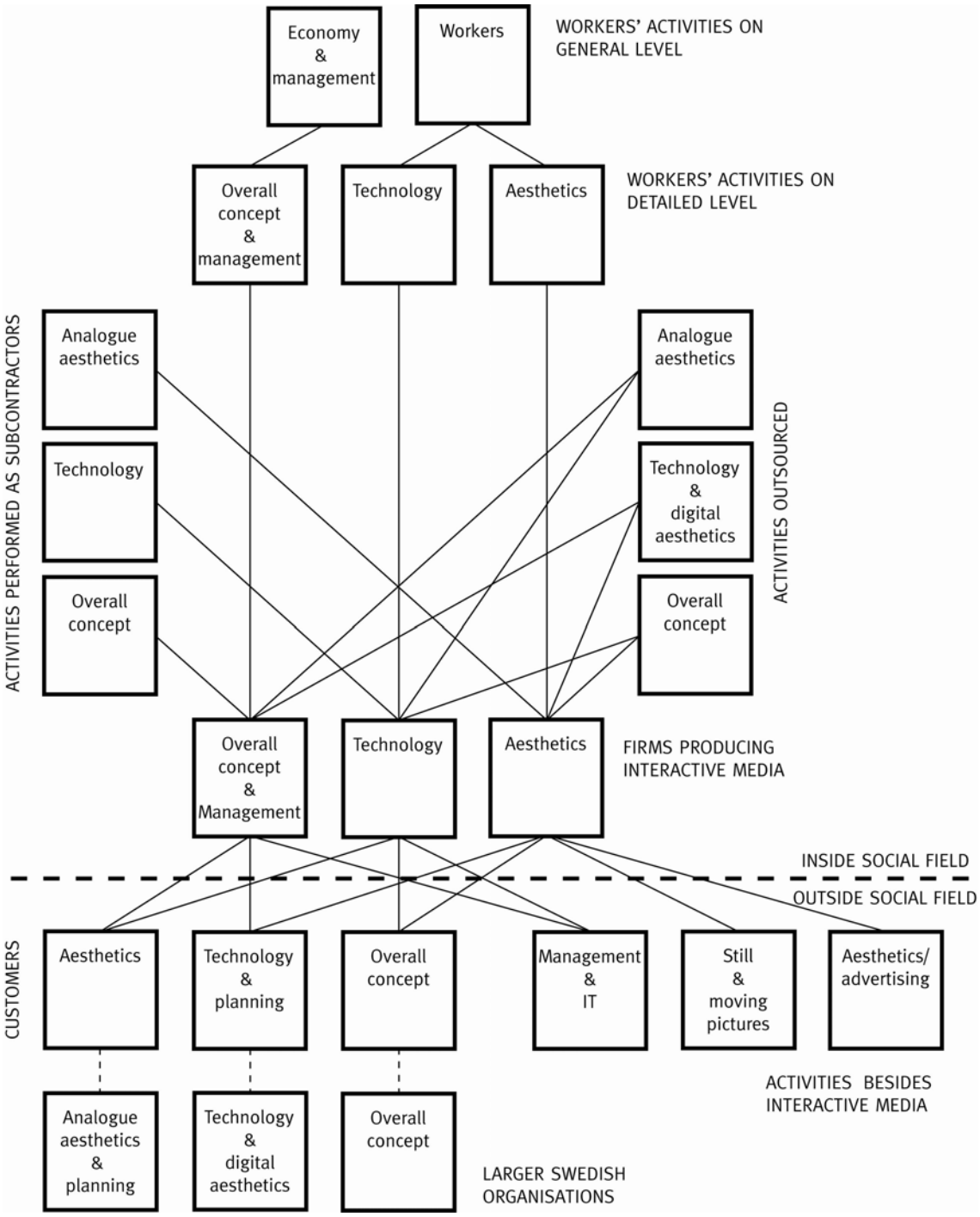
It is within the new breed of interactive media producers, often referred to as Internet consultants, that financialisation was centred. These were the firms that focussed most on growth, received the majority of media attention, became the objects of speculation and were hit the hardest by the coming crash. The new breed of firms and those that grew large and were financialisated do not differ concerning the division and integration of activities they are involved in. But they were successful in presenting themselves as different from other types of firms and thereby managed to tap into a source of resources that already existent firms or those that came too late could not utilise to the same extent or at all.

Division and Integration of Labour Within and Between Firms

The formation of interactive media production was not only a question of ideal structuring and a struggle over recognition, status and ultimately external resources. Firms became involved in the practice of producing interactive media solutions and in doing so contributed to creating an overall structure of positions built upon a division and integration of labour within and between firms. This can be described using the presented results on the production, outsourcing and subcontracting of activities within and besides interactive media production, complemented with the information on customer organisations that produce part of their own interactive media solutions.

The results have shown how activities that workers and firms perform are related and can be grouped into clusters of activities using factor analysis. The clusters of activities that firms and workers can be involved in are further related, which has been shown by correlating clusters of activities with each other. This means that firms engaged in certain clusters of activities generally have a larger proportion of workers involved in similar clusters of activities. They further generally outsource and/or let customers handle activities that are part of clusters they themselves are to a lesser extent involved in, and perform similar activities as subcontractor as they produce altogether. It is also more common that firms engaged in certain activities do similar activities besides interactive media production. As shown in figure 6.3, this makes it possible to develop a model that shows the overall distribution of clusters of activities and positions within the practice of producing interactive media solutions and relate it to the social field (cf. Scott 1995a, p. 20 on the San Fransisco multimedia industry).

Figure 6.3. The structure of positions related to the social field for interactive media production based on division and integration of labour within and between firms.



The figure shows the different positions within and related to the social field inherent in the practice of producing interactive media solutions based on the division and integration of activities and positions and how the positions relate to the social field. The vast majority of firms and workers are involved to at least some extent in more than one cluster of activities, meaning that there is an extensive overlap between clusters within and between firms. It is thus not correct to equate clusters of activities with particular types of actors, since they are not mutually exclusive. The cluster of activities should rather be viewed as tendencies or positions that actors might hold due to their involvement. While they are in these positions, they are more likely to perform some activities while not perform others. It can therefore not be definitely decided that a *particular* firm involved in a cluster of activities usually is related to and works as subcontractor to or outsources production to certain other firms that are dominated by another logic as in e.g. network analysis (cf. Wasserman and Faust 1994). But based on the general patterns, it can be assumed that *in general*, collaborating firms will differ in terms of the activities they perform and hence dominating logics. Based on the previously presented results of analyses and some further calculations and as visualised in the figure (although only partially so in order to reduce complexity), the following can be concluded:

The more a firm producing interactive media solutions is involved in aesthetics, the higher the proportion of workers engaged in aesthetics it generally has. Firms engaged in aesthetics are likely to be engaged in aesthetics and advertising besides interactive media production, if they have such activities. Firms involved in aesthetics are less likely to outsource this cluster of activities, but more likely to let others handle technical and digital aesthetics. These firms are highly likely to also perform aesthetics as subcontractors to other firms, but in a few cases also overall concept. It is unlikely that the customers of interactive media firms in the position dominated by the aesthetic cluster of activities themselves handle those activities, and to some extent technology.

Firms that are engaged in the cluster of activities concerning overall concept and management are quite often also involved in technology and aesthetics, which is expected due to the previously described overlap of clusters of activities. They usually have a lower proportion of workers engaged in technological activeties, but they do not have a higher proportion of workers handling overall concept and management, since the cluster of activities usually is handled by only a few workers. The firms involved in overall concept and management are most likely to handle aesthetics and advertising, as well as IT and management, besides interactive media production, if they have such activities. Involvement in overall concept and management is positively correlated to outsourcing aesthetics. Firms handling overall concept and management might perform technological activities as subcontractors, but are far more likely to handle overall concept and manage-

ment. The customers of these firms usually do not handle overall concept or aesthetics, the latter probably because it is not part of the solution at all.

Firms involved in the cluster of activities of technology are sometimes also involved in overall concept and management, and a bit less often in aesthetics. The involvement in the technology cluster of activities increases the proportion of workers that are involved in technological activities, and to a somewhat smaller extent workers involved in overall concept and management, while it decreases the proportion of workers involved in aesthetics. Firms that are involved in the technology cluster are often involved in the same activities as subcontractors to other firms as well. On the other hand, handling technology is negatively correlated to outsourcing the same activities and usually means that customers do not handle them themselves. Involvement in the technology cluster is positively correlated to involvement in management and IT besides interactive media production, but negatively related to aesthetics and advertising.

Although there are some inconsistencies in the material, I would argue that the overall pattern is rather clear. Firms that perform certain clusters of activities tend to perform similar activities as subcontractors and have a larger proportion of workers engaged in those activities than in other ones. The activities that firms outsource or that customers handle are more likely the opposite of those handled by themselves. Customers often have more of a choice of what activities to handle internally, meaning that correlations are lower, but patterns are consistent.

7. The Crash and After

As is well known by now, the rapid expansion and high valuation of some of the firms that produced interactive media solutions did not last. Following the theory, the actors within the social field was unable to allocate the necessary resources to sustain outsiders' willingness to invest (cf. Hannan and Freeman 1986). The IT boom ended in the same spectacular fashion as it had appeared in 1998, this time with a massive stock market crash in 2000. But just like the formation of interactive media production started before the boom, the crash did not happen over night or cause the end of interactive media production (although perhaps the social field). Despite extensive coverage of the crash, there is no consensus on when it actually occurred, but the US crash, Boo.com's bankruptcy and the IPO of Telia are sometimes used as symbolic markers (see below and Ekström and Lindqvist 2001; Elmbrant 2005; Fagerfjäll 2003; Pettersson and Leigard 2002). One reason for the lack of consensus is that the crash was stretched out in time. Further, although interactive media producers were at the centre of the IT crash, it affected most companies related to IT and media.

Many available accounts of new economy and Internet related areas in Sweden and abroad treat it as the story of a bubble that started sometime between 1995 and 1998 and ended with a stock market crash in 2000 (Eckerstein et al 2002; Elmbrant 2005; Perkins and Perkins 2001). But if focus is placed on the formation and organisation of the practice and social field for interactive media production, it seems more correct to view both the bubble and the crash as important parts of the formation having effects on further developments of e.g. organisation, and the possible abolishment of the social field.

Following the above, the purpose of this chapter is to describe the crash its effects. The chapter starts with a description of the events leading up to what was to be the final stock market crash in late 2000, focussing on contributing factors and signs that the crash was coming. The subsequent section concerns the events that triggered the stock market crash and the crash itself. This is followed by a discussion of a related process that had negative effects for the social field, the weakened demands for interactive media solutions. The chapter then turns to a description of the effects the crash and weakened demands had for interactive media producers. The final section concerns the discussions that followed the crash. The description is structured in accordance with central aspects of the theoretical model, in this case mainly the needs for resources.[58]

[58] Given the focus of this chapter, there is quite a lot of rather detailed financial information taken from media sources and annual reports. I believe this to be necessary, especially since that there is limited survey data to back up the argumentation.

Signs and Causes of the Crash

The Swedish stock market crash for firms producing interactive media solutions did not come out of the blue. There were several signs and warnings that the growth in valuation would not last forever. The US stock market suffered a crash in the spring of 2000 that wiped out a large proportion of the listed dotcoms and interactive media producers. Many Swedish dotcoms were experiencing problems and several of them had already gone bankrupt. Ericsson was experiencing problems with their cell phone operations that lead to a massive downsizing and decrease in its share value. Parts of state owned Telia were put on the stock market in early summer of 2000 after a massive campaign urging people to sign up for shares, but the stock rapidly lost much of its value. Some of the most well known of the new breed of Swedish firms producing interactive media solutions were also experiencing troubles and presented less positive images of their future development than before. The shares for firms producing interactive media solutions and for other firms related to the Internet and IT further experienced huge volatility all the way through the crash. Largely as a result of these problems, the crash was preceded by mounting discussions on the lack of profits, the sanity of valuations and the practice of accounting related to e.g. goodwill posts.

The US IT Crash

The potential risks facing Swedish firms producing interactive media solutions became more apparent when the Internet related stocks on the NYSE and Nasdaq markets fell dramatically on the 10th of March 2000 (Perkins and Perkins 2001, p. 40). Within a few days, many US dotcoms and interactive media producers had lost 50 to 70 per cent of their value, an estimated 800 billion US dollars were wiped out during the spring of 2000 and 75 per cent of the value was gone within a year (Indergaard 2004, p. 145; Perkins and Perkins 2001, pp. 16, 40, 60).

The shares for Swedish interactive media producers also experienced a downturn in the spring of 2000, but there were limited direct connections between the stock market changes in Sweden and the US crash, even though the Nasdaq was reported daily in Sweden. The all-time peak for interactive media shares in Sweden in fact appeared four days before the US crash, on the 6th of March, and many Swedish firms regained at least part of their former valuations during the spring and summer.

Several Swedish analysts and journalists further downplayed the impact of the US crash for the firms producing interactive media solutions in Sweden. It was first argued that the US crash mainly concerned dotcoms, which was largely true: the US stock markets had more focus on dotcoms compared to interactive media than Sweden (Perkins and Perkins 2001). Some described it as a sensible correction of the valuation of firms producing interactive media solutions and pointed out that US firms had been valued much higher than Swedish ones. This implied

that Swedish firms had a more realistic valuation than US ones (compare chapter five), that Swedish firms had a correct valuation after the minor downturn and that this was as bad as the supposed crash would be in Sweden (Vision 000401). The valuation of Internet related firms on the Nasdaq exchange had previously been used to legitimise valuations of Swedish firms producing interactive media and to show that the situation in Sweden was normal. But when the US market crashed, emphasis was instead put on showing how and why Swedish firms *differed* in valuation and practice from those in the US.

Even though many Swedish firms producing interactive media solutions regained parts of their lost share holder value during the spring of 2000, the attempts to differentiate the Swedish and US situation was only partially successful. In explaining Framfab's weak results in late 2000, Birgersson stated that he had underestimated the psychological effects that the US crash for dotcoms had for the willingness to invest on the Swedish market (DI 001101). There were few linkages between the Swedish and US markets, although some US investors had invested in Swedish interactive media producers, but the events in US showed that a crash in Sweden was a *possibility*, something people took into account.

The Dotcom Death in Sweden

Together with the new breed of interactive media producers, the dotcoms had come to be symbols of the new economy in Sweden, although not to the same extent as in the US. The dotcoms had largely relied on a combination of VC and advertising (e.g. banners) to get resources to develop online solutions. But several of the dotcoms faced serious problems in the middle of 2000 as revenues from online sales did not reach expected levels and were insufficient to cover burn rates (Vision 010111). The most notorious Swedish case is without a doubt the Internet based clothes retailer Boo.com, which managed to spend somewhere between 1 and 1.4 billion SEK of VC in about a year, selling clothes for roughly 30 MSEK (Lindstedt 2001; Vision 010830). Boo.com was not the only or first Swedish dotcom to close down, so did e.g. Boxman, Dressmart and Letsbuyit.

The interactive media producers were affected by the crisis for dotcoms since they lost a customer base that in some cases seems to have been rather insensitive to costs and demanded complex and costly solutions. Although the producers of interactive media solutions were aware of the risks associated with having the dotcoms as customers, they were an attractive source of resources. According to CEO Ulf Dahlsten, Icon medialab alone had to write off 70-80 MSEK in invoices that were not paid due to insolvency of dotcoms in 2000, much on firms that were related to Icon (E24 010125). The seven Internet consultancies on the stock market together had to write off 550 MSEK as customer losses in 2000, largely coming from dotcoms (DI 010301).

The crash for the dotcoms also had a negative effect on the valuation of firms producing interactive media, thereby limiting their possibilities of gaining resour-

ces through investments. As previously shown, there were few firms producing interactive media solutions that were also active within e-commerce. Still, the confusion among outsiders concerning the difference between the two types of firms that were symbols of the new economy – the interactive media producers and the dotcoms – meant that the problems facing the latter inflicted on the valuations of the former. There is no available figure on the average proportion of all interactive media producers' revenues coming from dotcoms, but it most likely was quite limited for most firms, and the negative impact of being associated with the failure of the dotcoms was probably more important.

Problems for Ericsson and Telia

Through their success within the growing telecommunications markets, Ericsson had become the major symbol for the broader IT and telecommunications markets in Sweden and helped to pave the way for the interactive media producers. But Ericsson started to experience problems in the summer of 2000 and was later close to bankruptcy due to the troubles with their cell phones and the lowered demands for investments in telecom infrastructure. Ericsson's share fell rapidly to finally reach crap status and the company's credit status was lowered by Standard & Poor. The firm further made redundant a lot of employees, lowered purchases of IT consultancy services and shut down several R&D projects related to mobile and wireless interactive media. In total, Ericsson cut their staff in half from to 50,000 employees and cut costs with 55 billion SEK (DN 051010).

Although Ericsson's most severe crisis occurred after the IT crash in 2000, the problems they started to experience had negative effects on the producers of interactive media solutions as it decreased the possible incomes for some firms and more generally lowered the faith in IT related firms and shares (Vision 010211). Analysis of changes on the Swedish stock market shows that lowered valuations for Ericsson repeatedly had negative effects on the share values of firms producing interactive media solutions, also those unconnected to Ericsson. The firm that had helped interactive media producers gain legitimacy by showing that the IT related sectors were a possible solution to the problems created by the economic crisis of the early 1990s now contributed to throwing the interactive media producers into a new crisis, one it would take them years to recover from.

As part of the wave of privatisation that followed the economic crisis of the early 1990s in Sweden, it was decided that the state owned Telia should be partially privatised and placed on the stock market. Given the size of Telia, this was to be the largest IT related IPO ever conducted in Sweden, and one of the largest in the whole of Europe. The government wanted Telia to be a 'folkaktie', a share owned by large groups of private investors, rather than large Swedish and foreign institutional owners. State representatives were pushing for a higher asking price for Telia shares at the IPO than several others involved as well as external analysts thought was justified, especially since many IT related shares

had fallen during the spring of 2000 (Ekström and Lindqvist 2001). The attempt to create a folkaktie was successful since more than one million Swedes bought shares. The stock however plummeted rapidly after the IPO in the summer of 2000, meaning that most people lost part of their invested money. In proportional terms, the Telia shares fell less than most of those for firms producing interactive media and the dotcoms, but it affected a larger proportion of the population, and the share has still (late 2005) not reached the asking price at the IPO.

Telia had few direct links to interactive media production and few investors probably thought so. Still, I would argue that the privatisation of Telia and the fall in shareholder value had effects on the firms producing interactive media solutions. It showed that during the IT boom and in relation to the stock market, not even the state could be trusted. For many, the Telia shares were the first that they ever bought and it is likely that many were highly unwilling to make further investments in IT related firms. It also meant that a large proportion of the population actually had less money to invest, even if they wanted to.

Troubles for Swedish Interactive Media Producers

The US and dotcom crashes, the problems of Ericsson and the IPO of Telia show how events that were not directly linked to the Swedish firms that produced interactive media solutions still had a negative effect on them, mainly by lowering outsiders beliefs and share valuations. But some of the interactive media producers themselves also faced troubles that indicated that the growth would not continue for ever and that a crash was a possibility.

The share value index for firms producing interactive media solutions was up until late 1999 when it went down for a while and then started climbing again to peak in March 2000, went down in the spring of 2000, but then recovered slightly during the summer. The reason for the falls was partially because some of the firms repeatedly made losses, like Icon Medialab which made a 73 MSEK loss for the third quarter of 1999 and lost ten per cent of its share value in two days (CS 991029). Analysts further started to report troubles with high burn rates and cash flow for firms within the social field in the spring of 2000. In the media, this was however mostly discussed as an impediment to the *pace* of future growth and not as a risk for the firms' current operations. Increased profits were expected in the long run and the short term cash problems could often be solved by making new share emissions or obtaining more VC. This process was similar to the supply side price inflation during the real estate boom, where higher prices were validated by new credits, which raised prices even more: new emissions functioned as loans based on future values, even though the future values were already included in the price of shares (Wohlin 1998).

Few journalists and analysts critically evaluated the firms' neglect of goodwill and more generally the accounting procedures until after the crash in late 2000. A brief look at some financial reports, prospects for IPOs and new emissions from

firms producing interactive media solutions, one that goes beyond the visionary statements and glossy pictures, would show signs that the firms were in serious troubles unless they made urgent changes (cf. David 2001). Such an examination would further show that valuations would be hard to defend. From my analysis of annual reports (and I am far from an expert on this matter) it is evident that several firms had few paying customers and projects and hence low incomes in relation to the number of offices and employees they had (i.e. high costs). As a result, the firms were burning money faster than they were making it, but they were still valued far higher than most firms in the old economy. If the firms could not dramatically increase their incomes (for some, more than double it) or quickly lay off staff (in some cases probably more than half), it seems apparent that they would need a lot more resources through investments. The available options were however rapidly decreasing. Market reports (from e.g. Gartner Group and Jupiter) indicated that customer spending on IT, including interactive media solutions, was decreasing as the Y2K problems were solved, most firms had websites and the dotcoms had crashed. Huge layoffs would cause dramatic decreases in share value as valuations were based on hopes of future growth and profits. Available venture capital was quickly withdrawn and the dotcom crash and Telia's IPO made new emissions far more problematic (Vision 000419; 010426).

Debating the Current Situation and Coming Crisis

One thing to keep in mind when reviewing the discussions regarding the IT bubble and crash is that people did not know that a crash would come, but it was evident that the shares could not keep on climbing forever. The question was what would happen and when a change would occur. Once the financialisation appeared, the crash could hardly be avoided, but when it would appear was uncertain. This lack of certainty and the alternative views regarding what would happen is evident when analysing the discussions in the media. There were diverse and opposite recommendations regarding how those active on the stock market should act, confusing reports and articles on the current state and future alternatives, a lack of understanding of the factors that influenced valuations and in some of the basics of how companies and stock markets function.

Discussions in the media of an IT bubble and coming crisis started to increase and change character from around September 1999 (Ågerup 2002, p. 24). What was previously seen as a small risk of a dip in shareholder value over time became viewed as a more certain risk for a crash. The troubles for some firms producing interactive media solutions in late 1999 and the downturn in the spring of 2000 were discussed in terms of a separation between the winners and the losers (Vision 000405b), and this became a recurring theme in explanations of stock market falls. The downturn in the spring of 2000 was further discussed as if it might be *the* crash (SvD 000331; Vision 000510). Even though some warned that the troubles were not over, there seemed to be a feeling that the spring

downturn was as bad as it would get and it seemed as if the interactive media producers would recover (cf. Indergaard 2004, pp. 142-3; Vision 000405a). Still, the spring crisis is the time when the bubble 'symbolically' burst in the sense that beliefs in ever lasting growth were shattered and it became obvious that there was a risk that people would lose their investments (cf. Perkins and Perkins 2001).

The shares for firms producing interactive media solutions generally had high volatility, roughly meaning that they rapidly changed value and that the difference between the highest and lowest price paid in specified period of time differed considerably. There are numerous cases where the shares of a firm producing interactive media solutions went up or down by more than 20 per cent in a day, just to make the reverse change the day after. The high volatility meant that the share value of some interactive media producers could increase rapidly the same day as other fell dramatically, with the roles being the reverse the day after. This is common during bubbles and the formation of markets based on technical changes (Dosi 1984; Shiller 2005). The volatility made it hard to determine the overall directions of share valuations for firms and the producers of interactive media as a group. The problems however indicated that a crash was on its way in the not too distant future. Questions frequently raised in the media and in online discussion groups after every downturn was 'is this the big one, is it time to cash out or should I hold on a bit longer and make a bit more money?'

The Final Stock Market Fall

The final stock market fall for Swedish firms producing interactive media solutions came in late October 2000. As only a small portion of firms, mainly consisting of the new breed of interactive media producers, were present on the stock market, few firms were directly affected by the fall. These firms however were the symbols for interactive media production in Sweden and they were what outsiders generally equated with the social field. Given that the firms on the stock market were considerably larger than the average firms producing interactive media solutions for external customers, they also employed quite a large proportion of interactive media workers in Sweden. As a result, the stock market fall that a very small number of firms experienced ultimately had negative consequences for practically all other firms involved in interactive media production.

The Triggering Factor: Bad Reports

As shown, there were rational reasons for investors to expect severe problems and decreased share valuations for firms producing interactive media solutions. I would however argue that it was not any of the above reasons that triggered the stock market fall in late 2000. Instead, the stock market fall seems to have been triggered by a series of financial reports released by firms producing interactive media solutions in October 2000 that caused a loss of faith (cf. Indergaard 2004,

p. 135). Interestingly, not all of the financial reports were that much worse than some of those that previously had been released by firms producing interactive media solutions. The media sources further show that many investors and analysts already had predicted negative financial reports and recommended lower valuations, and the stock market had already adjusted to the new situation as shares had decreased in value. Still, most shares fell dramatically in the couple of days following October 25th 2000, although the high volatility meant shares bounced up and down for a period weeks.

In late September, Cell had already lost 84 per cent of its share value from its top position due to the problems associated with the merger with Mandator (DI 000921) and Icon had lost 73 per cent since the start of the year (SsD 001108). The shares for several firms producing interactive media solutions, including Framfab and HiQ, however went up dramatically on the 24th of October 2000. The great fall came on the 25th of October. In a short period of time, several firms delivered negative reports for their 3rd quarter: Cell, Icon, Mind and Adcore. HiQ, Cybercom and Sigma, on the other hand, delivered quite good reports, but Cybercom fell anyway. Framfab only released a profit warning, their results were not presented until the very end of October, i.e. after the crash. Their financial report was however perceived as the most negative one since they made a loss almost ten times as much as analysts expected, between -80 and 140 MSEK, depending on methods of calculation (IS 001109; SsD 001108).

By the 1st of November 2000, Framfab's shares were back to the same valuation they had after their first day on the stock market (DI 001101). The downturn also continued a while for for Icon due to the announcement of a predicted loss for the 4th quarter on the 15th of December. Several firms however initially made a ricochet just days after the huge downturns (on the 27th of October) and a new stock market race started just days before Christmas in 2000 for e.g. Icon, Mogul, Framfab, Cell, Adcore and A brand new world.

Such a massive crash of course did not go unnoticed in the media. It was given massive attention on the 26th of October. That day, Sweden's second largest morning paper, *Svenska Dagbladet*, had the story on the Newspaper placard, the front page, on the front of the economy section and on two more pages. The placard said: 'Black day on the stock market: the dotcom death made shares plunge for IT companies'. The front of the economy section in the same paper listed the fall in shares for some of the most well known firms: 'Consultancy slaughter Framfab – 28%, Icon -13%, Cell -13%' (SvD 001026). The same day, the largest morning paper *Dagens Nyheter* also had the crash on the front of their economy section and stories inside about it.

The seven Swedish so-called Internet consultancies of the new breed of interactive media producers represented on the stock market in one year together lost 95 per cent of their share value, equivalent to 100-120 billion SEKs (E24 010228a; Vision 010308). The total decline on the Swedish stock market during

the same period was however somewhere between 1,400 and 1,600 billion SEK, mainly due to the decline of Ericsson and Telia (DN 010304; SvD 010306). The results for 2000 showed a total loss for the seven Internet consultancies alone of over eight billion SEKs, of which about seven came from goodwill write offs (DI 010306; SvD 010301).

There were some recoveries on the stock market during the spring of 2001, but every time one of the interactive media producers released a new financial report, the shares for practically all interactive media firms fell (Ågerup 2002, pp. 159-60). Icon Medialab, for instance, in early 2001 had to revise their predicted loss for the 4th quarter of 2000, which caused the firm's share value to drop (SvD 010126). Several firms, like Adcore, Cell, Icon and Adera in fact made substantially larger losses after the stock market crash that had been triggered by what was perceived as negative reports. Framfab made a loss of about 2.5 billion in 2001, including goodwill write offs of 1.1 billion SEKs, which was worse than the year before (E24 020213). The Framfab shares, which reached their highest value at 213 SEK (adjusted for splits) on the 6th of March 2000, was down to 0.63 SEK in July 2001 (DN 010718). Cell peaked at 350 SEK in February 2000 and was down to 0.46 SEK in June 2002, a fall of 99.9 per cent (CS 020705).

Explaining the Crash

Once the financialisation turned the social field for interactive media production into a speculative object and a bubble was created, a stock market crash was inevitable (cf. Shiller 2005). But why did the stock market crash happen when it did? It was after all previously known that many of the new breed of stock market firms producing interactive media solutions were not making any profits, several of them had previously delivered negative reports and had been forced to ask for more capital through new emissions. Both the US stock market and the Swedish dotcoms, viewed as an important customer group for interactive media producers, had further already crashed. In line with the ideas of the new economy, the general argument had however previously been that growth and expansion was more important than currently making profits. Making profits had in fact sometimes been treated as negative for valuation, as it indicated that the firm did not invest enough into growth. The increasing share values were further higher than anything that the firms could deliver as shareholder dividends, so even those that did not believe in the ideas of the new economy and recognised that it was a stock market bubble had an interest in continued growth. Lack of profits however came to be a concern when share values were no longer growing. The previous crash in the US and the bankruptcies of several Swedish dotcoms had further proven that firms that had a low turnover, no profits and rapidly spent investment capital ran a high risk of going out of business.

Taken together, the reports presented in October 2000 were not that much worse than some that had previously been reported, and far better than what was

to come in 2001. What had happened? It seems as if people simply lost faith in the new economy, the interactive media producers, and the possibilities of making profits on the shares. Despite the focus on growth rather than profits, people lost their patience and by October 2000, they simply had had it. The timing, with a concentration of widely reported bad news, triggered a downward spiral where everyone tried their best not to be stuck with the losses, but also an increased volatility with short bursts of rapid growth as some attempted to make money on the crash itself (cf. Perkins and Perkins 2001). As repeatedly is the case during stock market bubbles, underlying structural factors caused the financial problems for firms producing interactive media solutions, but it was an irrational exuberance followed by a loss of faith in the central ideas of novelty and the possibilities of making profits that made the stock market crash (Kindleberger and Aliber 2005; Shiller 2005). The mechanism explaining the crash is probably not that everyone suddenly made rational evaluations of the available financial information or chose to alter the standards according to which firms in the new economy should be valued and based on that decided to radically lower the price of shares (although see Garber, pp. 123-6). I would instead argue that some people lost faith and anticipated that others would do so as well and decided to get out, which triggered others to follow their lead and thereby caused a drastic redistribution of the supply-demand relation and as a result rapidly falling prices.

Weakened Demands

The attention paid to the stock market crash in late 2000 drew attention away from another change that came to have serious consequences for the possibilities of actors within the social field to receive outside resources: the demand from customers of interactive media solutions decreased more rapidly than insiders or analysts had predicted. After roughly four years of steady growth and excess demand, it came to an almost immediate halt in late 2000 (SvD 010213). The stock market bubble was the most immediate and visible problem for interactive media producers, especially to most outsiders. But as only a small portion of the Swedish firms producing interactive media solutions were traded on the stock market, the crash in itself cannot explain why so many firms faced problems from late 2000 and onwards. Despite this, most analyses have focussed on the stock market bubble and more or less neglected the impact of weakened demands. As shown, there were some reports of decreased demand before the crash, but the major discussions of weakened demand occurred after the crash.

There were several reasons for the weakened demand for interactive media and other IT related solutions. First, the dotcoms were gone. Although they were not a large group of customers, their average spendings were high since the solutions they wanted often were complicated. Second, the Y2K related assignments were by definition gone after the turn of the millennium. Third, practically all firms

and government agencies that were interested in getting a website or intranet solutions had it by 2001 (SCB 2002). Although some firms and government agencies had an interest in developing more complex solutions, many were at least momentarily satisfied with what they had and mainly needed web editing, which does not render the same incomes for producers. Fourth, some of the firms that had an interest in continuously upgrading their interactive media solutions had developed internal operations and thus did not supply any resources to the social field (see previous chapters and Augustsson and Sandberg 2004a). Fifth, Swedish firms in general had made extensive investments in IT solutions during the 1990s. This not only concerned interactive media solutions, but also IT based production systems, IT security, CRM and general upgrades in IT software and hardware. Several reports and media articles indicate that many firms in late 2000 lowered procurements of IT and wanted to capitalise on the investments they had made. It was, in other words, time for IT managers and departments to show that investments could pay off. Last, the diffusion of knowledge and standardisation of technologies meant that it no longer was possible to charge as much, or sometimes nearly anything at all, for services that had previously been sources of large revenues, e.g. basic website HTML programming. What firms had been able to charge tens or hundreds of thousands for doing in the mid 1990s, many students and computer literate kids could now do for a couple of thousand.

According to the results from the firm level survey directed to firms producing interactive media in 2001 reported in chapter five, many firms expected a growth in turnover and thus demands. A few reports quoted in the media up until the middle of 2001 supported beliefs in a modest growth in demand, but the majority did not, and practically all reports were negative. Ever since 2001, recurrent articles and reports have been published that predict a future rise in demand for interactive media and IT solutions. But the downturn continued until at least 2003 when the situation stabilised somewhat and then a slow growth began in 2004.

Results of the Stock Market Crash and Weakened Demands

The stock market crash and the weakened demand for interactive media, which appeared at the same time but were largely unconnected, caused a dual shock to the supply of resources for a social field that already faced structural problems since more resources were being spent than came in. The shock had both material and ideal dimensions as it concerned on the one hand capital and on the other legitimacy and support. The lowered valuations for a small group of firms caused by the stock market crash made it more or less impossible for these firms to use their own shares as capital and for all firms to receive resources through investments (i.e. VC, IPOs and new emissions). The stock market crash also led to a massive decrease in legitimacy and status for the social field as a whole as the magic was gone. For years to come, the whole practice of producing interactive

media solutions was viewed as something more or less dubious. Through guilt by association, insiders were not in a position to defend interactive media production, and few outsiders came to its aid.

The lowered valuations in themselves probably would not have proven to be such a huge problem without the rapidly weakened demands that meant that the possibilities for firms to gain resources through sales, something they in general had overestimated for years, decreased even more. The weakened demands also lead to lowered esteem, as there was limited willingness to support a social field that could not find customers for their services. It was argued in the media for years after the crash that there was an abundance of firms producing interactive media solutions in Sweden, many were superfluous and it was a good thing if some of them went out of business (AV 020527).

The direct result of the dual shock was a lack of capital, downsizing and layoffs, shutdowns, bankruptcies and corporate rerestructuring, as well as increased changes in management. On a more general level, the shock had impacts on the future formation, change and organisation of the social field as well as the practice of producing interactive media solutions. The possibilities for firms to enter interactive media production were highly limited, the few examples I have found mainly consist of employees from firms that had gone out of business who started up a new firm focussed on continuing working with a previous customer. This is quite common after periods of rapid expansion and a crash, but in my mind, is a type of corporate reconstruction rather than the establishment of new firms (cf. e.g. Dosi 1984; Kaplan 1999; King and Borland 2003; Levy 1994).

Lack of Capital

The capital resources that some firms had gained through VCs, IPOs and new emissions rapidly diminished and it quickly became hard to find more, both from VCs and through the stock market. The lack, and price, of VC capital started to increase already when the dotcoms experienced troubles in the spring of 2000, but it became a lot worse for interactive media producers after the final crash in late 2000 (Vision 000419; 010426). From investing in more or less anything related to IT and media, VCs now shunned away from everything that resembled it. VCs pulled back promised capital that had not already been paid out to firms and in some cases also demanded already invested capital to be refunded. A large proportion of small private investors also lost their interest in IT and media related shares, or simply ran out of money to invest. The decreased interest in IT related areas meant that the majority of firms that had been traded on the OM Attract 40 stock market list, housing the shares with the highest turnover (nearly 75 per cent of which were IT firms when the list was started in 2000), over time were thrown out, which further decreased analysts and investors interest (SvD 021114; TT 021219). Some capital was invested after the crash, but it was largely aimed at saving previous investments from complete bankruptcy.

Downsizing and Layoffs

To grow fast, and have lots of employees and office space had before the crash been seen as strengths and had increased valuations, but later became a burden as salaries and rent stood for a large proportion of costs. Many firms quickly tried to lay off their redundant staff, which initially was not a problem since other IT related firms were willing to hire them directly due to the lack of experienced workers. The process of making employees redundant however rapidly became more costly and conflict ridden as workers became more aware of the problems of finding a new job within the same area and learnt of their rights according to labour regulations and increasingly as union members.

It is hard to find any reliable figures on the number of firms that downsized, or the number and proportion of employees that were made redundant due to the crash and weakened demand. The statistical data from the 2001 firm level survey is not fully reliable given that it logically only includes surviving firms and since many layoffs occurred after the data was collected in the spring and summer of 2001. Calculations made by e.g. AMS, ITPS and the unions as well as private initiatives like Martin Edenström's site Kickad.nu generally report layoffs for the whole IT, media and telecommunications sector, or specific member groups like engineers.[59] According to estimates from Kickad.nu, 11,100 workers in the IT sector had been made redundant by September 2001 (IS 010920). Some other estimates are as high as 50-100,000 for the Swedish IT and telecom sectors taken together. None of these sources is however focussed on interactive media production specifically. It can be assumed that the layoffs made within firms engaged in interactive media production make up a minority of the latter figures given the layoffs made by e.g. Ericsson and Flextronics.

Several firms producing interactive media solutions continued to expand up until the crash and some simultaneously laid off and hired workers. From July 2000, Icon and Framfab increased by 400 employees each and Cell by nearly 270 (E24 010228b). At the same time, the interactive media producers on the stock market laid off about 1,800 workers in 2000, equalling roughly a third of those employed by the major Internet consultancies (cf. DI 010123; 010301), and this continued for years after the crash. Framfab, for instance, continued to reduce their Swedish staff from 2,666 in the beginning of 2001 to 650 at the end of the same year and the number of offices went down from 60 to twelve, of which three were in Sweden (DN 011031). Although incomplete for the reasons pointed out, the firm level survey data from 2001 and later from 2003 shows that even though the large firms that often were represented on the stock market laid off

[59] During the crash, Martin Edenström from Cross Communication established the site Kickad.nu focussed on reporting layoffs and shutdowns in the IT related sectors, which became an important source for information and rumours about the IT and media related sectors. Similar sites existed in the US, e.g. fuckedcompany. Kickad.nu still exists in late 2005 as What.se (SvD. 010529). Edenström himself was made redundant in late 2001.

most workers in absolute terms, there were quite a lot of smaller firms producing interactive media that also reduced their number of employees (cf. Sandberg and Augustsson 2002, pp. 24-25). There is however no reliable data on the overall proportion of workers laid off.

Although the decrease in staff among interactive media producers only constituted a minority of layoffs within the IT and telecommunications sectors, it was given a lot of attention. One reason was the way layoffs were handled, with several reports of firms not acting in accordance with labour regulations. Cell, for instance, in late August 2002 dismissed all of their employees and offered to rehire them again at a lower salary, which caused an outrage among unions (GP 020831). At least 25 articles were published in the media in late 2002 that directly focussed on Cell's plans. The unions' resistance and the bad publicity caused Cell to abandon their plans to fire all employees, but they managed to convince employees to voluntarily agree to lower salaries, something several other firms also did (CS 020918). Further, a large proportion of firms did not sign collective agreements and did not follow MBL. It was further repeatedly stated that regulations such as LAS could not be applied to the IT sector, and several firms forced workers to sign illegal employment contracts restricting their possibilities of working with IT related areas if they resigned. Some firms also pressured employees to resign to get around LAS and MBL (CS 001018; 980914; DI 020118).[60] Framfab were sued by six different unions for not conducting MBL negotiations when firing 340 employees in late 2000 and were forced to pay 1.5 MSEK in lawsuits (CS 001229; Vision 010117). Although this was a large sum compared to previous cases, it was a minimal portion of Framfab's total costs of reconstruction. The layoffs further caused conflicts that damaged the image of interactive media firms as good employers.

The firms perceived themselves as part of the new economy, but the conflicts surrounding layoffs and labour regulations showed that the field for interactive media production was part of larger structures governed by rules created in the old economy, overall ideal structures that limited their possibilities of handling redundancy. The controversy surrounding Framfab's layoffs and Cell's attempt to fire and rehire all employees at lower wage levels are examples of open conflicts between outsiders and insiders over the ideas that are to govern a forming social field. In both these cases, the insiders lost the symbolic struggles, which might be attributed to their weakened position at the time but both firms still achieved their goals relatively cheaply.

[60] In brief, the MBL regulation states that employers have to consult with union representatives when making significant changes, which layoffs obviously constitute. The LAS regulation basically states that in times of redundancies, the last employee hired should be the first to go unless there are extenuating circumstances concerning e.g. competence.

As in the case of layoffs, there are however no reliable figures on the number of firms that ceased to produce interactive media solutions due to changed focus, shutdowns or bankruptcies. Statistics published by e.g. SCB, UC and ITPS often do not distinguish different types of IT related firms, and therefore their figures for shutdowns and bankruptcies are most likely much higher than the total number of Swedish firms producing interactive media that ever have existed (e.g. DN 011013). It is further generally the case that only a minority of firms cease operations due to bankruptcy (cf. Gratzer 1996).

In regard to layoffs, but also mergers and acquisitions, many of the larger firms producing interactive media solutions sold off or shut down specific offices in Sweden and abroad, thereby focussing their operations in fewer geographical locations (usually keeping offices in Stockholm, Malmö/Lund and Göteborg, while closing other locations). But some of these firms and several others producing interactive media solutions later shut down their operations completely, e.g. Gladius, Entrappa, A Brand New World, Adera, Halogen, Dimac, Abel & Baker, Mind Solutions, Commando, M2S, Alfaskop and Kabel New Media Sweden. The bankruptcy that received the most attention was without a doubt Icon Medialab Sweden, who filed for bankruptcy and shut down their Stockholm office in May 2002 with about 100 MSEK in unpaid debts, laying off the remaining 150 employees (AB 020504; DI 031014; DN 020504). Several newspapers reported directly from the bankruptcy auction at Icon's Swedish office (DN 020823). The firm however still exists as LB Icon and is in late 2005 one of the largest share holders in Framfab.

Some firms tried to avoid shutting down their operations through corporate reconstruction. Icon Medialab tried to perform a reconstruction by exchanging all shares in the existing company for new shares in a new holding company that would take over Icon's business operations. The firm would be taken off the stock market and the shell of the old company, including losses of 2.5 billion SEK, would be sold to the highest bidder. The new company would then be put on the stock market 2-300 MSEK richer. Similar reconstructions had been performed previously, but they were now stopped by a quickly passed law that in essence stated that losses on sales of daughter firms could only be written off against profits on similar affairs (SvD 011208). Adcore however managed to sell their capital losses of 4 billion SEK by signing the deal on the 6th of December, one day before the government's stop-date for such transactions (E24 011218; Vision 011218). In May 2002, Adcore further changed direction into real estate, changed its name to Klövern, wrote off losses of seven billion SEK from Adcore in the new firm and handed out Adcore's consulting business (now called Connecta) to share holders (Ågerup 2002).

All reductions in the number of firms involved in the practice and social field are not detectable in financial statistics. Some firms are still registered as active in official records, but have not had any turnover to speak of since 2000 and are

thus not active in interactive media production, so-called zombies (cf. Indergaard 2004). Other firms are still active and have turnover, but they have turned focus away from interactive media production and become engaged in other areas, e.g. advertising or general IT and management consulting. Many of them have, in other words, exited the social field of interactive media production when it hit problems the same way that they entered it during the boom years. It is also clear that there are some firms that continue to perform roughly the same types of activities they did while they labelled themselves interactive media producers, but have chosen to present themselves as something else, in part probably due to the negative publicity associated with interactive media production after the crash.

Changes in Management

Between the spring of 2000 and 2001, every single CEOs of the new breed of interactive media producers represented on the stock market was replaced (Vision 010308). This trend was not restricted to firms producing interactive media, but it hit them the hardest: one third of all Swedish IT and telecom firms on the stock market changed CEOs during this period (AV 010926). Although many resigned or were made redundant in relation to the actual crash, the rapid change of top managements was neither anything new, there had been huge circulations for a long time due to e.g. mergers and acquisitions, complex corporate structures, the extent of management positions and the circulation of managers, founders and owners sitting in several positions. This is clear when trying to recapitulate who had formal control and responsibility in just one company, Spray:

Lotta Vennermann with a background in advertising became part owner and CEO of Spray Interactive Media Agency in late 1996, thereby replacing the co-founder Johan Ihrfelt (Resumé 961010). Vennermann left as CEO in August 1997 (DI 970812). Per Bystedt (with a background as CEO of Stenbeck owned MTG's TV-operations, DI 970603) became CEO of Spray Interactive and GCE of the holding company Spray in relation to Spray's merger with Tetre (DI 970818). Nicholas Högberg from Bottnia Internet Provider, Kanal 5 and as a consultant at Arthur Andersen became CEO of Spray AB in October 1999, replacing former GCE Johan Ihrfeldt (CS 990920). Högberg left in the middle of 2001 and was replaced by Johannes Grabisch from Lycos (Vision 010506). Bystedt became chairman of the board and Daniel Sachs CEO of Spray Ventures in July 2000, but Sachs resigned in September 2001 (Resumé 000619; SvD 010703). Per Bystedt returned as CEO of the Spray group in August 2001 (E24 010831).

As the biggest icon of the social field, Birgersson's leaving the post of CEO, and also later when Framfab labs was sold, rendered a lot of attention and was described with iconic references: 'the net emperors new clothes'; 'a new role for the fallen saviour'; 'IT worlds arch saint loses Gloria' (SsD 001108; 010718; SvD 001108; Vision 001107). The icons and gurus were publicly dethroned but others

left silently: most hardly noticed that one of Framfabs other founders and larger owners, Peter Svanfeldt, left the firm in September 2001 (DI 010906).

The rapid circulation of top managers in firms producing interactive media solutions made it hard for outsiders to know who had influence, control and ran the firms. Some of those that were written about the most, e.g. Birgersson and Staël von Holstein, were after the crash blamed for decisions that appeared after they had left Framfab and Icon medialab, respectively. The formal connections that those well-known to outsiders had to the interactive media firms were in the end not the most important thing. As a result of this personalisation, some people came to be identified with and for long bound to certain firms. Several soon lost formal control of the firms they had started, but outsiders viewed them as representatives of the social field.

Aftermath debates

The crash and following troubles for firms producing interactive media solutions caused a lot of debate, some of which is necessary to understand the further development of the social field. The focus of the debates was almost exclusively placed on the stock market bubble and crash, there was little concern for the weakened demand for solutions. To some extent because of this, the debate centred on the small portion of firms that were traded on the stock market and the people identified with them, as well as outsiders that had reported, contributed to and invested in the social field. Here, I want to point to two central areas: the attempt to identify winners and losers of the boom and crash, and to distribute blame and shame among those involved. This is followed by my interpretation of why the crash caused so much hostility and whether there was anything left but Potemkin facades after the crash (cf. Indergaard 2004, p. 11).

Winners and losers

The vast and rapid increase and following decrease in valuations of firms that produced interactive media solutions led to assumptions that there had to be some people who had made a lot of money, and others who had lost just as much. The discussion of winners appeared as soon as the rapidly increased valuations created millionaires among firm starters and investors, whereas discussions of losers mainly appeared after the crash (DI 980509; 991113). Interesting to note is that during the boom, there are few articles where the money that the insiders were making was questioned or seen as unjustified.

There are clear separations in the media discussion between on the one hand insiders and outsiders, and on the other hand between those insiders that had paper money and those that had real money, i.e. those insiders that owned shares in highly valued companies and those that had sold parts of them (VA 991117). There was an almost obsessive ranking of how much insiders were worth based

on their ownership in different firms, and sales of shares were often monitored and reported as significant news (AV 000216; CS 990224). For a while, the paper *Dagens Industri* had almost an article a week focussing almost exclusively on how much money people were making and *Affärsvärlden* made annual listings of the wealthiest people in IT (see e.g. DI 000119; 991214; 991227; VA 000529; 990531). Those insiders that did sell shares were repeatedly asked to explain their behaviour, and it is clear that a willingness to get rich was not an acceptable answer and would no doubt have labelled them sell-outs. It would further have signalled a lack of belief in the own firm's and the social field's future development, and indicated a lack of belief in the new economy itself.

With a few exceptions, most insiders however made less money than they were valued at and that which outsiders seem to have perceived. Apart from the negative signals of selling shares, several insiders in firms that were listed on the stock market were not allowed, due to regulations related to IPOs, to sell shares until after the the crash (CS 990224; DI 000412; 000915). Some employees were given a lot of stock options, but they turned out to be worthless for many workers since IPOs were no longer possible after the crash and the shares values of interactive media firms on the stock market fell below the option levels.

Insiders who had sold companies to firms producing interactive media solutions through mergers and acquisitions and accepted shares as payment in several cases made huge losses (DI 010326). The construction of the Swedish tax system further meant that the valuation of the shares as a taxable asset was based on the valuation at the time of purchase. Since the shares had dropped considerably in value, this meant that owners might have to pay over 100, and in a few cases over 1,000 per cent, in taxes if they sold their shares (DI 010220; Vision 010208). Some of those affected argued that the tax system should be changed since the effects were absurd. They did get some support from e.g. business journals, and government representatives looked into the question, but no change was made.

The majority of insiders were thus no big time winners in economic terms, but focus came to be put on the minority of well-known insiders that sold off shares just before the crash (DI 020406; VA 020422a; 020422b). It was repeatedly implied in retrospective articles that they knew what was coming, but that outsiders did not (AV 021030; DI 001209; 010915; E24 001023; SvD 000930; VA 001030). Although it was acknowledged that some insiders did not make a lot of money, the general view was that they were all winners. The outsider investors were generally portrayed as the losers although some of them gained financially from the rapidly increased shares.

Distributing Blame and Shame

The general conclusion that the insiders were the winners and the outsiders the losers made it easy to pinpoint those who were to blame and should feel ashamed for the bubble and crash The media had a tendency of focussing on the insiders

that had become rich and the outsiders, especially small private investors, that had lost money (AB 030615; DN 001202). The implicit message was that the former had become rich at the expense of the latter through immoral and illegal actions. The insiders that had not made any money, like people who had received shares as payment for their companies and workers whose options had become worthless, had themselves to blame, whereas outsiders, especially small private investors, were victims (see e.g. Elmbrant 2005).

For a while, almost anyone who had made any money from being active within interactive media and related social fields were under scrutiny in the press. Interactive media workers were regarded as either spoiled and greedy overrated brats, or hard working victims of cold hearted employers with little knowledge of work environment regulations. Firm owners, managers and VCs were described as ruthless, incompetent as managers and for fooling small private investors in order to make huge profits for themselves. The media started to question the basis of the Internet firms altogether and the morality and legality of those involved. There was something suspicious with everyone that actually made any money from the IT boom or was involved in it. If it was not illegal, it was at least bound to be immoral (see e.g. Elmbrant 2005; Fagerfjäll 2003; Ågerup 2002). A large proportion of the articles in the media, especially outside the specialist papers and trade magazines, were written from the assumption that people in general were angry and had a right to be so after the crash.

The gurus – icons of the new economy – were after the crash described as if they had preached false prophecies and committed blasphemy. Based on the media coverage and comments in papers and online editions, Johan Staël von Holstein became the prime target although not the only one questioned. He was after all a nobility ski-bum that had come from the hyper capitalist Stenbeck sphere, he publicly stated that he wanted to be rich, that he was part of a new generation that would take over and had been presented as the opposite of the 'broadband Jesus' Jonas Birgersson (Staël von Holstein 1999)

Further, the accounting principles and general financial information in most of the Swedish companies from the new economy were accused of being faulty (SsD 000507; Vision 010816). Framfab was criticised for having tried to hide their lack of profits in their financial report for the 1st quarter 2000 and again before the 3rd quarter the same year, at the same time as large owners and management sold off shares (E24 010615; SsD 000503). Those involved denied and the OM stock exchange later freed them from insider accusations (E24 010703). I have found six different occasions between September 1999 and December 2000 where owners, members of the board and top managers at Icon Medialab were suspected of leaks, insider trading and related illegal affairs. The OM stock market, the Swedish Financial Supervisory Authority and the Swedish National Economic Crimes Bureau looked at several of these suspicions, but none led to any sanctions for Icon (DI 000615; 990910; TT 991123).

There was also internal distributions of blame and shame, most notable at Icon Medialab were Fedeli was attacked by Johan Staël von Holstein, and Ulf Dahlsten later criticised by Staël von Holstein and the chairman of the board Björn Nordstrand for not having been able to manage Icon and deliver accurate information about the firm's losses in late 2000 (GP 010126). Dahlsten replied by arguing that he tried to steer Icon Medialab away from the troublesome dotcoms, was given incorrect information concerning the financial state of Icon in 2000 and that Letsbuyit was a pyramid scheme (DI 010201; SvD 010126).

Later, in 2004 and 2005, the criticism changed character and target. The state and politicians became accused of not nurturing, supporting and saving the position as one of the world leaders in IT related areas that Sweden had for a period during the turn of the century. The state had previously stepped in to save companies and parts of the computer sectors, as well as e.g. shipping and mining and the banks after the economic crisis in the early 1990s (Engstrand 2003; Larsson 2001). But unlike the previous situations, the climate probably made this a too costly strategy after the IT crash. The companies were not only viewed as having themselves to blame, but had loured innocent small private investors into the boom, not to mention convinced Swedish politicians into publicly supporting the sectors. There was a sense of 'told you so' in relation to the interactive media sector. They were blamed for their irresponsible behaviour, for contributing to private peoples losses on the stock market. The official state policy was that the time for large state rescue missions was over (Lundgren 2003).

Understanding Anger

Given the limited proportion of people that became directly negatively affected by the IT crash as either employers, employees or investors, the amount of critique and malicious delight reported in the media and in online forums seems to be too high. Why were people who never invested in or worked for firms producing interactive media but used the solutions so angry? It seems to be a combination of a feeling that a lot of others, and especially insiders, were making obscene profits and of having been fooled into believing in and later robbed of a dream. The anger must thus partially be understood in light of beliefs in prophets as saviours. They had promised a bright future for all based on innovations in IT, and now it was ruined. At the time, few seem to have remembered that the role as oracles of the future to some extent had been handed over to and almost forced upon the icons who all along had been given extensive resources, both capital and prestige, to make the dream come through. Following this, the profits that insiders were perceived to make were tolerated during the boom when the dream was alive, but after the crash they became impossible to accept and seen as unjustified.

It was further a national project gone wrong, the Swedish national team in IT had gambled high and failed, it seemed. Staël von Holstein himself made references to sports, saying that Sweden could be just as good in IT as in football. At

the same time as Sweden became one of the most 'IT mature' countries in the world and many IT solutions and artefacts like cell phones and e-business changed from something for specialists and nerds to everyday necessities whose part of the material and ideal structure of life and society is seldom thought about, those that took part in the process were suspected, ridiculed or forgotten.

Taken together, the image of the interactive media producers as winners and to blame and the anger further contributed to rapidly decreasing resources in terms of capital, prestige and legitimacy. The actors within the social field were not only in dept financially, but also morally. When the social field was formed, the actors that became recognised as insiders were labelled as a particular group that could be held accountable and now it was time to settle the score.

What was Left, Just Potemkin Facades?

If one follows the media debates that followed the crash, one can easily get the picture that the majority of firms went bankrupt right after the crash, that the remaining shred withered away within a year and that interactive media is not produced anymore. Several of the most well known firms on the stock market that produced interactive media solutions do however still exist, although most of them do not label themselves as producers of interactive media or something similar anymore. Although the majority of firms experienced the downturn on the market for interactive media solutions, several did fairly well. After all, the social field was characterised by large dynamics before the crash (cf. Johansson 2001). Interactive media production was there before it received attention, it was not as big during the boom as it was portrayed, and not as dead as it was rumoured to be after the crash.

After the crash, it seems as if the social field for interactive media production dissolved in directions similar to the three logics that made up the former field: business systems and applications, technical solutions and advertising and media. The three areas are to a lesser extent viewed as part of the same practice and social field. Interactive media solutions and the practice of producing them still exist, but there are few firms that identify themselves as interactive media producers and outsiders perception is that practically all the firms producing interactive media solutions are gone due to bankruptcy.

I previously argued that a social field is gone when no actors perform the practice constituting it or when a set of activities are not recognised as a practice handled by certain actors. Here, lack of identity and perception causes the social field to fall apart, mainly because people do not want to be associated with the false prophets who become *persona non grata* after the stock market crash rather than due to the weakened demand. The massive decrease of support following the loss of belief after the crash caused a labour in division going in the opposite direction as compared to during the formation of the social field, since many firms wanted to frame themselves out by pointing to how they differed from the

new breed of interactive media producers (see e.g. Ågerup 2002, p. 154 on Adcore). The change in willingness to be associated with the social field is also a way not to be held accountable for ideal constellations and the interpretations of the new breed of firms producing interactive media solutions, as well as outsiders. The anger directed towards the new breed of firms and the personalised icons was because those that were handed the right and responsibility to interpret the future could not deliver. It was not just a loss of material value, but also of vision. After the stock market crash, most icons are turned into sell-outs in the eyes of outsiders and since they dominate outsiders' perspective of what the field is, they bring with them practically all firms recognised as interactive media producers. Interactive media production, like dotcoms, becomes viewed as a failed social field that limits possibilities of establishing new firms and ideal support. The dead field is a history that affects new attempts to form fields.

8. Changing Structures and the Shaping of a Field

As I argued in the introductory chapter, this study offers developments in two areas of knowledge. One is mainly empirical and focussed on interactive media production in Sweden, describing how people took advantage of opportunities, started firms and began to produce certain types of solutions. The other area of knowledge is theoretical and centred on the formation and organisation of practices and social fields related to developments in technologies. In relation to the above, the growth of interactive media production in Sweden is an attractive case to study, and quite simply a good story to tell. But the 'empirical' story should not be allowed to overshadow the overall process and underlying 'theoretical' argument concerning how social fields are formed and become organised. Especially not since I have generated the methods, theoretical and empirical findings in relation to each other in order to answer the research questions. As said, it is somewhat premature to call the explanation used here a theoretical model. It is rather a set of interrelated concepts holding certain explanatory implications that have been constructed based on previous theories and during the collection of empirical material. Evaluating such a model based on coherence with empirical results is not really the point. Instead, one should ask whether the findings together aid in explaining the case and answer the research questions posed to it.

Following this, the purpose of this chapter is, first, to give explicit answers to the research questions – how and why did interactive media production form and become organised like it did. In the second part of the chapter, I thematically discuss the conclusions of the findings, focussing on areas I find particularly important. These are, in turn: technology, practices and social fields, resources, organisation, the role of structure and agency, timing and change, and finally issues related to generalisations and comparisons The third part concerns implications and suggestions for further research. The chapter ends with a postscript.

Answering the Research Questions

The presentation of findings in the previous findings chapters makes it possible to return to the purpose of this study which, to recapitulate, is specified as two descriptive and two explanatory questions: i) how did the production of interactive media form in Sweden, ii) how is interactive media production organised, iii) how can the formation of interactive media production be explained and iv) how can the organisation of interactive media production be explained.

Production of interactive media solutions has existed on a small scale in Sweden for quite some time, but grew rapidly and became a social field in the

mid to late 1990s. This happened as large groups of new firms were established, already existent firms moved into interactive media production and increasing numbers of firms and government agencies started to produce their own solutions internally. The rapid expansion followed increased state initiatives related to IT, growing demands for interactive media solutions and an increased willingness to invest in IT and interactive media related shares, fuelled by extensive media attention. The investments made some firms grow large organically and through mergers and acquisitions of other firms, but the majority of firms were small. A stock market crash and weakened demand led to a large proportion of firms making workers redundant and in some cases close down completely.

In explaining the course of formation, attention has to be paid to the existing structures, the previous economic crisis and how ideas inherent in technologies, innovations in IT and a future societal change came to form a constellation of ideas that supported massively increased resource allocation to IT related areas. A new breed of firms producing interactive media solutions were given the right to interpret the constellation of ideas and placed themselves at centre. This gave them more or less exclusive access to certain resources based on the perception of them as insiders, which further led to demands for growth. But the insiders were not given the right to dominate the practice, which made it possible for others to move in. Together with the visions related to the technology and an imminent new economy, the increased resources caused a financialisation of the social field that led to a bubble and ultimately a stock market crash. The simultaneously weakened demand for interactive media solutions caused firms to lay off workers and shut down, but it was largely the lack of willingness among firms producing interactive media to be associated with the shattered dreams and false prophets following the crash that made the social field fall apart.

Interactive media production in Sweden came to be handled by a combination of firms that produce solutions for external customers and organisations with in-house production. While the latter generally are incorporated in the existing organisational structures, the majority of the former group consists of small firms with few levels of management and a shifting division of labour. These firms often outsource production to and function as subcontractors to a small number of other firms, and customers are often involved in the production process, creating an extensive division of labour between firms.

The organisation of interactive media production is explained by on the one hand the process of formation. This concerns ideal and material preconditions and the realisations of inherent opportunities and answers to the questions making up aspects of formation: what is the field to be, who should be involved and how should production be organised. The dominant ideas following the crisis prescribed increased use of IT solutions and favoured a combination of many small and a few large firms producing for external customers as well as some firms and government agencies with internal operations, instead of a government

monopoly, a domination of foreign firms or only internal production. On the field level, on the other hand, the explanation given here focuses on solving problems of both flexibility and stability in project based production taking place in a turbulent social field within certain limiting and enabling material and ideal structures, some of which are specific to the social field and others that are broader in scope.

Recapitulating and Discussing the Findings

In this section, I draw attention to and discuss some of the central findings of this study. In doing so, empirical, theoretical and methodological findings are drawn closer together. The discussion is arranged thematically, starting with some of the core areas, technology, practices and social fields, resources, and organisation. It then moves on to more general areas concerning the role of structure and agency and timing and change. It ends with issues related but not restricted to methodology: research levels, generalisations and comparisons.

Technology Reconstructed

This study shows that technology plays an important role in the formation, and to some extent organisation, of interactive media production, and not just because it partially is a technical practice and social field. But in order to understand the proper role of technology, it is necessary to analytically take it apart and conceptually reconstruct it. I have done this by on the one hand making a separation between technology as artefact, system and practice, and on the other hand a separation between the material and ideal aspects of technology.

Concerning the first point, the meaning of interactive media as an artefact is related to the construction of it as a system and as practice by those that are given or fight for the role to interpret the technology. At the same time, it has been my intention to show that these are three distinct processes of construction that should not be clashed into one overall social construction. The interplay and contradictions *between* the processes of construction and thereby aspects of technology are necessary to understand the outcome of formation. Emphasis has been placed on the construction of the practice as it is closer to the heart of the research questions, but I believe it is evident that interactive media is what it is not just because of the artefacts, but what they are part of and those producing them. Interactive media constitute several different types of solutions that cannot be clearly separated from similar ones based on e.g. technology or functionality. Still, insiders and outsiders contributed to conceptualise interactive media solutions as a specific type of often Internet related solutions that could be separated from others. These solutions were in turn perceived to be produced by certain actors, a new breed of firms, that could use the definition of them as insiders as a basis for constructing the practice and thereby frame others out.

Following the above, the power of technology to create and destruct markets is far more complex than e.g. Nelson and Winter (1982) assert. I would argue that it is more in line with the growing research literature that combines a resource based view of firms with a view of both technologies and markets as constructed. This research tries to explain the formation of social fields by combining insights from research on organisations and social movements. What I have tried to show here is that such an approach benefits from paying close attention to the interplay between overall structures and actors and that critical realism serves as a constructive basis for doing so.

The above points to the second reconstruction of technology based on a separation between the material aspects and the ideas and visions of technologies. Technical innovations were necessary for the formation of interactive media, but many of them had existed long before, most were not created with the intention of facilitating interactive media production and the material aspects of technology offers limited constraints on formation and organisation. A group of entrepreneurs quite early introduced the Internet and challenged technical standards. This successful acting upon structures contributed to a development and diffusion of technological artefacts and systems and knowledge of how to use and produce them. Their actions further gave Sweden an early start that prevented international firms from moving in and made it less possible for the state to claim control over the practice.

But based on the findings, I argue that it was four sets of ideas related to the technologies, rather than the material structures of technologies themselves, that had most impact on formation and organisation. These influential ideas were expressed by several groups of actors as almost universal truths and became widely diffused through management consultancy literature, the media, research reports, government policy documents, and so on. First, there were certain ideas ascribed to the specificities of the Internet technology itself concerning e.g. digitalisation and the network structure. Second, there were some ideas based on patterns of innovation and diffusion of IT, frequently visualised as exponential curves: the growth and change of markets, corporate strategies based on first mover advantage and growth, and new forms of valuating firms. Following this, there was a third set of ideas or beliefs in stage models based on technical innovations. This meant that the Internet and IT related solutions would bring about a new societal stage and economy. The ideas developed into a technically based and future oriented constellation of ideas supporting and functioning as each others proof. When analysing how the ideas were expressed, some of it quoted here, my interpretation is that the ideas became ascribed to the IT artefacts and the Internet system, which was described as containing them in their very essence. It was a fallible belief in technological determinism based on the social construction of ideas, rather than material aspects of the technology. This contributed to viewing

the development of artefacts related to the Internet, the central technical system of the time, as something inevitable that should be embraced and supported.

Fourth, the universal constellation of ideas related to the technology became situated and interpreted in the Swedish context. The innovations in IT came to be viewed as a cause and way out of the economic crisis in Sweden in the early 1990s, and thereby the future for Sweden (Benner 2004). IT contributed to globalisation, increased flexibility, outsourcing and downsizing, familiar outcomes of the economic crisis. By having a competitive IT production sector, IT and thereby changes could be controlled. The options seemed limited after the crisis, but IT as a technology showed the future way for Sweden: the effects of the technology were given and unavoidable, but we had a successful sector that was producing the artefacts causing change.

As argued, we all hold ideas about necessity in relation to existing structures that influence our views of causes and preferable future strategies, thereby being enabling by being limiting (cf. March and Olsen 1976; Weick 1990; 2001). In this case, constellations of ideas concerning the role of IT as technology and its relation to the Swedish crisis came to be enlarged and developed into an interpretative model that structured ideas of current changes and the future, thereby creating cognitive order (Cronehed 2004, pp. 82-3, 288).[61]

In other words, a social construction of technological determinism meant that the future of Sweden came to be regarded as restricted to and dependent upon the production of IT and especially Internet based interactive media solutions.

Standing alone, I agree that the above explanation for the massive resources in terms of capital and legitimacy given to the social field for interactive media production, as well as for the overall organisation, seems somewhat preposterous. But when reviewing and analysing what was written and said and when trying to recapitulate the mindset of the time, it becomes clear that this constellation of ideas flourished widely in Sweden in the years before the millennium. This further makes it problematic to pinpoint who created, nurtured and held the ideas. The ideas became ascribed to and identified with the producers of interactive media solutions, and particularly a small group of iconic prophets. But to a great extent these persons seem to have been mere fix points or beacons for collectively held beliefs. From the perspective of this study, I do not find them fascinating as individuals, but as symbolic actors filling certain positions.

The economic crisis and the following changes did not create all the opportunities for interactive media production. But decisions based on interpretations of the causes of the crisis and the ways forward gave interactive media production more resources than had otherwise been the case. Without the crisis

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[61] From this perspective, the popularity of Castells was probably not due to whether he was correct or not, but because he could deliver a convincing global narrative of our times in line with the ideal constellations at the right moment (Cronehed 2004).

that legitimised changes, the Swedish model would probably have prevailed to a larger extent and there would have been less privatisation (Almqvist and Glans 2004). There would further most likely have been less IT related state initiatives.

The perception of what could save Sweden from the crisis did not have to be IT, it might have been e.g. biotechnology or finance. Just like IT, Biotechnology was perceived as an important and rapidly growing knowledge intensive field due to e.g. the genome project. Sweden further had a large pharmaceuticals sector and a strong position within medical research. But IT was a likely area due to the perception that IT (rather than biotechnology) was highly influential for current changes. The growing number of cell phones were further visible and understandable symbolic artefacts that proved the potentials of IT (cf. Shiller 2000, pp. 19-20; Ågerup 2002, p. 78). Biotechnology had more dubious symbols, like the cloned cheep Dolly. Much unlike IT, biotechnology was further disputed for ethical and religious reasons. Given that the reasons behind the economic crisis mainly were financial rather than due to IT, it would have been possible to claim that by having a competitive financial sector, financial issues and thereby change could be controlled. Sweden has traditionally however been more focussed on production than finance, as compared to e.g. the UK. The negative reputation of the financial sector following the crisis probably made this an impossible candidate to propose, in much the same was as lack of legitimacy for interactive media production after the crash made outsiders unwilling to support it.

From Practice to Social Field

The concepts of practice and social field make up a significant part of the very core of this study and have been discussed throughout. Social fields have been portrayed as fuzzy and structured according to logics and status, as well as horizontal and vertical division of labour, where the status as insider is dependent not only on involvement in the practice, but also identity and recognition from other insiders and to some extent also outsiders. The case of interactive media production shows that fuzziness and confusion has important effects on formation, organisation and especially resource allocation. This confusion and its effects are easily neglected in studies based on externally labelled sectors, e.g. using SNI codes, as these studies, to recapitulate the previous quote from Bourdieu, settle on paper issues that in reality are at stake in ongoing struggles. It seems clear to me that a neglect of the role of fuzziness, confusion and struggles over definitions for the formation and organisation of social fields can result in limited and probably faulty explanations (for similar arguments, although related to other areas, cf. Bourdieu 1999; Calhoun 1995; Sayer 2000).

In this study, I repeat the argument of using longitudinal perspectives to analyse and understand changes over time. I further give an example of the possibilities of recapitulating parts of previous but recent changes through the analysis of media sources in much the same way as historians do (although from a socio-

logists perspective). The findings also strengthen the notion that in order to fully understand and explain issues of organisation, it is insufficient to restrict oneself to the so-called unit of analysis either in terms of theoretical or empirical findings. Blau and Scott (1962) early on argued that in order to understand organisations, it is necessary to pay attention to the surroundings of organisations, something still often neglected (Coase 1999, pp. 55, 68; Stern and Barley 1996).[62] The focus on organisational fields rather than single organisations is beneficial, but when the purpose is to explain the organisation of social fields, studies cannot be restricted to the meso-level, especially not as social fields are open systems without clear borders (cf. DiMaggio 1991; Scott and Meyer 1994). In the case of interactive media production, where struggles over the right to define and participate in the social field are central parts of the formation that affects organisation, explanations cannot be restricted to the social field itself. Especially not since outsiders put pressure on and participated in making the social field what it was and is.

From the above follows the importance of separating between and paying attention to the respective roles of insiders and outsiders in constructing social fields. In the case of interactive media, this especially concerns outsiders who can hand over control and responsibility to perceived insiders, but also put pressure on social fields. The actors perceived as producing interactive media solutions were largely given, but also fought for the right and responsibility to interpret and realise the new economy. They thereby also held the right to define themselves and construct a meaning of what interactive media was, who the legitimate participants were and how the activities inherent in the practice should be distributed among actors, what I have referred to as three central aspects of formation. The new breed of firms performed a labour of division based on alternative logics pointing to the differences to, and framing out, other actors. But they were not given the sole right to produce interactive media solutions and hence could not control entrance to the practice or the social field. But established firms were dependent on outside recognition to receive insider status and gain access to investment resources. Those producing interactive media that were labelled as not part of the social field could not alter outsiders' image that the new breed of firms constituted what interactive media was, and instead tried to change their appea-

[62] Blau and Scott were hardly alone in arguing for this approach, so did e.g. Woodward (1965), Burns and Stalker (1961) and Lawrence and Lorsch (1967). The earlier works of e.g. Smith (1776/1952), Marx (1867/1990), Weber (1976), Veblen (1899/1994), Polayni (1968) and Durkheim (1893/1984) further seem to suggest that they regarded this approach as self-evident. It could however be argued that the importance of organisations as legal units and research objects, was not yet developed, thereby rendering a separation between the internal and external of organisations irrelevant. In relation to Scott's (1992) idea of organisation theory as a development from rational/closed to natural to open systems perspective, one could add that there was a considerably longer period than 'modern' organisation theory when organisations were viewed as both open and closed systems (Ahrne 1994).

rance. What I have tried to show here is how struggles like these point to how both insiders and outsiders hold ideas about the ideas (i.e. ideal structures like institutions) that govern social fields and that they might do something about it.

The Impact of Resources

By pointing out that social fields are dependent on outside resources, it becomes evident that resource allocation affects the formation, sustainability and organisation of social fields. A separation has here been made between material (infrastructure, capital etc.) and ideal (legitimacy, recognition, status, and so on) resources. A further separation is made between different types of resources retrieved through e.g. sales and investments, all of which can be directly aimed at a social field, or indirectly benefit it. Regarding the separation between material and ideal resources, it seems as if they are both positively and negatively mutually reinforcing. Social fields with high legitimacy will receive e.g. more capital, and increased capital allocation contributes to a more positive image. On the other hand, social fields that fall from grace might find that capital quickly dries up as outsiders become reluctant to finance and lack beliefs in possibilities to make money on the social field.

Similar to the previously described role that outsiders play in the formation of a social field, the case of interactive media production in Sweden points to the importance of paying attention to the effects of *indirect* outside resources for creating the opportunities for social fields to form. This both concerns ideal resources like recognition and legitimacy and material resources like capital and increased demand. I believe that the simplified separation between, first, indirect and direct outside resources and, second, between material and ideal resources makes it possible to understand the relative contribution of different actors and show the impact that state policies and initiatives have on the formation of social fields (cf. Fligstein 2001). The findings from this study in fact seem to suggest that at some stages of formation, the resources that indirectly benefited interactive media producers, e.g. the Adult Education Initiative and the tax deduction on personal computers, were more important than direct investments for the social field, although it is granted that this is hard to prove.

Regarding the specification of different types of resources deriving from e.g. sales and investments, two conclusions can be drawn. First, actors access to alternative types of resources is dependent on different aspects that makes up the status as insider: outside recognition and involvement. Whereas all actors with sufficient knowledge can start producing interactive media solutions and try to sell them and thereby gain resources through revenues, it is mainly the actors that outsiders view as producers of interactive media and hence insiders of the social field that have the possibility of acquiring resources through investments. In other words, image is more important for investments than sales. The separation between internal and external recognition further explains how actors that other

insiders do not view as especially skilled (sell-outs) still can get access to more resources through investments than other producers of interactive media solutions that are attributed higher internal status (indies).

Second, the findings show that alternative types of outside resources create different possibilities for firms producing interactive media to act, but also bring with them different demands for appearance and strategy due to different expectations held by outside actors with alternative interests. The differences in possibilities and demands concerns the social field as a whole and differences between actors involved in the practice, depending on the relative distribution of alternative types of resources they receive. I find the difference particularly noticeable between firms that are and those that are not represented on the stock market, and between firms that produce for others and those with in-house production. Investments in interactive media are based on expectations of higher future returns, whereas resources supplied through purchase of interactive media solutions are based on demand and competition. The survey findings show that expectations placed on the in-house development of interactive media solutions partially concern control and cost. Policy statements related to state funding included e.g. democratic or equality dimensions related to the so-called digital divides. From the perspective of organisation theory, it is hardly surprising that not only the size, but also *types* of resources affect organisation and strategy on firm and field level.

Even though I have generated the theoretical and empirical findings in close relation, financialisation has received limited attention in the theoretical explanation, but quite a lot of emphasis in the empirical chapters. My main reason for this is that the theoretical model is intended for the formation and organisation of social fields in general and to some extent is open-ended, meaning that explanations have to be based on detailed empirical findings. In my view, financialisation and bubbles constitutes very specific and unusual cases in the formation of practices and social fields due to interpretations and predictions of future developments. Since financialisation *did* occur and thus is a relevant specificity here, it is given more attention in the empirical chapters. I would argue that a theoretical model focussed on the specificities of bubbles risks losing the crucial notion that a bubble was just one of several possible (unrealised) alternatives and instead contribute to ideas of the inevitability of (the realised) formation commonly associated with both epistemic fallacies and ad hoc theorising.

From Formation to Organisation

The production of interactive media solutions could have been organised differently, e.g. as a state monopoly, solely produced internally for organisations' own needs, or become dominated by already established firms from related social fields. This has been discussed in relation to events and facts that point to possibilities for other developments as well as using counterfactual arguments (cf. e.g.

Danermark et al 2002; Hollingsworth and Boyer 1997b). Following the above approach, answers to the question of why interactive media production in Sweden is organised a certain way has largely been sought in the formation of the social field. I have further pointed out the need to pay attention to previously existing structures and unrealised possibilities, rather than to restrict explanations only to the organisational outcomes of single firms or the social fields (cf. Dijksterhuis et al 1999). At the same time, it is vital to pay attention to the survival and functionning of organisations concerning demands for flexibility and stability.

The organisation of interactive media production has here been described as the horizontal and vertical division and integration of labour within and between firms. The organisation and the division of labour are based on activities viewed as part of the practice that make up clusters of activities. The findings show that the clusters of activities largely follow the logics of the social field: aesthetics, economics and technology. The clusters of activities performed within firms, i.e. by individuals and groups of workers, are linked to the clusters of activities divided between firms: outsourcing, subcontracting and activities performed by customers. This makes it possible to understand the organisation of production as a temporary structural stability consisting of interrelated positions. The findings further show how the practice of producing interactive media solutions extends the social field and how alternative forms of organisation can coexist, even if some forms are not recognised as part of the practice due to constitutive rules.

Individuals and firms might occupy and move between these positions, but the occupation of one position influences the likelihood of occupying others and thereby movements between them. Elaborating on Sayer (1995; 2000), I argue that the relations between the positions are necessary, while those between specific actors are contingent. There cannot be e.g. outsourcing unless there are subcontractors and division of labour entails integration, which usually requires relations between known actors occupying certain positions. But the relations are contingent as it is not given which actors will hold a certain position. The overall organisation of production and firms' movements between positions can be interpreted as solutions to organisational needs for stability and flexibility. The specific solutions to these organisational needs however have to be understood in light of the project based production process, the overall material structures and ideas governing social fields, as well as in relation to alternative logics.

Swedish firms producing interactive media solutions create flexibility by changing the activities that workers and firms as a whole are involved in, as well as substituting short-term employments with market contracts through the use of firms without employees, e.g. self employed and freelancers. As briefly pointed out, this differs from some other countries like the US governed by other labour regulations, laws and so on. In Sweden, stability is reached through relations between a limited number of known actors, which creates possibilities for control and dependence. More generally, stability increases over time through a reduction

of some alternative forms of organisation due to e.g. inefficiency, thereby creating predictability through limitation. A focus on growth rather than effective organisation however prevailed in some firms until the crash, meaning that they competed with talk and image rather than efficiency.

The Role and Meaning of Structure and Agency

Much emphasis has been placed on constructing an abstract frame of reference related to structure and agency into which to place the focus of this study, the formation and organisation of interactive media production. This might at first be perceived as an unnecessary meta-theoretical excursion more akin to the philosophy of science than e.g. empirical sociology. But I hope it has become more evident as the presentation has progressed that the elaborations on different aspects of structures and their relations to actors play an important role in understanding and explaining the formation and organisation of interactive media.

Interactive media production in Sweden grew out of and became part of structures that were in transition largely due to a crisis caused by previous attempts to adapt Sweden's economic structures to the rest of the Western world. The reconfiguration of structures created increased opportunities for interactive media production and actors engaged in it and transformed structures in order to realise the potentials in a favourrable way. Some structures are however harder to alter than others and there are other actors that fight over structures, so attempts might fail, which was the case for firms perceived as outsiders during formation and insiders after the crash. Those firms that were not recognised as interactive media producers could not alter the ideas that insiders to the social field should be valued much higher than other firms and had to try to alter their image to fit the ideas instead. After the crash, insiders tried to alter overall ideas related to labour regulations and firm reconstruction in order to rapidly decrease staff and get rid of huge goodwill posts. In the first instance, they were sued by the unions, and in the latter the state changed tax regulations.

The specific structure-agency model I have used, with a separation between structures and actors and an analytical distinction between horizontal and vertical ideal and material aspects of the structural configuration, has certain implications. First, the ontological separation between ideal and material structures is analytically useful. Ideal and material structures do not refer to discourse and reality, respectively, but concern different aspects of reality that have causal powers. One might argue that the ideas of how firms in the new economy were organised was wrong because they did not match how firms actually looked. But it is no less possible to argue that the ideas really existed than it is to argue that firms producing interactive media solutions were characterised by e.g. a certain division of labour, and both aspects of reality had an impact. Once outsiders stopped believing in the ideas, it became harder to receive material resources.

Second, the vertical and horizontal separation of structures facilitates 'ordering' of structures by tying them closer to specific groups, actors, practices and other structures, and to identify necessary structural relations. This makes it possible to identify and distinguish between existing imagined and real necessary structural compatibilities held by those under study, as well as by myself (Sayer 1992). Although based on a critical realist notion of ontology, the separation is also to some extent an analytical tool in the same way as formalisation techniques can be, but one that is not restricted to formal logics (cf. Asplund 1968).

Third, although I have placed more explicit emphasis on structure than agency in the presentation of the findings, the explanation is not strictly structural or 'oversocialised' (Granovetter 1985). It is rather a question of placing a practice in a structural context that enables some things to form and do so in certain ways. As shown throughout, actors further actively engage in, try to alter and sometimes succeed in altering structures to better suit their needs, desires and morals. Much of the structures consist of other actors, some of which are related, and the results of their actions. The ideal and material structures of social fields are for instance largely made up of people that collaborate and compete with each other within the boundaries of collective actors and the ideas people have of what others are doing and how well they do it. Still, it has been my intention to show that structures cannot be reduced only to actors. They are not just an abstraction we use in lack of more precise methods of studying individuals. Structures are something more than individuals and have an ontological existence separate from, but related to, them. This 'more' in effect largely consists of the legacy of previous actors.

Timing, Pace and Change

The results show the importance of paying attention to change, pace and timing and the relations between the three when studying processes like the formation of social fields. As for all studies of organisational change, a confusion between e.g. the pace and scope of changes might result in drawing the wrong conclusions about processes of transformation.

As argued, the formation of social fields in themselves constitutes a form of change, but is not dependent on change to come about. Concerning interactive media production, changes in both technology and results from the earlier economic crisis contributed to formation, but these changes alone cannot account for the increased opportunities and valuations. As I previously argued in this chapter, it is necessary to pay attention to the effects of timing, whereby IT innovations were generally believed to cause and show the way out of the economic crisis. Further, the pace of technical innovations and diffusion contributed to amplifying collective beliefs in the scope of changes to the point where they were on par with stage models of change. In relation to the second implication of the perspective taken on structure and agency here and the previous discussion regarding

the role of the prophets as fix points for collectively held ideas, I do not believe that the most important question is to ask which *actors* held the beliefs, but rather to view the ideas as linked to and emanating from the technology as artefact and practice, and the social field

From the above follows a conclusion in line with Sayer's (2000) notion of necessity and what has been stated regarding the analysis of the relation between structures: it is vital to construct a clear conceptual and explanatory notion of the relation and necessity and causality between alternative aspects of change and time (Abbott 2001). It should be clear that my position is that stage models should be avoided as they are ontologically highly questionable and analytically decrease rather than increase possibilities of detecting the mechanisms causing change in open systems. I will give two more examples here based on the findings, the first related to the form of organisation and timing, and the second regarding beliefs, financialisation and the pace of changes.

The reasons why interactive media production did not become viewed as a natural monopoly are not only due to the technology, but a matter of timing. The 1990s was the decade of privatisation in Sweden. The shift in the view of what the state should have a monopoly on and the possibilities of including interactive media production in these practices is most clearly seen by its absence, so to speak. There seems to be no articles or statements from politicians, the IT Commission, Posten, Telia or anyone else suggesting that the Internet or interactive media production should be regarded as a natural monopoly that the state should handle. A lot of demands were put on the state to take action, become involved in and finance IT, but there was no acceptance for control and ownership. One alternative for organising the practice of producing interactive media solutions was thus unrealised due to a lack of political will and ideal acceptance at the time of the formation (rather than technical possibilities).

Actors need not believe in ideas for them to have an impact. It is enough if they believe that others believe in the ideas, or if there is a silent agreement that the ideas are valid even if few or no-one hold them to be true: not all who bought shares in firms producing interactive media solutions were devoted believers in the new economy, but many had an interest in increasing valuations. I believe that the notion that we hold fallible ideas about change is particularly acute in relation to the formation of interactive media and other social fields that become financialisated, since the possibilities of those involved and those trying to analyse what is happening are highly limited. Processes of financialisation and bubbles are not just characterised by rapid changes, the high pace seems to be a necessary condition for them to come about as it increases turbulence, volatility and uncertainty. On the other hand, the findings show that even processes of change that are perceived as rapid often have a longer history: the origins of the Internet dates back to the mid 1900s and some of the firms involved in producing interactive media solutions have been around longer than that.

Comparisons and Generalisations

I have made rather few explicit comparisons between the formation of interactive media production in Sweden and other countries, or with the formation of other fields. Still, based on the comparisons that have been made, it seems clear that the formation of interactive media production was in some central aspects different from most practices and social fields, but in other aspects quite similar. There is much to be learnt from comparisons between cases that have been realised in the same way, but also with comparisons to alternative forms of realisations in different settings and unrealised alternatives. Comparisons to unrealised options have here been used to show what might have been the case and other ways in which interactive media production might have been formed.

The examples of other social fields referred to point to some aspects and mechanisms that seem to be integrated parts of formation, e.g. the necessity of resources and how actions taken by just a few insiders can have huge consequences for the further survival of the whole social field and even cause it to fall apart. The comparisons made between firms that produce interactive media solutions for other external customers and those organisations that have internal operations falsifies ideas that the production of interactive media demands certain organisational solutions and that the inertia of established organisations makes it impossible for them to alter their activities and enter new social fields. Comparing how firms producing interactive media solutions are organised to findings from other knowledge intensive firms further suggest that the former are hardly innovative in terms of organisation. The comparisons made with the US situation show how the organisation of interactive media production and solutions to the same organisational issues, demands for flexibility and stability, take on alternative forms in different settings due to alternative overall structures.

The possibilities and results of comparisons point to the issue of generalisation. This study concerns a specific and to some extent a rather *special* case of social field formation and organisation. This is largelly due to the financialisation and bubble, but it is in a broader perspective related to the delimitations pointed out in the introduction. This is a study of a single rather knowledge intensive social field that was formed in Sweden roughly at the turn of the millennium. As with all studies based on case studies, it is possible to question the extent to which the findings are relevant in other areas. It should be acknowledged that the theoretical model I have used is inspired by findings from many other studies and is deliberately abstract in order to also cover cases that differ from the case studied here. The model contains few predictions and if-so statements, something that would be quite hard to accomplish in any detail, and I am doubtful as to the relevance of attempts to develop predictions of how social fields will form.

Following the above and the critical realist notion of generalisation based on mechanisms rather than covariation, I would argue that it is possible to generalise

some of the findings of this study concerning the theoretical model to the formation and organisation of other social fields because the model is general. But the specificities of interactive media production in Sweden during the 1990s are far less possible to generalise. Following this, the theoretical model is not necessarily better suited to explain the formation of social fields for interactive media production in other settings as compared to any other practice that comes to be organised as firms rather than e.g. state monopolies.[63]

Further Research

The findings and discussions make it possible to detect areas where there is insufficient knowledge regarding interactive media production in Sweden and develop hypothesis regarding the formation and organisation of social fields. Important as that may be, I believe it to be more beneficial to point out three relevant broader research areas: the conceptualisation of parts of society, comparisons between alternative forms of organisation and the performance of case studies within and more directly related to general models of overall structures.

Concerning the conceptualisation of parts of society, this study has shown how traditional classifications of sectors based on e.g. SNI codes are insufficient since they do not take issues of identity and recognition in relation to certain practices into account. Thereby, such classifications fail to fully appreciate the formation and organisation of social fields. In light of work surrounding this study and mode generally within the MITIOR programme, I however believe this issue to be more urgent and have broader implications. By having ambiguous conceptualisations of the differentiation, integration and organisation of parts of society, we fail to fully understand and run risks of misinterpreting continuity and change in society and working life, especially when relying solely on statistics. In the case of interactive media production, it for instance seems as if changed identification and practice is more important than firm start-ups and closure for the size and density of the organisational population (cf. Carroll and Hannan 2000).

Ambiguous conceptualisations means that we fail to identify differences between alternative parts of society due to systems of labelling e.g. firms, jobs and professions (cf. Hansen 2001). We further misunderstand the contextual factors and mechanisms that cause differences, thereby making it impossible to find ways to e.g. improve working life conditions, save by chance. Following this, increased attention ought to be focussed on conceptualising parts of society and how ways of grouping and dividing society influence attribution of causality

[63] This of course points to the opposite issue, to what extent the model makes it possible to differentiate between social fields. It has not been my intention here to develop a typology of social fields, either conceptually or explanatory. I simply want to point to the relevance of understanding the formation of practices as social fields resembling production markets as just one of several possible forms of organisation where structural preconditions and timing influence, but do not determine, the outcome.

and findings. Here, I have proposed focussing on what actors do, how they identify themselves and what they are perceived as being part of.

The second area for further research follows from the first, and from other studies within the MITIOR programme, as it concerns how we conceptualise areas of work as alternative forms of organisation and what we actually are comparing. We may compare e.g. two markets for interactive media production on the grounds that they are markets or because they are focussed on the same practice. But if we fail to see that not all markets are focussed on interactive media production (an error seldom made), or that markets are just one alternative form of organising interactive media production, even though other alternatives might not have been realised (a far more common problem), we might contribute to reifying ideas of inevitable developments and neglect necessary causal mechanisms. Based on the above, I propose that studies of formation and organisation pay increased attention to comparisons between both realised and unrealised alternatives in order to detect the mechanisms explaining outcomes.

From the above follows a third area for further research: performing case studies within models taking overall structures into account and as part of broader research. Despite extensive empirical material, few accounts of the labour process or technical development on the inter-firm and individual level have been presented in this study. This means that a vital aspect of organisation has been left largely untouched, a choice made given the focus and limits of the study. So far, most case studies of interactive media production have been exploratory with ad hoc relations to broader ideas of industrial organisation and changes in work and organisation, rather than cases studies designed to supplement or test overall models. My experience from this study is that it is hard to make use of such cases studies since they lack a frame of reference, they more or less float free. Given this, I would argue that a preferable approach for analysing the formation and organisation of social fields would be to use case studies as part of an array of methods all contributing to and being part of a model that takes overall structures into account (Reed 1997). This facilitates a better understanding of how e.g. working conditions are due not only to firm-level specific conditions, but also larger systems of production involving other firms and larger ideal and material structures. It also facilitiates a more detailed understanding of technical development linked to system level aspects, and customer and profit demands that limit possibilities of developing user friendly solutions.

They Did IT, a Post Script

‘I did it! I made it in the end!’
‘The end? Nothing ever ends…’

The quote above from Moore and Gibbon’s *Watchmen* (1987) sums up something essential about the formation and organisation of social fields to keep in mind when reviewing the results and analysis. The events during the turbulent formation of a social field do not reach a final stage, and might not even reach stability. The best actors can hope to achieve is a relative and momentary stability. The quote is paraphrased in the title of this study, ‘They did IT’, and has several meanings. First, these were the firms and persons that took part in, facilitated and spurred the formation of parts of IT and interactive media production in Sweden at the turn of the millenium. Second, it is also about those that came to be viewed as bringing Sweden into a new societal stage. They did not do it (IT) alone, but were presented as and presented themselves as if they did and thereby ‘won’, at least for a while. Third, it also conveys that it was in the past, a reference to the presumed breakdown of the social field. If the field will reform or not remains to be seen, but interactive media solutions will continue to be produced. Fourth, they actually made it, all they said would happen is now more or less reality.

In the process, riches and fame was made and lost, firms created and destroyed, technologies invented and forgotten. A social field was formed and later deformed. Prophets were born and dethroned. I personally believe that the loss of vision was the highest price. The vision was false, but what was lost seems to be the belief in visions altogether, at least for a while.

For all the faults of the bubble, do not say nothing happened. This dissertation is, just a few weeks after its finishing touches, available online for anyone to download for free worldwide (at www.ali.se). But do not be led to believe it could not have happened some other way, with others involved and organised another way. All the breakthroughs talked about are present today and additional others as well, but not always the same firms or brand names. The field might fall apart, but it is unlikely that they will shut down the Internet.

The story continues.

References

Newspaper Articles

For practical reasons, only those that that are directly referred to and cited in the text are listed here. Note that the articles are reffered to according to year-month-day. The first article below (020504) was thus published on the 4th of May 2002.

AB (020504) IT-undret har gått Iconkurs. *Aftonbladet*.
AB (030615) Vinnare och förlorare i it-kraschen. *Aftonbladet*.
Att:ention (2005) Den fria världens ledare. *Att:ention*.
AV (000216) Kapitalflykt från IT-konsulter. *Affärsvärlden*.
AV (010926) Special: IT - Alla dessa chefer. *Affärsvärlden*.
AV (020527) Special: Sveriges 500 största IT-företag - kör ut dom. *Affärsvärlden*.
AV (021030) HIQ-Grundarna: 1,2 MDR - Sålde en månad före kraschen. *Affärsvärlden*.
CS (970902) Konsultavhopp på löpande band. *Computer Sweden*.
CS (980911) Branschen fruktar massavhopp. *Computer Sweden*.
CS (980914) LAS drabbar IT-företagen extra hårt. *Computer Sweden*.
CS (990224) Icongrundare säljer ut för 54 miljoner. *Computer Sweden*.
CS (990920) Vd-rotation i spray-företag. *Computer Sweden*.
CS (991029) Smekmånaden över för Ulf Dahlsten och Icon. *Computer Sweden*.
CS (000426) Starkt resultat av HiQ. *Computer Sweden*.
CS (000927) Strategikonsulter hoppar av. *Computer Sweden*.
CS (001018) Ogiltiga avtal låser anställda. *Computer Sweden*.
CS (001030) Fantasilönerna stoppar inte avhopp. *Computer Sweden*.
CS (001229) Framfab krävs på skadestånd. *Computer Sweden*.
CS (020705) Cheferna flyr Cell. *Computer Sweden*.
CS (020918) 90 procent gick med på lönesänkning. *Computer Sweden*.
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Dagens IT (000301) Internetmogul vd för Optosof. *Dagens IT*.
DI (970603) Per Bystedt på väg till Internetbolag. *Dagens Industri*.
DI (970812) Spray-VD hoppar av. *Dagens Industri*.
DI (970818) Ny VD ska få fason på Spray. *Dagens Industri*.
DI (971213) Personalflykt från Resco. *Dagens Industri*.
DI (980509) IT-rallyt på börsen ger snabba förmögenheter. *Dagens Industri*.
DI (990602) Svenska Internet-projekt behöver amerikansk ledning". *Dagens Industri*.
DI (990903) Bråken som fällde Icon-chefen. *Dagens Industri*.
DI (990910) ...och börsen synar informationen. *Dagens Industri*.
DI (991022) Carl Bildt in i HiQs styrelse. *Dagens Industri*.
DI (991113) Guldregn över Internetföretagare. *Dagens Industri*.

DI (991214) Börs & Finans: Sprays aktieägare plockar hem 400 Mkr. *Dagens Industri*.
DI (991227) Icon-grundarna blev 400 miljoner rikare. *Dagens Industri*.
DI (000119) Internetpionjärer blir rika som troll. *Dagens Industri*.
DI (000412) Sju IT-storägare har blivit 10 miljarder fattigare. *Dagens Industri*.
DI (000419) Debatt: Förvärvad goodwill minskar per definition. *Dagens Industri*.
DI (000607) Öppen strid i Framfab. *Dagens Industri*.
DI (000615) Åklagare misstänker Icon för ekobrott. *Dagens Industri*.
DI (000728) Cellkonsulter flyr Flyborg. *Dagens Industri*.
DI (000915) Ägare snart fria ta hem 25 miljarder. *Dagens Industri*.
DI (000921) Jan Carlzon lättar när det blir problem. *Dagens Industri*.
DI (000927) Jan Carlzon fick sparken från Cell. *Dagens Industri*.
DI (001101) "Jag blir kvar på Framfab". *Dagens Industri*.
DI (001209) Banken tvingade Birgersson sälja. *Dagens Industri*.
DI (010123) 2300 miste jobbet inom IT förra året. *Dagens Industri*.
DI (010201) Ledare: Nu vågar Dahlsten berätta hur det var. *Dagens Industri*.
DI (010220) Pomperipossa slår mot IT-folket. *Dagens Industri*.
DI (010301) Börs&Finans: Var femte nätkonsult sparkad under krisen. *Dagens Industri*.
DI (010306) Goodwillposterna en tickande bomb. *Dagens Industri*.
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DN (991207) Karusellen snurrar allt snabbare. *Dagens Nyheter*.
DN (000125) Fusionsfebern bara stiger. *Dagens Nyheter*.
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DN (000621) "Kung Midas" har blivit vanlig. *Dagens Nyheter*.
DN (001202) Misslyckade aktieaffärer knäckte ekonomin. *Dagens Nyheter*.
DN (010304) Riskkapitalet tar värsta smällen. *Dagens Nyheter*.
DN (010718) Birgersson lämnar sargat Framfab. *Dagens Nyheter*.
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DN (020504) Icon Medialab läggs ned i Sverige. *Dagens Nyheter*.
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DN (020823) Övergivet Iconkontor säljs ut. *Dagens Nyheter*.
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DN (051010) Telekomjättens ras skakade Sverige. *Dagens Nyheter*.
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SvD (010306) 1400 miljarder minus på ett år. *Svenska Dagbladet*.
SvD (010529) Den enes död...den andres...com. *Svenska Dagbladet*.
SvD (010703) MEDIER/IT: Nytt vd-skifte i Spray. *Svenska Dagbladet*.
SvD (011208) Icons nödutgång stängs av ny lag. *Svenska Dagbladet*.
SvD (021114) Nordea halverar it-analysen. *Svenska Dagbladet*.
SvD (030930) Återhämtningen går trögt. *Svenska Dagbladet*.
TT (990407) Augustsson till Linné Groups styrelse. *TT*.
TT (991123) Finansinspektionen synar insideraffär inför Iconköp. *TT*.
TT (991209) Franco Fedeli ny chef för Svenska koppar. *TT*.
TT (021219) IT-bolag sparkas ut från börsens finrum. *TT Nyhetsbanken*.
VA (920219) Dataföretag: Bara hälften är nu kvar på börsen. *Veckans Affärer*.
VA (990531) Special: Sverges 500 största IT-företag - rikast i Sverige."
VA (991004) Internetkonsulterna: Redan rumsrena. *Veckans Affärer*. Stockholm.
VA (991117) Special: IT-haussen - pappersmiljonärerna. *Affärsvärlden*.
VA (000529) Sveriges 500 största IT-företag - Rik, rikare, rikast. *Veckans Affärer*.
VA (001030) INSIDER: Förutseende Internetkonsulter. *Veckans affärer*.
VA (020422a) Special: IT-vinnarna - De hann undan i tid. *Veckans Affärer*.
VA (020422b) Special: IT-vinnarna - högsta vinsten. *Veckans Affärer*.
Vision (991124) Pratar helst om it-konsulterna. *Vision*.
Vision (991208) Personalen tjänar miljard på optioner. *Vision*.
Vision (000223) Rekord för nyemissioner. *Vision*.
Vision (000301) VD:n är företagets nya varumärke. *Vision*. Stockholm.
Vision (000401) Europas börser allt mer oberoende. *Vision*.
Vision (000405a) Börssvacka? Vi tackar och tar emot. *Vision*.
Vision (000405b) De klarar ett börsras bäst. *Vision*.
Vision (000419) Prischock på kapital. *Vision*.
Vision (000510) Börsraset stoppade inte kalaset. *Vision*.
Vision (000524) Spray tvåa till börsen. *Vision*.
Vision (000615) Den misslyckade fusionssnurren. *Vision*.
Vision (001004) Bredbandsbolagets ägare vill sparka Birgersson. *Vision*.
Vision (001018) Låt industrin dö - satsa på det nya. *Vision*.
Vision (001107) Nätkejsarens nya kläder. *Vision Online*.
Vision (010111) Notan för e-handeln: Sju miljarder. *Vision*.
Vision (010117) Framfab tvingas böta 1,5 miljoner. *Vision*.
Vision (010125) Förbannade ägare fällde Dahlsten. *Vision*.
Vision (010208) Den stora skattesmällen. *Vision*.
Vision (010211) "Ericssons kursfall hotar hela IT-undret". *Vision*.
Vision (010308) Alla toppcheferna sparkade. *Vision*.
Vision (010318) "Stenbeck ligger bakom Sveriges framgångar". *Vision*.
Vision (010426) Det stora haveriet på riskkapitalmarknaden. *Vision*.
Vision (010506) Sprays vd avgår. *Vision*.
Vision (010816) IT-bolagen mörkar inför emissionerna. *Vision*.
Vision (010830) Krasch, Boo.om, bang! *Vision*.
Vision (011218) Adcore lurade Ringholm. *Vision*.

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Sammanfattning

Augustsson F (2005) *They did IT. The Formation and Organisation of Interactive Media Production in Sweden*. Arbetsliv i Omvandling 2005:16. Stockholm: Arbetslivsinstitutet.

Studien syftar till att beskriva och förklara framväxten och organiseringen av interaktiv medieproduktion i Sverige från 1990-talet till slutet av 2003, under för den så kallade IT-boomen och kraschen. Detta görs genom utvecklandet av en teoretisk modell och insalmande av empiriskt material.

I teorin konceptualiseras interaktiv medieproduktion som en praktik delvis utförd på ett socialt fält, vilket är strukturerat enligt arbetsdelning och -integration inom och mellan företag, logiker och status. Sociala fält formas via realisering av möjlighetsstrukturer inbäddade i existerande strukturer, och anskaffande av resurser. Det organisatoriska utfallet förklaras av strukturella förutsättningar och aspekter av formering (vad, vem, hur) samt företags beroende av stabilititet och flexibilitiet, vilket skapar positioner inom fält som företag kan inneha.

Det empiriska materialet består av fyra enkäter på företags- och en individnivå riktade till svenska interaktiva medieproducenter, genomförda mellan 1997 och 2003. En andra datakälla består av 8,000 nyhetsartiklar och notiser rörande IT och interaktiva media i Sverige. En tredje källa utgörs av visuella analyser av webbsidor tillhörande företag som producerar interaktiva medier, och en fjärde intervjuer med personer aktiva inom fältet.

Resultaten visar att framväxten av interaktiv medieproduktion i Sverige bör förstås utifrån det tidigare 1990-talets ekonomiska kris, IT-visioner och tron på en samhällelig förändring till ett kunskapssamhälle och en ny ekonomi. För interaktiva medieproducenter som kom att bli symboler för den nya ekonomin ledde detta till massivt ökade resurser i form av bl.a. statliga initiativ, ökad efterfrågan och riskkapital. Överflödet av resurser gav en snabb tillväxt av företag som producerade interaktiva medielösningar, en finansialisering och en spekulativ bubbla, vilket orsakade en börskrasch och eventuellt fältets upplösning.

Merparten av företag som producerar interaktiva medielösningar är små och når flexibilitet genom att ha en hög andel högkvalificerade fast anställda och omfattande samarbeten med andra företag, inklusive kundorganisationer. Analyser av resultatet visar vidare att arbetsdelningen och -integrationen i produktionen följer de logiker och kluster av aktiviteter vilka strukturerar det sociala fältet: ekonomi, estetik och teknologi. En stor andel svenska organisationer har vidare utvecklat interna interaktiva medieverksamheter som sammantaget är mer omfattande än de mer synliga så kallade Internetkonsulterna.

Summary

Augustsson F (2005) *They did IT. The Formation and Organisation of Interactive Media Production in Sweden*. Working Life in Transition 2005:16. Stockholm: Arbetslivsinstitutet/National Institute for Working Life.

The overall aim of the study is to describe and explain the formation and organisation of interactive media production in Sweden from the 1990s to the end of 2003, the period of the so-called IT boom and crash, through the development of a theoretical model and gathering of empirical material.

In the theory, interactive media production is conceptualised as a practice in part taking place on a social field structured according to the division and integration of labour within and between firms, and logics and status. Social fields are formed through the entrepreneurial realisation of opportunity structures resting in pre-existing structural configurations, and through the allocation of resources. The organisational outcome is explained by the structural preconditions, aspects of formation (what, who, how) and firms' demands for stability and flexibility, creating a set of interrelated positions that firms might occupy.

Empirical data has been collected from four firm and one individual level survey aimed at interactive media producers in Sweden, conducted between 1997 and 2003. A second data source consists of 8,000 news articles and items focussed on IT and interactive media in Sweden. Third, visual analyses of web sites of firms producing interactive media solutions have been conducted. Finally, interviews with people active within the field have been made.

The results show that the formation of interactive media production in Sweden should be understood in relation to the Swedish economic crisis of the early 1990s, visions of IT, and beliefs in a societal transition to a new economy and knowledge society. These ideas contributed to allocating massive resources, e.g. state initiatives, increased demands and investment capital, to those producers of interactive media solutions that came to be symbols of the new economy. The abundance of resources caused a rapid growth of firms engaged in interactive media production and a financialisation that led to a speculative bubble and a stock market crash, eventually making the social field dissolve. The majority of firms that produce interactive media solutions are small and reach flexibility and stability by having a large proportion of permanently employed skilled workers and extensively participating in collaborations with other firms, including customers. The division and integration of labour follows the logics and clusters of activities that structure the social field: technology, aesthetics and economy. A rather large proportion of Swedish organisations have further developed in-house interactive media operations that taken together are larger than the more visible so-called Internet consultants.

Appendix A: Design of the Study

This appendix contains a detailed description of the choice and design of research methods, data collection and methods of analysis, as well as research limitations and technical specifications. It is related to the discussions in chapter two concerning the construction of interactive media as an object of research. Given this, there are some overlaps between the two presentations.

Interviews

The operationalisation and search for interviewees related to or active within interactive media has been done through a combination of network and snowball sampling, i.e. starting with contacts involved in producing interactive media solutions and through them finding others to interview. A group interview with owners and managers in firms producing interactive media solutions was also arranged together with Promise in early 2001. People present at seminars from 2002 to 2004 were found using a similar method: invitations were sent out to participants in previous empirical studies as well as relevant research, policy, trade and union organisations. Everyone was asked to circulate invitations to others that might be interested. The interviews were initially documented as field notes (conducted by at least two researchers at a time) and in the case of seminars and the group interview later developed in more detail.

The interviews as well as the discussions at seminars give a picture of the insiders' views of the social field and its formation and organisation. They also function as a way of investigating if insiders' perception is in line with the theoretical models as well as the empirical findings retrieved through the surveys. Recognition is valuable and a test of validity within qualitative research (Denzin and Lincoln 1994; 2003; Mills 1959). But some discussions are rather abstract and divert from insiders' perception and ways of speaking about a phenomena. Further, as argued by Karlsson (2004, p. 107), 'Everyday concepts and social science ones are usually rivals, as the latter aim at going beyond the surface of the former to the mechanisms behind our way of thinking in ordinary life'.

Although research results that are hard to transmit to those involved has limited value (Svensson et al 2002), the solution for explanations is not to simplify (and thereby perhaps misrepresent) explanations in order to fit the language and cognitive model of those involved, not even when taking phenomenological aspects into account (Aspers 2001a, pp. 249-310). To be valuable, research should rather challenge the views held by those involved and thereby be potentially emancipatory (Collier 1998; Sayer 2001; 2005). Further, when people talk of how things are organised, they do so based on ideas of how they think it

should be organised, and not just how it is organised. This presents methodological problems and possibilities. The speech acts reveal the ideas and logics of the field the respondent belong to, but they have to be critically evaluated.

Surveys

The quantitative data is taken from five surveys conducted within the MITIOR programme between 1997 and 2003. They have been published as reports that include more detailed descriptions on data collection and analysis (Augustsson and Sandberg 2004a; Sandberg 1998; Sandberg and Augustsson 2002; Sandberg et al. 2005). The present discussion concerns issues not covered in those reports.

The operational definition used when targeting firms that produce interactive media solutions for external customers bridges the distance between on the one hand the insiders' perception of the field, their position and the practices they perform, and on the other outsiders' (including researchers') labelling of them, a combination of a phenomenological and a 'traditional' quantitative approach that makes the actors' identification part of inclusion.[64] A broad working definition of interactive media solutions was constructed by researchers together with insiders, researchers made the first rough screening of databases and respondents subscribed or not to the working definition in their questionnaire replies. Thereby, only those (found) that identify with and perform activities identified with interactive media based on the definition developed together with insiders are included. Firms that perform similar activities but identify themselves as not part of the practice and those that label themselves as interactive media producers, but do not perform any of the activities that other insiders identify as part of interactive media production are excluded from the quantitative studies. There was a tendency for firms to label themselves as interactive media producers during the time of database construction. The situation now is the opposite (cf. Lee 2001).

To find a population of firms that corresponded to the research definition, an investigation of on- and offline sources where firms producing interactive media might be listed or at least mentioned was performed. Since the label interactive media is not used by all those involved, a number of additional labels have been investigated and all firms roughly corresponding to interactive media included. This process was far more elaborate for the survey conducted in 2001 than the one from 1997 (see more below).

There are two major reasons why the population was not based on existing classifications of firms producing interactive media. First, there existed no such classifications suitable for quantitative studies, which made it impossible to

[64] This is implicitly present in all studies, although usually viewed as a problem, as those that do not correspond to the definition either did not reply or are excluded from analyses. The strategy was however explicit and more elaborate here as it involved understanding what interactive media was.

directly target a group of firms using e.g. SNI-codes. A browse through the firms that eventually responded to the surveys used here show that they were listed under more than twenty different classifications, mostly related to advertising and media, technology and management and 'other', i.e. close to the logics and clusters of activities found in the study. Including all firms listed under these classifications would have been impossible for practical reasons and using a smaller sample was not an option since the purpose was to make a complete study of interactive media production in Sweden (cf. Leisink et al 2000). It would further have been impossible *ex ante* given that it was not known how the firms that claimed to produce interactive media were classified until they actually responded to the surveys. There is neither any branch organisation with a complete coverage of firms, although Promise's list of current and prospective firms was used as a starting point in the studies directed to firms that produce interactive media solutions for external customers.

Second, even if there existed an external industrial classification of firms engaged in producing interactive media solutions, it would not have been suitable for the study as it would have neglected the phenomenological aspects and thereby treated the meaning of interactive media as given.

1997 New Media Survey

The first Swedish national survey aimed at managers in companies producing interactive media was conducted in 1997 by Åke Sandberg, with assistance from Christofer Edling (Sandberg 1998). Back then, the sector was called 'new media', not 'interactive media', but the theoretical and operational definition was more or less identical. Interactive media is consistently used here to avoid confusion.

The database of about 750 companies that was used for the survey came from a Promise list that was supplemented with lists found in business journals, mainly *Dagens Industri*. Five different questionnaire versions were used and data collected using a combination of mail questionnaires, web-based and e-mail surveys and telephone interviews. 600 of the companies in the database were estimated to be active and a total of 302 responses were received, i.e. 50 per cent.

I did not personally participate in the completion of the survey, but had the original data for analyses and the opportunity to consult Sandberg and Edling. Due to the condition of the stored data, it had to be reconstructed and to some extent recoded using the existing data files, archive material and research notes.[65] There is however, usually just a deviation of one or two per cent up or down in distributions over responses to single questions between data reported in Sandberg (1998) and here. A total of 297 responses have been found during the

[65] The data was stored in five separate STATA data files with limited information on the process of coding, how the data files related to each other and the questionnaire versions, which questions the columns and what firms the rows represented. I am indebted to Atty Burke for her assistance in reconstructing and organising the material.

reconstruction of the data, out of which 230 can be linked to a certain company. Several companies documented as having responded to the survey could not be linked to a certain response. Based on the names of these companies, the database consists of roughly another 20 companies that replied to both the 1997 and 2001 survey apart from the 38 mentioned below.

2001 Interactive Media Survey

The second survey was conducted by Åke Sandberg and me in 2001 (Sandberg and Augustsson 2002). The process of finding companies was far more extensive than in the previous survey. Promise's list of current and prospective members was used as the basis and was complemented by a systematic examination of all on- and off-line sources found, including repeated checks to find newcomers.[66] Companies found through e.g. job-ads, IPO prospects, newspaper articles, links on websites, advertisements and personal meetings were also included. All firms that by themselves or by others were labelled as interactive media producers or something related were initially included and checked against the working definition through an analysis of their websites.[67]

The exact number of presumed firms investigated is hard to determine but an estimate would be at least 5,000. Due to the contested labelling of interactive media, alternative logics of inclusion and high dynamics, it was likely that many firms were not active at the time of data collection. Therefore, all firms or a random sample of them were not directly approached. An inactive firm is one that is not producing interactive media in the legal form it had when the data collection process starts due to: i) claiming not to be active; ii) having closed down according to official records; iii) being bought up, split or merged and no longer an independent legal body; iv) lacking any documented turnover.[68] Thus, a firm can legally exist, but be considered inactive if no business activity is performed.

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[66] This main sources have been Affärsdata, BitoS, Bizbook, Clockwork, Dataföreningen Sverige, Emfas företagskatalogen, fetform, fuska.nu, Grafiska företagens förbund, Gula Sidorna, Impact00, Info Magasin, Interactive Island, Internetboken, Internetkatalogen, Mid Sweden Info Center, Mogul.com, Multimediaakademien i Lund, Resumé Mediebyrå Special, Spray, Svenska IT-företagens organisation, Swedish Game Industry, Vindue, Vision branschbibel and Wipcore Partners.

[67] Among the terms used to label firms involved in interactive media production are: advertising bureaux, CD-ROM producers, design bureaux, digital media producers, e-business producers, electronic commerce, free-lancers, full service bureaux, game developpers, graphics companies, graphics producers, Internet, Internet consultants, Intranet, IT consultants, media bureaux, multimedia producers, new media producers, packet solutions and budget web-pages, producing digital printers, production bureaux, PR/info bureaux, web bureaux, web and multimedia bureaux, web designers, web design and HTML, web developers, web producers and web promotion,

[68] Organisations differ somewhat from individuals in this respect. Individuals are born, move and die, but seldom start or cease to exist through mergers, splits or by being bought out. Firms without turnover are usually inactive. They might however be in a start-up phase or try to avoid taxes, but this is a reasonable risk to sort out inactive companies.

Taken together, it was unlikely that even a majority of the 5,000 firms in the database would correspond to the working definition of interactive media, making it possible but expensive and problematic to approach them.

Three checks were made of the potential inclusion of the wrong firms. First, the website of each firm was investigated, which also enabled updating necessary contact information. In some cases, firms were also contacted via e-mail or by phone. This left 1,563 presumably active firms producing interactive media solutions including doubtful cases that were kept for further screenings. The first check proceeded gradually from the autumn of 1999 to the spring of 2001 with a final control and update in April 2001 before the data collection started. The second and third checks were integrated in questionnaires as questions and phone interviews, excluding firms based on their identification and what they did.

Data collection was initially performed through a combination of phone interviews and mail questionnaires by Jobfinder Student. The strategy was later changed since mail questionnaires alone proved more efficient and Jobfinder Student shut down their operations. I came to handle reminders and coding personally following the shutdown of Jobfinder.[69]

490 of the 1,563 firms proved to be inactive, 264 identified themselves as not being interactive media producers, 16 were double entries, 284 identified themselves as interactive media producers but denied participation, 164 have not been possible to locate or classify and 345 responded to the survey in total. In conclusion, 90 percent (1,399) of the firms in the database were classified and 44 percent of the relevant firms filled out the complete questionnaire and make up the basis for the analyses. An analysis of the firms that were not possible to classify was performed in late 2001.

2002 In-house Interactive Media Production Survey

The third survey was directed at workers responsible for in-house interactive media operations in a sample of Swedish firms and government agencies with more than 200 employees. It was conducted by Åke Sandberg with initial assistance from Tommy Lindkvist and then me (Augustsson and Sandberg 2004a).

Smaller organisations were excluded since they were considered less likely to have in-house interactive media operations and in order to make sampling easier. A sample of 800 organisations was randomly drawn from the 1,581 organisations listed using UC's (*Upplysningscentralens*) database of Swedish organisations. The limited sample was chosen because the study was mainly viewed as a comparative complement to other studies, but it would in retrospect have been better to include all firms given the response patterns and low base numbers. A total of

[69] The shut down of Jobfinder Student probably affected the response rate negatively since reminders were delayed and firms temporarily suffered an unclear status in our databases. Comparative analyses however show that there are no systematic bias in e.g. answer patterns before and after the shut down.

370 organisations (46 per cent) responded. Of these, 40 per cent produced all or some of their own solutions, 37 per cent ordered and used such solutions and 23 per cent claimed not to use interactive media at all. Some organisations had certain difficulties understanding what interactive media was and claimed not to use it, even though they had a website. A study by Statistics Sweden showed that practically all large Swedish organisations had a website in 2002, meaning that they use and in some cases produce interactive media (SCB 2003). Thus, there is reason to suspect that some of those that claim not to use interactive media in fact do, but this does not seem to render systematic bias among respondents.

The questionnaire was based on the 2001 survey directed at firms producing interactive media solutions for external customers, although extensively revised and modified since the type of organisations differ. Still, the purpose was to facilitate direct comparisons. The questionnaire was divided into two sections. The first, more extensive, part was directed at firms that produce all or parts of their own interactive media solutions, and the second at those that only order, use and maintain such solutions.

2002-3 Interactive Media Survey

The fourth and fifth surveys were conducted in 2002/3, initially by Åke Sandberg and Gabriela Maguid, and consisted of firm and individual level questionnaires in a sample of 57 interactive media producers that responded to the 2001 survey and a couple of firms supplied by Promise (Sandberg et al 2005). The firm-level questionnaire was a slightly modified version of the 2001 questionnaire. 52 firms (91 per cent) responded to the firm-level survey, equaling 15 per cent of the sampling frame of 345 firms. 370 of the complete list of 454 workers responded to the individual-level survey, equivalent to 81 per cent of that sample frame.

The information from the 2003 survey does not represent a general updated study of firms that produce interactive media but a portion of the firms that were active and willing to respond to the 2001 survey. The responding firms of the 2001 survey were most likely representative of all Swedish firms producing interactive media that year, so a sample drawn from them is not necessarily representative of Swedish interactive media producing firms in 2003 since industrial dynamics might have altered the content of the population (see more below)

Survey Combinations and Analysis

An aim of reconstructing the 1997 survey was to merge all surveys to facilitate longitudinal analyses of changes within particular firms. As mentioned, 297 of the original firm responses to the 1997 survey have been reconstructed and 230 identified, i.e. a firm name and identity was linked to the responses. 38 of these firms also replied to the IM-2001 survey and three to the IM-2003 survey. 49 firms responded to the 2001 and 2003 survey (see table A.1).

Table A.1. Description of survey data.

	Number of replies	Type of respondents
NM-1997	297	specialised interactive media firms
IM-2001	345	specialised interactive media firms
IM-2003	52	specialised interactive media firms
IMSO-2002	370	organisations with in-house operations
IMIND-2003	370	interactive media workers
NM-1997+IM-2001	38	cohort
IM-2001+IM-2003	49	cohort
NM-1997+IM-2001+IM-2003	5	cohort
IM-2003+IMIND-2003	52/370	Multilevel: specialised firms /workers

The responding firms in the 2001 study in practice function as the artificially constructed population of firms (and thereby individuals) for both the firm and individual level surveys conducted in 2003. In reality, there is of course a real population of firms that is larger than 345, but these were not approached.

Analysis

The combination of survey data makes it possible to analyse the formation and organisation of interactive media production, including internal differentiation and combinations of activities, using i) correlations, ii) multilevel, iii), longitudinal iv) factor and v) comparative analyses. The actual population of firms targeted here is however limited from the outset and there is a reduction due to non respondents, meaning that cohorts are smaller than commonly advised for most of the more advanced statistical analyses. The problem is not unique for this study, it is common to find drop out rates between 40 and 60 per cent in longitudinal studies (Bijleveld and van der Kamp 1998) and drop out rates are generally higher for firm level studies where survival probability decreases due to the turnover of firms, different methods of sampling, movements in and out of the field and non respondents (Aldrich 1999; Allison 1982; Kalleberg et al 1990; Selvin 1996). The small size of the cohorts are however not a major problem here since neither predictive nor exploratory models are used in the explanation; the cohorts are mainly used to view tendencies regarding whether changes over time are due to changes in the composition of firms or in the firms themselves.[70]

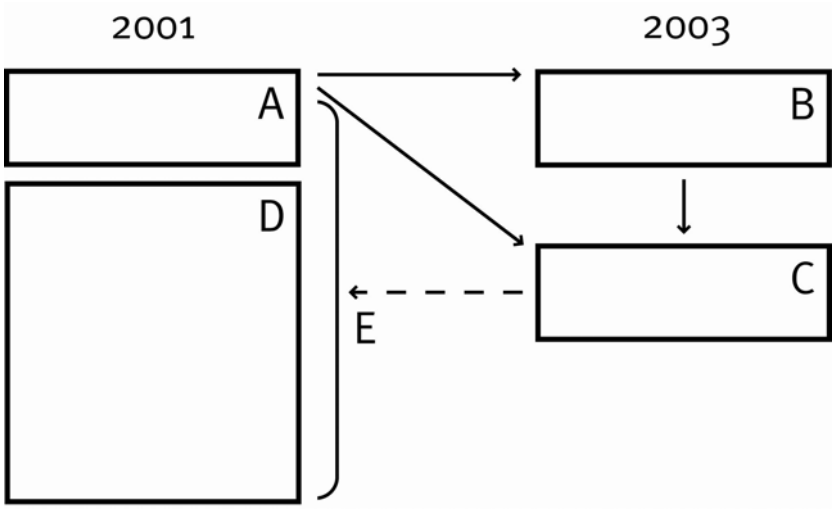
i) The correlations between activities is here analysed using Pearson's r, which assumes linear relations between normally distributed variables measured at the interval level (Berry and Feldman 1985). Since activities are measured using ordinal level categorical data, this is not ideal, although common (Bryman and Cramer 1994, p. 67). Pearson's r is still used for consistency since the further

[70] The main exception concerns multilevel correlations between factors within 'constructed' cohorts described further down.

analyses, such as factor analyses, are based on it. Pearson's r is further a robust enough approximation of reality in this case (Agresti and Finlay 1997, p. 340): hardly any co-variations change direction or statistical significance and the relative (but not the absolute) measures of co-variation are intact when using e.g. Kendaull's tau-b (Chi-square is not favourable since it treats the data as nominal, i.e. as non-ordered, which is not the case here, cf. Agresti and Finlay 1997, pp. 260-1). The correlations between activities that form the basis for the factor analyses are found in the table appendix. Traditionally significant levels for p-values, i.e. the probability of the observed data given that the null hypothesis H_0 is true (here a nil hypothesis, i.e. zero difference), as received from the statistical program has been included in the tables. This conveys limited information in itself and is mainly included for ritualistic reasons (Gigerenzer et al 2004). The same also holds true for significance concerning correlations between factors.

ii) The problem associated with the small sample data also applies to multi-level analyses (Hoyle 1999), but I argue that they can be somewhat overcome by using the access to longitudinal cohort data. Multilevel analyses on firm and individual level are more easily justified when comparing data from the same time of data collection since changes on one or more levels might occur if data is collected at different points in time (DiPrete and Forrestal 1994). The number of responses from firms in 2003 (i.e. 52) is however too low to enable firm-level factor analyses and other statistical elaborations (Bryman and Cramer 1994, p. 258), making it preferable to compare individual level data from 2003 with the firm-level data from 2001 for all 345 firms that responded that year and not only the 49 firms that also responded in 2003. This can be justified from theoretical perspectives due to time-lag effects (e.g. Edling 1998; Liljeros 2001), empirically given that the majority of workers were employed in the same firms two years earlier, and statistically using stepwise linkages (figure A.1).

Figure A.1. Relations between data sources for correlations and factor analyses at individual and firm level.



Analyses of correlations of performed activities between firm and individual level data in 2003 (B and C, respectively), as well as between 2001 and 2003 cohort firm level data (A and B) show stable patterns of correspondence. There is neither any significant deviation between the firms that only responded in 2001 and the smaller group that also responded in 2003 (D and A), meaning that all respondents in 2001 can be treated as a single group (E), which further can be statistically inferred to the total population of firms in 2001, i.e. the estimated 750-1,000 firms active in 2001 producing interactive media solutions. This makes it justified to compare firm level data for all firms from 2001 and individual level data from 2003 (C and E) rather than just C and A.[71]

iii) Longitudinal data from observations of several actors on a number of variables at different occasions constitute a variant of hierarchical models and both are in some respect hierarchical, although one in level and the other through time (Bijleveld and van der Kamp 1998; Bryk and Raudenbush 1992). Longitudinal cohort analyses here purport to show whether firm level changes over time are mainly due to either alterations in existing firms or in the composition of firms. This is however somewhat problematic since the cohorts are limited and the number of computable cases very small (Selvin 1996). Given this, to the extent that longitudinal analyses are used, it is mainly to detect tendencies.

iv) In this study, I mainly use factor analysis to systematically reduce the empirical data and propose underlying patterns in longitudinal and hierarchical clusters of activities that firms producing interactive media solutions perform (including as subcontractors) and what they outsource to others. It is thereby somewhat comparable to a realist perspective (Mingers 2004, p. 187), although it converts reality from an open to a closed system to find correlations between the inherent variables (Bhaskar 1998b). I have found that it is necessary to interpret the results of factor analyses and compare it to other types of empirical data and the reality as the analysis cannot move beyond the quantitative data used, a position commonly held in relation to factor analysis (Bollen 1989, pp. 67-72). The method detects patterns even if such hardly exist and emerging patterns can be merely spurious statistical or mathematical effects (Hoyle and Duvall 2004). For the same reasons, factor analysis works best with a hypothetical preconception of the patterns to be revealed based on theoretical arguments. But factor analysis can be quite easily modified to reach desired patterns by e.g. limiting the number of

[71] A more advanced longitudinal multilevel study would of course need to take into account other potential hazards such as micro and macro correlations with error terms, and when involving clusters of activities how to treat non-normal variables, the construction of indexes and specification of latent variables at different levels (Bollen 1989; DiPrete and Forrestal 1994, pp. 348-351; Hoyle 1995) This is however not the case here since the exploratory comparisons between data at different levels and points in time are merely intended to show correspondence.

factors to extract, the variables used in models, the number of iterations, specifying eigen values for inclusion and the distribution of variables on different factors. This makes it necessary to be critically reflexive of wishful thinking (Bourdieu and Wacquant 1992). In other words, do I find clusters of activities because that is what I want to find? I have developed a range of alternative models, twelve of which were composed in detail before settling for the one used here that is shown in table 6.2, 6.8 and figure 6.3. All patterns are rather consistent, although smaller deviations appear, which leads me to believe that the patterns are not just based on my wishful thinking.

Factor analysis should ideally be used on interval level data with continuous variables, but it can as is done here be used exploratorily for categorical data and even dichotomous variables to detect clusters of activities (cf. Aspers 2001a, pp. 156-160; Bryman and Cramer 1994, p. 257; Kim and Mueller 1978).

The number of factors retrieved using factor analysis is commonly overestimated using standard techniques like K-G rule, scree plot and to some extent parallel analyses. A reduced number of factors often make more sense, but lowers 'explanation' or 'power', and in some cases present less distinct factor loadings (Hoyle and Duvall 2004). For example, the four factors I found at the individual level in analyses make reasonable sense, but the same does not hold true when analyses are made at firm level. A more understandable and consistent pattern is found if the number of factors is reduced to a maximum of three. The price to pay for this is a reduction in the total variance explained by between five and ten per cent and for some variables a less clean loading on factors.

I have used rotation although several variables are not pure, i.e. they load rather highly on more than one factor. This is statistically undesirable, but analytically and theoretically understandable given other empirical findings concerning flexibility specialisation. Comparisons between orthogonal and oblique rotation methods reveal little difference in the number of factors and only minor alterations in the distributions of variables on different factors, factor loadings and total variance explained. Given this and the complexity of interpreting oblique rotations, orthogonal varimax rotations are used throughout even though the factors are related to each other (since division and integration of activities are by necessity internally related: Sayer 1995, chapt. 2) something that generally is argued to favour oblique rotation (Kerlinger 1986).

Once the variables that are assigned to a certain factor, i.e. the activities that are included in different clusters of activities, have been determined, I have calculated the extent to which an actor is involved in that factor by adding the respective variables together to create an index that represents the factor in question. This makes it possible to i) determine the proportion of actors that are invol-

ved in a factor at all and ii) correlate factors with each other.[72] This, in effect, is a correlation between standardised indexes where some variables in the indexes will have no or opposite correlations to variables in other indexes for some respondents, which further reduces the strength of correlations between factors. This is however necessary for practical reasons since the total number of possible correlations is more than 15,000 (although not all are used).

A combination of factor analysis and correlations between production, outsourcing and subcontracting is used to give a picture of the cluster activities that firms usually do, and the ones they most often leave to others and thereby describe the vertical structuring of positions in the field in terms of division and integration of labour between firms. By using multilevel analysis, it further becomes possible to analyse the correspondence between the activities firms are engaged in and the clusters of activities performed by individuals working in firms, thereby linking the division of labour between firms to the division of labour within them.

The data and analyses used here cannot describe direct links between firms, i.e. concrete production networks or general relational patterns. This requires other methods and types of questions (Wasserman and Faust 1994).[73] But the purpose is not to detect the actual firms that are related to each other or to describe a particular production network. Network analysis is a powerful tool for studying relations and their impact, but has limited value for understanding overall structures of social fields as conceptualised here, since the latter consists of both actual and potential positions and relations between actors (cf. Fligstein 1996, p. 657). The method used here instead shows the vertical and horizontal structuring between types of firms holding positions based on division and integration of labour and clustering of activities by which some firms outsource some activities to another other type of firm, even though actual connections between them cannot be proven (cf. Broady 2002, on relations between networks and social fields from Bourdieu's perspective). Variations in firms' positions are further shown to differ, contributing to the dynamics within the field.

v) Apart from comparisons made between subgroups of firms and workers, the main comparative analyses are made between 2001 data for firms producing interactive media for external customers and 2002 data for organisations that

[72] This differs from second-order factor analysis that aims at finding factors of factors, but has similarities to using factor scores, i.e. measures of actors on factors (Kerlinger 1986, pp. 582-585). The difference is that while factor scores commonly are based on adding averages weighted according to factor loadings, the extent of involvement is here based on adding dichotomised variables (involvement or not) within factors. The latter method constitutes a larger reduction of information, but it becomes easier to distinguish actors that are not involved at all in a certain cluster of activities.

[73] The questionnaire involved questions about the number of other firms one perceived to have stable outsourcing and subcontracting relations to, the felt dependence and geographical location of these firms. It did not, however, ask respondents to name related firms.

produce their own solutions internally. As for multilevel analyses discussed above and as argued elsewhere (Augustsson and Sandberg 2004a), the time difference for data collection is not ideal for comparisons since differences (as well as similarities) between the two groups of respondents might be due to changes over time in one or both groups, but it is manageable given that organisational changes usually take a longer time than the six months time lag. The slight deficit is further counterbalanced by the similarity in methods of data collection, questionnaire design and the use of retrospective questions.[74]

Visual Analysis of Web Sites and the Internet

The extensive work involved in searching for and identifying interactive media firms on the Internet which took place between 1999 and 2001 gave me, apart from the discomfort of a mouse-arm and the benefits of increased knowledge of the structure of the web, the possibility to perform a visual analysis of the web sites of interactive media producers (Augustsson 2004).

The relevant web sites for the visual analysis initially consisted of all firms that by themselves or by others had been labelled as interactive media producers in off- and online sources described in relation to the surveys above. Later, only web sites belonging to firms that in responses to surveys defined themselves as interactive media producers were used for analyses.

A total of at least 1,600 web sites have been studied for the visual analysis, of which about 350 were reviewed at three different times. A first analysis of the web sites has been performed directly online while finding active interactive media firms. It consisted of getting to know and detect patterns in the visual codes and styles of the artefacts and the social field. The findings were documented as field notes and preliminary categorisations of types of web sites. The second more systematic analysis has been performed on two separate sets of paper copies of web sites downloaded and printed in 2002 and 2004/2005. Using the preliminary categorisations constructed in the first analysis, the material was divided into different groups based on the visual appearance of the web sites as a whole, including pictures, text and structure of information. Each group was then analysed as a whole and compared to other groups to find internally coherent characteristics and external differences.

The Internet in general is an important research tool and area containing information that is inaccessible elsewhere, like chat rooms, discussion groups,

[74] Respondents in both types of organisation have been questioned regarding the situation from one to three years back, making it possible to compare data for 1999, 2000 and 2001 although data collection took place in 2001 and 2002, respectively. It is granted that the use of retrospective questioning has limitations (Augustsson and Sandberg 2004a; Sandberg et al 2005), but there are no immediate signs of problems in this case and they do not make up a central part of the analysis (i.e. they are not necessary proof for the argument, but add some extra weight and consistency).

comments to articles and web blogs. The changing of the Internet is a topic in itself directly related to the firms studied here who play an important role as architects and enablers of the Internet. For the purpose of this study an estimated average of between one and two hours a day have been spent online during the last five years. This has mainly consisted of watching and documenting interesting information, intervening by posting comments and questions on web sites, discussion groups and in chat rooms, and repeated communication with people active in the field as well as analysts, journalists and web editors. This represents a way of 'being there' in vital 'soft places' of the social field that cannot really be done in other ways (Hedman 2004; Rehn 2001, pp. 36-42).

Media Coverage and Second Hand Information

Interactive media was practically born and raised in the light of the media as trade and business journals from related fields and mainstream journals and papers gave it enormous attention (Holmberg et al 2002). Specialised magazines, online journals and websites were founded, newspapers included article series and gave daily IT stock market tips, 'showing ordinary people how to get just as rich as the IT-entrepreneurs' (Pettersson and Leigard 2002; Ågerup 2002). The hype is both beneficial and problematic for methodological perspectives: there is more than sufficient material for the study's purposes, but the volume of data rapidly exceeds manageable levels.

The operational definition of media coverage is set wider than the actual interactive media production in order to find empirical material that shows how it has been framed and understood in relation to e.g. IT, the dotcom boom and the new economy. Relevant *media* to cover has been chosen based on i) the general national importance of the media source, e.g. number of readers and influence (Carlson 1999), ii) coverage and influence in IT and media related sectors, iii) media sources covered in the article database used, and iv) practical issues related to browsing, searching and storing articles. The relevance of *articles* and *items* to include in the analysis of media coverage has been judged on the basis of headlines and summaries and when deemed interesting the full article printed and stored for further analysis. In retrospect, the judgement of what is of concern and not has changed over time. During the hype years, the sheer volume of news meant that articles had to be really 'to the point' to be stored, whereas in 2003, almost any article would suffice. A learning process has also occurred whereby some articles that were earlier seen as relevant are now of less interest, other pieces of material have 'grown' as the focus of the study has become clearer and possible explanations have emerged. Reduction and classification of material has been an integrated part of the actual analysis that is guided by and that has guided the research process, since it is impossible to judge something as relevant without

classifying it as saying something specific that is relevant for the study (Bourdieu and Wacquant 1992; Gubrium and Holstein 1997; Sayer 1992).

To correct shortcomings and potential bias in the collection of articles and to obtain a fuller account of the media coverage, a more systematic search was performed in the summer of 2004 using the Affärsdata online article archives.[75] A list of initial search words including specific persons and companies, e.g. 'Framfab' and 'Jonas Birgersson', and more general terms like the 'IT boom' and 'IT crash' was used to find articles. More search terms were added gradually as new names, events and areas of interest emerged and in total about 60 terms were used. A combination of group and stepwise searches including logical expressions has been used to reduce overlaps, unnecessary duplicates of articles and keep the searches manageable. This means that a first group of roughly twenty search terms was included in the first batch. The second search contained a new batch of terms with the restrictions that articles containing any search terms from the first batch should be excluded. The second batch of search terms was then added to the list of excluding restrictions in the third search, and so on. The reason not to include all search terms at once in a single search was the maximum limit of 250 hits set in the Affärsdata database and the practical problems of handling the total number of articles retrieved. For the same reasons, the search period, from the beginning of 1990 to the end of 2003, was split up into shorter time periods. In total, between 750 and 1,000 searches were made. I stopped adding terms and perform searches when I felt that the new articles gained could no longer justify the work effort. Duplicates of articles (due to several papers including news from Reuters, TT and AP) have been included in some cases to determine the complete media attention of a certain event since it is an indicator of the symbolic importance of that event.

As in the case of finding firms for the surveys, it is hard to determine the total number of articles browsed through, but they exceed tens, and probably hundreds, of thousands. In the Affärsdata database alone, the search term 'framfab' gives about 2,300 hits annually between 2000 and 2003, i.e. roughly six a day (cf. Willim 2002). The stored paper articles alone amounted to over 6,000 at the end of 2004.[76] A further reduction of the material was made in the process of reading and preliminary classification of the material during which irrelevant articles were excluded, leaving roughly 5,000 articles (table A.2).

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[75] The reasons for choosing the Affärsdata database for the major online search instead of the more common Mediearkivet, which also was available, was that the latter has less coverage of financial sources, allows a maximum of 100 hits at a time and is overall less user-friendly. Mediearkivet was however used for a complementary search since Affärsdata does not cover *Aftonbladet*, Sweden's largest evening paper.

[76] For practical reasons, or rather the decision to spend valuable and limited time on more important tasks, I have not counted the exact number of articles. It was estimated by comparing the size of 1,000 digital articles that were printed out to the total number stored. In my view, it matters little what the exact number is, this is a good enough estimate.

Table A.2. Description of storage and reduction of articles for analysis of media coverage. Note: Figures are rough estimates

	Paper Articles	Digital Articles	Total
Total published	?	75,000	75,000+?
Stored for reading	6,000	5,600	11,600
Reduction 1	-1,000	-1,600	-2,600
Reduction 2	-	-1,000	-1,000
Used in analysis	5,000	3,000	8,000

The total number of hits retrieved from Affärsdata was roughly 75,000. Hits that seemed relevant based on title and introduction, about 5,700 pages, were marked and downloaded digitally as word files. Most articles are shorter than one page and are closer to news items, but some run over several pages, making the total amount of articles somewhat fewer (perhaps 5,600). By cutting away duplicates and irrelevant articles and altering the layout of the articles (e.g. reducing fonts and page breaks), the number of pages was limited in steps to some 4,000 and then 3,000 pages that were printed out for further sorting, reduction and analysis. The reason to print out the digital articles rather than convert paper copies into digital format, i.e. scanning, was that the latter proved impractical. About 8,000 articles and news items are included in the final analysis. Thus, probably less than ten per cent of the articles I have come across between 1999 and 2004 have been used in the analysis. The reason for the large reduction of material prior to the analyses is the shear quantity of media coverage of the area. Even so, the majority of articles included concern strictly financial matters, e.g. changes in chare values that are only quickly browsed through and stored to check specific information.

During article search and sorting, connections and patterns between articles have been identified through two complementary methods. The first method, which is restricted to the digitally retrieved material, takes advantage of the design of the Affärsdata database. The method consists of studying pairwise connections between different search terms by investigating the proportion of hits that overlap each other. In practice, this consists of comparing the number of hits that two search terms result in independently of each other and when combined or using 'NOT' restrictions for one term over the other. As with factor analysis, the overlaps are non-directional, meaning that one word is not thought to 'cause' another. The method makes it possible to see how often two persons, firms, events and discussions are written about in the same article as well as independently of each other. It shows the clustering of themes and persons, how the media tends to associate e.g. option programmes and goodwill discussions with certain companies but not others, and whether a CEO is mentioned with or without reference to the firm in which he/she is employed and to another CEO. The

method has some similarities to factor analysis as it detects underlying patterns between 'variables' and creates clusters of interrelated subjects.[77]

Similar to e.g. science citation indexes, the method is fairly crude and 'dumb' since it is restricted to exact search terms and cannot interpret the meaning or type of relation between two terms or understand when something is discussed without being referred to in exact terms. It is further basically a quantification of qualitative material whereby articles are reduced to search terms and the count and relations between them are at the centre. Still, the method facilitates systematic overviews of patterns of relations that cannot easily be achieved through normal reading of articles and works as a complement to more advanced content analyses. This quantification and systematisation of the material further has qualitative benefits for the overall analysis and explanation. It says something about the relative status of two firms if one is only included in comparison with the other, whereas the other receives attention on its own.

The second method used for detecting patterns in the media coverage material is more in line with traditional ways of analysing qualitative material where articles are sorted into different themes based on an analysis of their content. In difference to the method described above, the themes are not based on the search terms used to retrieve the articles, but are allowed to grow out of the material itself, with reference to the research questions to be answered. The classification further changes during the process and the material is regrouped, some themes collapsed and others split up based on reinterpretations of the articles.

A total of 70 categories were left after the final iteration of which 66 were included in the analysis (table A.3). The labels of the categories presented in the table are the working names that I used during analysis. Given this, the actual labels are chosen more for my personal association and understanding than to describe the contents in detail with any clarity. Still, I think it is evident that some of the categories, like 'drugs+IT', are narrower than others, like 'crisis/crash'. The number of articles in each category varies quite a lot: I have found less than 20 articles concerning drugs, but several hundreds related to the crisis and crash. Articles might further 'belong' to several themes, in which cases copies have been made.

[77] I am fully aware that the results of the first type of analysis of the media coverage can barely be detected in the text, making it less transparent than would be preferable. I still choose to briefly discuss the method here since it has played a role in the analysis.

Table A.3. Categorisation of media coverage.

Label	Label (continued)
1. regional+real estate	36. Visions
2. drugs+IT	37. New economy
3. growht, business	38. Gurus/people
4. start, firms	39. Organisation+management
5. growth, around	40. Closure
6. books on IT+IM	41. Layoffs, general
7. pornography+IT	42. Layoffs, specific
8. unions; employers	43. Quits
9. expansion, firms	44. Computer games industry
10. stories, chronicles	45. Work Environment
11. legitimacy	46. Stenbeck
12. bankruptcy– general	47. Wage levels+forms
13. bankruptcy - specific	48. Wage cuts
14. venture capitalists	49. Options
15. investments	50. IPOs
16. women+IT	51. Emissions of stocks
17. immigrants+IT	52. Change of CEO, etc
18. technology-solutions	53. Contract, agreement, sales
19. technology, diffusion, visions, consequences	54. Customer relations, discussion
	55. Outsourcing
20. IT-policy+state initiatives	56. Stock market relations
21. Law, taxes, economic crimes	57. Winners-loosers, insider trading
22. Competitions	58. Shares–financial reports, results
23. Lists	59. Stock market tips
24. e-commerce	60. Firm acquisitions and sales
25. Competence in sector	61. Alliances
26. educations in IM/IT	62. Mergers
27. Needs for competence	63. Valuation, prognosis of market (not share value)
28. Changed activities+identities	
29. Growth-new market	64. Share valuation, general
30. Market-convergence	65. Share valuation, specific firms
31. Demand for IT/IM	66. 2004-01-01>>
32. Demand-workers	67. Probable duplicates
33. IT-boom–bubble	68. Perhaps relevant
34. Valuation–discussion	69. Interesting, but not relevant
35. Crisis/crash	70. Prosolvia

Complete Analysis

The perceived causality has been tested and revised through repeated readings, comparisons with information from statistical data, visual analysis and interviews. This lead to the development of new themes that was not immediately visible in the articles by themselves and a reconfiguration of overall analytical models and patterns of causality. No method has more weight than another, but it is possible and necessary to start somewhere. Media attention does not govern causality, but has proven to be a good starting point for the analytical model as it already was arranged thematically. Problems associated with starting with the media coverage can be to fall into the narrative of interactive media, which focuses a small number of firms. I have performed dual readings of the material, one reading focussed on what actually happened and another on interpreting what was presented as important in the media and how it was described and discussed. The restriction to a small proportion of firms, which means that the information relating to the majority of firms is scarce, poses no problem for the second reading, since it shows how interactive media was constructed.

There is an anecdote at the Stockholm sociological department about a legendary statement of one of its most distinguished professors: 'I am going to batter my data until they confess'. The statement is often seen as prejudice, which has some merits to it. But it is also a good thing if done properly. Different methods often result in contradictory findings that need to be holistically analysed. Three research strategies used badly cannot be combined into great results (Bourdieu and Wacquant 1992; Sayer 1992; 2000). There are inconsistencies in all empirical data included here, and even more so when comparing different methods to each other. These 'problems' have to be incorporated into explanations by analysing the data *holistically*; An attention to the use of statistics and an integration of qualitative and quantitative data through analytical interpretation that gives all forms of enquiry equal importance. This might, as for the professor above, include quite a bit of battering before the work is done.

By adding in turn linkages, a time axis and causal relations to the above described themes, an overall model of the formation and organisation of the social field that includes actual but abstracted events and explanations has been made. Such models are bound to include events and links that are missing because there is insufficient data or relations that cannot be assumed through logical reasoning. The specifications and organisation of themes and links has gone through several iterations during the research process before a final working model with good 'fit' was found. The model has also functioned as a basis for the presentation of the empirical material. There is however a necessary trade-off between chronology, description of processes in different themes and understanding, meaning that the presentation cannot completely follow the demarcations.

Research limitations

There are practically no archives containing information aimed at issues related to interactive media and much that once was is lost, since firms themselves often have not kept detailed records. As an example, a lot of personnel files concerning former employees were found in filing cabinets that were sold when Icon Medialab auctioned out their office interiors after closing down the Stockholm office. KBs efforts to create archives of material published on the Internet have come to a halt, and much of the digital information concerning companies has been lost as they have shut down and sold off or destroyed their servers. The late search through media archives has reduced the limitations of not having a more systematic gathering of articles from the outset, but this cannot fully make up for the loss of information.

Interviews have mainly been used exploratorily as a basis for constructing questionnaires and finding relevant research areas, and confirmatory to see if the analyses make sense to those involved. Although this has been an important step in the research process, more focussed interviews would have been beneficial.

The reconstruction of survey responses from 1997 has increased the amount of data greatly as compared to only using the available publications from the study, but the condition of the data still meant a loss of information. The follow-up firm-level surveys from 2003 were only sent out to those firms that agreed to participate in the individual level survey, which provided fewer possibilities for longitudinal data analysis. It would have been preferable to include all firms in the 2003 firm level survey. Still, it is likely that many firms who denied participation in the individual level survey would not have replied to a firm level survey either. In retrospect, it would also have been preferable to send out a survey to all larger Swedish organisations about their in-house interactive media operations to increase the number of responses for analyses.

There is an ethical consideration with methodological consequences that needs to be pointed out. Although data from the Internet, articles, certain interviews and surveys has been used in the complete analysis, the possibilities of presenting data for particular firms are limited by confidentiality. This means that there are cases were there is available data that cannot be presented. There are some further complications here due to the ComputerAct's (PUL, personuppgiftslagen) position on jointly storing and analysing some data in digital form.

Taken together, those methods that have proven useful to gather and analyse the necessary empirical material to answer the research questions put forth in the introduction have been explored. In retrospect, other methods could have been used and existing methods given different weight or timing, but this is what has been done within the opportunity structures offered by the enabling and constraining structures, including the boundaries of the MITIOR programme, as I perceived them.

Appendix B: Tables

This appendix contains a selection of the statistical data used in the study in order to facilitate evaluations of the empirical material and analyses.

List of Abbreviations

A: Animations
Ac: Actors for sound/vision
Adv: Advertising
BM: Business management
C: Copy
CD: Concept development
CR: Content research
D: Design
E: Educating customers
EG: Education in general
e-b: Conduct e-business
e-l: Conduct e-learning
GD: Graphic design (and content)
GP: Graphics production
HRM: HRM, economy, administration
IG: Illustrations, graphics
ITC: IT consulting
MGTC: Management consulting
MS: Marketing and sales
OA: Other activities
P: Programming
Ph: Photo
PhP: Physical production of CD-ROMs etc.
PM: Project management
PMD: Publishing, marketing and distribution of CD-ROMs etc.
PSS: Provide server space, web hosting
PPub: Publishing in printed media
Pub: Publishing on the Internet
SA: Strategic advice
SD: Systems development (and programming)
SM: Sound/music
SwD: Software development
U: Usability
VFT: Video/film

Tables

Table 1. Mean and median number of employees working in firms producing interactive media solutions different years. In total and focussing on interactive media production. Actual and predicted (*). Source: 1997, 2001 and 2003 firm level surveys.

	Total number of employees	
Year	mean	median
Spring 1997	21	6
Dec. 1997*	25	7
Dec. 1998*	31	10
2000	13	5
2001	16	5
2002	12	5
2003	12	5
2004*	12	7

Table 2. Correlations between broader activities for interactive media workers. Source: 2003 individual level survey.

Activities	SD	GD	PM	MS	HRM	BM
GD	0.082					
PM	-0.008	-0.006				
MS	-0.191**	-0.0145**	0.503**			
HRM	-0.235**	-0.0329**	0.256**	0.377**		
BM	-0.091	-0.0164**	0.293**	0.530**	0.529**	
OA	-0.080	0.009	-0.034	-0.004	-0.120*	-0.097

n=330-333

Table 3. Results of factor analysis of the broader activities that interactive media workers are engaged in. Source: 2003 individual level survey.

Activities	Factors 1	2	Communalities
Systems development	-0.031	0.569	.325
Graphic design/content	-0.008	0.737	.544
Project management	0.797	0.207	.678
Marketing and sales	0.821	-0.153	.698
HRM, economy, administration	0.512	-0.627	.655
Business management	0.710	-0.317	.604
Eigenvalues	2.374	1.130	
Total variance explained: 58.408			

Varimax (orthogonal) rotation
n: 333

Table 4. Cross tabulation of position and managerial tasks. Source: 2003 individual level survey.

		Position		
		Owner	Permanent employee	Total (n)
Have managerial tasks	Yes	21	33	54
	No	6	40	46
Total		27	73	100 (310)

Table 5. Factor analysis of workers performance of detailed activities included in interactive media production. Source: 2003 individual level survey.

	Factors				
Activities	1	2	3	4	Communalities
Concept, storyboard	.536	.364	.178	-.358	.580
Graphics, web-design	.089	.842	.002	.172	.746
Programming	.038	.334	-.038	.845	.829
Systems development	-.040	.027	-.110	.864	.760
Content research	.704	.158	.041	-.315	.621
Copy	.532	.115	.124	-.397	.469
Sound/music production	-.017	.179	.811	.030	.691
Video/film production	.009	.213	.841	-.095	.762
Photo	.113	.484	.582	-.086	.593
Animations	-.017	.795	.292	.056	.721
Illustrations, graphics	-.050	.870	.161	.047	.787
Providing actors	.316	-.086	.724	-.138	.651
Educating customers	.654	-.017	.172	.294	.545
Project management	.788	-.197	.161	.008	.685
Strategic advice	.832	-.177	-.041	-.033	.726
Usability	.755	.217	-.035	.100	.629
Eigenvalues	4.260	3.094	2.109	1.333	
Total variance explained: 67.472					

Varimax (orthogonal) rotation.
N: 333

Table 6. Supportive functions performed in connection to the actual production of interactive media. Source: 2001 firm level survey.

	Yes (usually)	Sometimes (can)	No (do not)	Total	n
Physical production of CD-ROMS, DVDs, etc.	41	28	31	100	(335)
Publishing, marketing, distribution of CD-ROMs, DVDs, etc.	10	23	67	100	(326)
Publishing on the Internet/portal	69	20	11	100	(338)
Providing access to server Space, webhosting, etc	47	16	37	100	(133) [a]
Perform e-business activity	11	13	76	100	(333)
Perform e-learning	9	17	74	100	(330)

a. The low base numbers are due to an error in the construction of the computerised coding tool. The error did not render systematic bias and distributions are therefore valid.

Table 7. Factor analysis of workers performance of detailed activities included in interactive media production. Source: 2003 individual level survey.

	Factors			
Activities	1	2	3	Communalities
Concept, storyboard	.557	.400	-.167	.498
Graphics, web-design	.084	.593	.523	.632
Programming	.007	.131	.855	.749
Systems development	-.075	-.140	.754	.594
Content research	.715	.146	-.167	.561
Copy	.551	.186	-.293	.424
Sound/music production	.025	.677	-.187	.494
Video/film production	.058	.734	-.284	.623
Photo	.147	.751	-.056	.588
Animations	-.003	.771	.298	.684
Illustrations, graphics	-.042	.739	.370	.685
Providing actors	.358	.429	-.398	.471
Educating customers	.652	.048	.201	.468
Project management	.794	-.067	-.103	.646
Strategic advice	.829	-.187	-.053	.725
Usability	.749	.094	.227	.621
Eigenvalues:	4.260	3.094	2.109	
Total variance explained: 59.143				

Varimax (orthogonal) rotation, maximum 3 factors.
n: 370

Table 8. Performance of activities excluding interactive media production. Percentage of all interactive media producing firms that have other areas. Source: 2001 Firm level survey.

Type of activity	Yes
Advertising, PR	36
Publishing in printed media	29
Graphic production	47
Design	44
Software development	24
Video/ film/TV production, photo	19
Audio, music production	8
General IT-consulting	34
General organisation and management consulting	17
General education	14
Other activities	20

n: 132/259-262

Table 9. Factor analysis of firms' performance of activities included in interactive media production. Source: 2001 firm level survey.

	Factors			
Activities	1	2	3	Communalities
Concept, storyboard	.460	.554	-.202	.559
Graphics, web-design	.240	.069	.633	.463
Programming	.026	.068	.831	.696
Systems development	-.135	.185	.698	.540
Content research	.395	.681	.012	.620
Copy	.398	.638	.004	.566
Sound/music production	.775	.122	-.051	.619
Video/film production	.762	.104	-.206	.634
Photo	.684	.053	.132	.488
Animations	.659	.130	.343	.569
Illustrations, graphics	.563	.265	.309	.483
Providing actors	.598	.145	-.024	.379
Educating customers	-.091	.520	.368	.414
Project management	.114	.746	.226	.620
Strategic advice	.029	.790	.201	.666
Eigenvalues:	4.667	2.236	1.412	
Total variance explained: 55.438				

Varimax (orthogonal) rotation, maximum 3 factors.
n: 345

Table 10. Correlations between related interactive media activities that firms producing interactive media solutions perform. Source: 2001 firm level survey.

	PhP	PMD	Pub	PSS	e-b
PMD	.350**				
Pub	.078	.034			
PSS	.092	.065	.358**		
e-b	-.009	.042	.206**	.442**	
e-l	.118*	.132*	.236**	.266**	.373**

n: 124-131/322-335

Table 11. Correlations between performance of core and related interactive media activities for firms. Source: 2001 firm level survey.

	PhP	PMD	Pub	PSS	e-b	e-l
CD	.212**	.230**	-.048	-.329**	-.216**	-.043
GD	.033	.044	.216**	.041	.039	.035
P	-.003	-.106	.325**	.155	.160**	.114*
SD	-.176**	-.080	.257**	.194*	.220**	.067
CR	.086	.195**	.013	-.231**	-.116*	.060
C	.073	.153**	.097	-.127	-.134*	.039
SM	.209**	.262**	-.068	-.297**	-.053	.125*
VF	.183**	.324**	-.140*	-.164	-.094	.017
Ph	.261**	.208**	.039	-.048	-.010	.116*
A	.161**	.088	.122*	-.100	-.034	.036
IG	.222**	.138*	.086	-.091	-.026	.041
Ac	.140*	.163**	-.014	-.116	-.114	.158**
E	.043	.054	.171**	.066	.066	.292**
PM	.061	.096	.135*	-.090	-.083	.107
SA	.048	.165**	.060	.063	.070	.120*

n: 123-132/321-337

Table 12. Correlations between activities that firms perform besides interactive media production. Source: 2001 firm level survey.

	Adv	PPub	GP	D	SwD	VFT	AM	ITC	MGTC
PPub	.492**								
GP	.443**	.460**							
D	.396**	.368**	.697**						
SD	-.094	-.127*	-.022	.029					
VFT	.082	.067	.041	.014	-.046				
AM	.095	.029	.064	-.012	-.018	.368*			
ITC	-.066	-.096	-.073	-.019	.339	-.035	.034		
MGTC	.218**	.127*	.076	.078	.130*	.018	.022	.198**	
EG	-.142*	.031	-.057	-.031	-.016	.001	.085	.160*	.099

n: 257-262

Table 13. Factor analysis of the activities that firms perform besides interactive media production. Source: 2001 firm level survey.

Activities	Factors 1	2	3	Communalities
Advertising	.734	-.033	.129	.557
Printed publishing	.716	-.069	.090	.525
Graphics production	.839	-.024	-.028	.705
Design	.792	.048	-.117	.644
Software development	-.100	.642	-.200	.461
Video/film/TV	.030	-.086	.797	.643
Sound/music production	.049	.100	.809	.667
IT consulting	-.079	.785	-.022	.623
Management consulting	.222	.573	.072	.383
Education in general	-.086	.353	.206	.175
Eigenvalues:	2.482	1.505	1.396	
Total variance explained: 53.825				

Varimax (orthogonal) rotation, maximum 3 factors.
n: 345

Table 14. Firms outsourcing of activities included in interactive media production. Source: 2001 firm level survey.

Activities	Yes, usually outsource	Sometimes outsource	No, do not outsource	Total (n)
Concept, storyboard	8	32	60	100 (216)
Graphics, web-design	11	35	54	100 (218)
Programming (HTML, etc)	18	38	44	100 (219)
Systems development, data-bases, programming	30	36	34	100 (219)
Content research	9	27	34	100 (214)
Copy	20	40	40	100 (216)
Sound/music production	43	27	30	100 (214)
Video/film production	44	23	33	100 (215)
Photo	39	37	24	100 (218)
Animations	17	42	41	100 (218)
Illustrations, graphics	15	37	48	100 (217)
Providing actors	49	13	38	100 (215)
Educating customers	8	29	62	100 (215)

Table 15. Factor analysis of the interactive media activities that firms outsource. Source: 2001 firm level survey.

Activities	Factors 1	2	3	Communalities
Concept, storyboard	.117	.052	.674	.470
Graphics, web-design	-.206	.777	.204	.688
Programming	.141	.699	-.342	.626
Systems development	.355	.451	.436	.519
Content research	.252	.126	.706	.578
Copy	.234	.112	.684	.536
Sound/music production	.816	-.020	.228	.718
Video/film production	.793	-.014	.237	.685
Photo	.600	.184	.185	.428
Animations	.287	.707	.263	.652
Illustrations, graphics	.179	.667	.407	.642
Providing actors	.765	.049	.203	.629
Educating customers	.430	.196	-.111	.236
Eigenvalues:	3.904	1.955	1.547	
Total variance explained: 56.975				

Varimax (orthogonal) rotation, maximum 3 factors.
n: 345

Table 16. Firms' performance of activities included in interactive media production as subcontractor. Source: 2001 firm level survey.

Activities	Yes, usually deliver	Sometimes deliver	No, do not deliver	Total (n)
Concept, storyboard	17	29	54	100 (171)
Graphics, web-design	61	23	16	100 (175)
Programming (HTML, etc)	59	21	19	100 (175)
Systems development, data-bases, programming	45	20	35	100 (173)
Content research	13	23	64	100 (172)
Copy	11	23	66	100 (171)
Sound/music production	6	16	77	100 (170)
Video/film production	11	13	76	100 (172)
Photo	16	25	59	100 (170)
Animations	26	32	42	100 (172)
Illustrations, graphics	30	36	34	100 (172)
Providing actors	4	7	89	100 (167)
Educating customers	18	29	53	100 (171)

Table 17. Factor analysis of the activities that firms perform as subcontractors. Source: 2001 firm level survey.

Activities	Factors 1	2	3	Communalities
Concept, storyboard	.068	.770	-.077	.604
Graphics, web-design	-.049	.466	.607	.589
Programming	-.139	.016	.838	.722
Systems development	-.117	-.138	.729	.564
Content research	.213	.721	-.015	.566
Copy	.202	.795	-.080	.680
Sound/music production	.772	.238	-.061	.657
Video/film production	.806	.097	-.012	.659
Photo	.602	.355	.066	.493
Animations	.565	.141	.487	.576
Illustrations, graphics	.341	.480	.354	.472
Providing actors	.705	.056	-.122	.515
Educating customers	.289	-.178	.476	.342
Eigenvalues:	3.731	2.180	1.526	
Total variance explained: 57.211				

Varimax (orthogonal) rotation, maximum 3 factors.
n: 345

Table 18. Interactive media activities performed by customers themselves. Source: 2001 firm level survey.

Activities	Yes, usually do	Sometimes do	No, do not do	Total (n)
Concept, storyboard	16	54	30	100 (232)
Graphics, web-design	5	25	70	100 (226)
Programming (HTML, etc)	2	14	84	100 (223)
Systems development, data-bases, programming	7	12	81	100 (223)
Content research	26	51	23	100 (228)
Copy	22	44	34	100 (228)
Sound/music production	7	15	78	100 (224)
Video/film production	8	17	75	100 (222)
Photo	14	45	41	100 (225)
Animations	5	16	79	100 (224)
Illustrations, graphics	8	29	64	100 (225)
Providing actors	10	19	71	100 (221)
Educating customers	9	33	58	100 (223)
Project management	8	34	58	100 (225)
Strategic advice	6	33	61	100 (224)

Table 19. Factor analysis of the interactive media activities that customers perform themselves. Source: 2001 firm level survey.

	Factors			
Activities	1	2	3	Communalities
Concept, storyboard	.094	.151	.691	.509
Graphics, web-design	.290	.571	.184	.443
Programming	.267	.698	-.089	.566
Systems development	.234	.727	-.130	.600
Content research	.135	.042	.715	.532
Copy	.401	-.052	.535	.450
Sound/music production	.837	.313	.084	.806
Video/film production	.849	.284	.016	.802
Photo	.627	-.023	.337	.507
Animations	.743	.397	.138	.729
Illustrations, graphics	.559	.191	.353	.473
Providing actors	.674	.235	.210	.554
Educating customers	.037	.731	.080	.542
Project management	.203	.556	.434	.538
Strategic advice	.162	.733	.306	.657
Eigenvalues:	5.778	1.718	1.213	
Total variance explained: 58.059				

Varimax (orthogonal) rotation, maximum 3 factors.
n: 345

Table 20. Interactive media activities performed by larger Swedish firms and government agencies. Only organisations that produce interactive media internally. Source: 2002 survey of in-house production.

	Yes (usually)	Sometimes (can)	Subcontract (do not)	No	Total	n
Content research	52	30	8	10	100	145
Concept, storyboard	51	24	9	16	100	144
Graphic design	47	32	21	0	100	146
Programming	44	33	22	1	100	147
Copy	40	26	17	17	100	144
Illustration/graphics	34	35	22	9	100	146
Project management	34	36	7	23	100	146
Photo	30	39	21	10	100	145
Systems development	23	42	29	5	100	143
Educating customers	20	30	17	33	100	146
Strategic consulting	18	38	15	29	100	141
Animations	16	18	25	41	100	145
Sound/music	7	13	23	57	100	144
Video/film	6	16	30	48	100	146
Providing actors	5	11	26	58	100	146

Table 21. Factor analysis of the interactive media activities that larger Swedish firms and government agencies perform themselves. Source: 2002 survey of in-house production.

	Factors			
Activities	1	2	3	Communalities
Concept, storyboard	-.036	.831	.127	.709
Graphics, web-design	.495	.707	.178	.777
Programming	.670	.274	.245	.584
Systems development	.756	.095	.192	.617
Content research	.447	.615	.088	.586
Copy	.333	.818	.322	.883
Sound/music production	.284	.010	.731	.615
Video/film production	-.277	.377	.518	.487
Photo	.118	.193	.833	.745
Animations	.606	.105	.583	.719
Illustrations, graphics	.758	.363	.309	.802
Providing actors	.130	.136	.759	.612
Educating customers	.798	-.150	.316	.758
Project management	.755	.259	-.113	.650
Strategic advice	.664	.468	-.223	.710
Eigenvalues:	6.472	2.036	1.718	
Total variance explained: 68.352				

Varimax (orthogonal) rotation, maximum 3 factors.
n: 370

Table 22. Correlations between detailed activities for interactive media workers. Source: 2003 individual level survey.

	CD	GD	P	SD	CR	C	SM	VFT	Ph	A	IG	Ac	E	PM	SA
GD	.248**														
P	-.082	.446**													
SD	-.222**	.170**	.750**												
CR	.566**	.118*	-.112	-.170**											
C	.428**	.062	-.166**	-.205**	.559**										
SM	.204**	.139*	.032	-.050	.113	.200**									
VFT	.321**	.149**	-.028	-.162**	.176**	.174**	.649**								
Ph	.293**	.385**	.049	-.131*	.155**	.172**	.425**	.493**							
A	.281**	.556**	.267**	.005	.094	.052	.347**	.361**	.469**						
IG	.228**	.675**	.263**	.046	.041	.006	.217**	.266**	.502**	.763**					
Ac	.267**	-.009	-.141*	-.205**	.308*	.253**	.396**	.489**	.356**	.090	.074				
E	.193**	.110	.175**	.100	.300**	.240**	.085	.077	.204**	.099	.080	.233**			
PM	.348**	-.106	-.051	-.108	.446**	.316**	.054	.111	.042	-.041	-.082	.382**	.486**		
SA	.340**	-.083	-.083	-.074	.460**	.337**	-.065	-.027	.027	-.091	-.140*	.234	.477**	.661**	
U	.358**	.281**	.136*	.001	.436**	.258**	.026	.058	.182**	.176**	.168**	.183**	.433**	.461**	.571**

*: p<0.05 **: p<.01, n: 293-307

Table 23. Correlations between activities performed by firms producing interactive media solutions. Source: 2001 firm level survey.

	CD	GD	P	SD	CR	C	SM	VFT	Ph	A	IG	Ac	E	PM
GD	.161**													
P	-.028	.478**												
SD	-.065	.204**	.529**											
CR	.484**	.168**	.116*	.112*										
C	.488**	.239**	.156**	.030	.667**									
SM	.375**	.061	.056	-.025	.341**	.356**								
VFT	.408**	-.010	-.062	-.078	.345**	.249**	.652**							
Ph	.218**	.220**	.039	-.017	.319**	.309**	.425**	.450**						
A	.318**	.268**	.220**	.160**	.313**	.306**	.426**	.402**	.409**					
IG	.344**	.375**	.185**	.070	.393**	.433**	.311**	.204**	.404**	.560**				
Ac	.288**	.046	.046	.033	.282**	.257**	.469**	.475**	.313**	.280**	.225**			
E	.068	.103	.252**	.374**	.235**	.107	.044	.042	.149**	.149**	.124*	.166**		
PM	.406**	.190**	.256**	.258**	.424**	.381**	.191**	.167**	.139*	.300**	.331**	.190**	.447**	
SA	.339**	.223**	.176**	.265**	.406**	.425**	.167**	.98	.139*	.222**	.229**	.135*	.475**	.562**

*: p<0.05 **: p<.01, n: 325-339

Table 24. Correlations between activities that firms producing interactive media solutions outsource. Source: 2001 firm level survey.

	CD	GD	P	SD	CR	C	SM	VFT	Ph	A	IG	Ac
GD	.660											
P	.012	.319**										
SD	-.040	.124	.541**									
CR	.470**	.142*	.025	-.027								
C	.449**	.143*	-.033	.020	.508**							
SM	.289**	-.111	.018	.194**	.285**	.300**						
VFT	.154*	-.040	-.020	.095	.305**	.304**	.689**					
Ph	.126	.070	.094	.101	.215**	.216**	.405**	.510**				
A	.172*	.426**	.302**	.140*	.250**	.205**	.288**	.284**	.423**			
IG	.214**	.457**	.182**	.071	.278**	.288**	.298**	.280**	.290**	.666**		
Ac	.206**	-.019	.065	.145*	.322**	.260**	.579**	.519**	.457**	.313**	.231**	
E	.142*	.069	.230**	.208**	.128	.104	.237**	.210**	.093	.218**	.060	.308**

*: $p<0.05$ **: $p<.01$, n: 210-218

Table 25. Correlations between activities that firms producing interactive media solutions perform as subcontractor. Source 2001 firm level survey.

	CD	GD	P	SD	CR	C	SM	VFT	Ph	A	IG	Ac
GD	.241**											
P	.049	.475**										
SD	-.038	.229**	.620**									
CR	.464**	.250**	.009	-.013								
C	.539**	.172*	-.087	-.100	.576**							
SM	313**	.080	-.035	-.112	.284**	.332**						
VFT	223**	.079	-.027	.074	.236**	.160*	.625**					
Ph	.204**	.246**	-.095	-.091	.359**	.348**	.411**	.403**				
A	.051	.330**	.193*	.069	.149	.166*	.329**	.377**	.425**			
IG	.290**	.313**	.157*	.039	.262**	.429**	.280**	.190*	.342**	.619**		
Ac	.183*	-.062	-.110	-.029	.240**	.225**	.490**	.487**	.307**	.173*	.123	
E	-.105	.063	.239**	.294**	.103	.052	.089	.091	.081	.249**	.108	.137

*: $p<0.05$ **: $p<.01$, n: 166-174

Table 26. Correlations between activities that customers to firms that producing interactive media solutions produce themselves. Source: 2001 firm level survey.

	CD	GD	P	SD	CR	C	SM	VFT	Ph	A	IG	Ac	E	PM
GD	.269**													
P	.142*	.476**												
SD	.067	.301**	.599**											
CR	.322**	.145*	.078	.088										
C	.245**	.231**	.132	.050	.336**									
SM	.241**	.343**	.372**	.373**	.234**	.354**								
VFT	.171*	.282**	.369**	.325**	.182**	.292**	.835**							
Ph	.225**	.230**	.153*	.126	.247**	.405**	.456**	.426**						
A	.204**	.474**	.409**	.424**	.223**	.333**	.697**	.701**	.421**					
IG	.245**	.449**	.211**	.215**	.260**	.334**	.486**	.390**	.502**	.552**				
Ac	.220**	.246**	.245**	.228**	.277**	.267**	.595**	.648**	.317**	.490**	.380**			
E	.053	.295**	.333**	.398**	.048	.062	.282**	.235**	.109	.220**	.224**	.275**		
PM	.269**	.276**	.246**	.332**	.256**	.199**	.398**	.368**	.220**	.370**	.290**	.425**	.460**	
SA	.258**	.412**	.402**	.399**	.207**	.166*	.407**	.357**	.201**	.413**	.278**	.369**	.557**	.574**

*: p<0.05 **: p<.01, n: 218-227

Table 27. Correlations between activities performed and outsourced by firms producing interactive media solutions. Source: 2001 firm level survey.

Activities Performed	Outsourced												
	CD	GD	P	SD	CR	C	SM	VFT	Ph	A	IG	Ac	E
CD	**.005**	.019	.119	.185**	.015	-.019	.231**	.134	.196**	.063	.053	.341**	.125
GD	.067	**-.282****	-.123	-.046	.034	.116	.093	.229**	.022	-.127	-.113	.014	-.042
P	-.047	-.231**	**-.440****	-.140*	-.024	.086	-.018	.081	-.006	-.200**	-.084	-.072	-.136*
SD	-.029	-.076	-.385**	**-.343****	-.007	.022	-.094	.013	-.012	-.180**	-.028	-.236**	-.153*
CR	.081	-.060	.114	.244**	**-.071**	.017	.322**	.249**	.265**	.093	.069	.387**	.200
C	-.023	-.061	.105	.199**	-.014	**-.020**	.276**	.258**	.330**	.098	.078	.312**	.101
SM	.032	-.074	.096	.058	-.120	-.037	**-.047**	-.133	-.030	-.195**	-.205**	.101	.021
VFT	.049	-.006	.089	.049	-.109	-.069	-.007	**-.187****	-.023	-.057	-.032	.133	.087
Ph	-.016	-.022	.054	.091	-.073	.001	.043	.024	**-.169***	-.073	-.030	.104	.149*
A	.062	-.131	-.150*	-.063	.038	.075	.069	.077	.133	**-.242****	-.132	.068	.072
IG	.068	-.143*	-.078	.012	.096	.077	.144*	.157*	.136*	-.124	**-.197****	.226**	.114
Ac	-.007	.000	.014	-.002	-.067	.054	-.057	-.067	-.102	-.209**	-.100	**-.006**	-.030
E	-.011	.030	-.087	-.025	-.015	.056	.035	.080	.002	-.007	.037	-.042-	**-.249****
PM	.146*	-.045	-.062	.070	.103	.197**	.192**	.219**	.199**	-.009	.095	.209**	-.020
SA	.038	-.025	.083	.114	-.003	.093	.169*	.200**	.175*	.053	.025	.200**	.011

*: p<0.05 **: p<.01
n:206-218

Table 28. Correlations between activities performed and as subcontractor among firms producing interactive media solutions. Source: 2001 firm level survey.

Performed As producer	as subcontractor												
	CD	GD	P	SD	CR	C	SM	VFT	Ph	A	IG	Ac	E
CD	**.587****	.128	-.082	-.176*	.306**	.302**	.322**	.361**	.089	.144	.248**	.122	-.171*
GD	.112	**.575****	.295**	.160*	.080	.045	.010	.024	.117	.188	.115	-.168*	-.011
P	-.073	.271**	**.609****	.436**	.003	-.129	-.060	-.057	-.144	.098	.066	-.148	.114
SD	-.141	.003	.357**	**.682****	-.126	-.201**	-.175*	-.164*	-.267**	-.134	-.122	-.089	.150
CR	.348**	.111	-.095	-.048	**.523****	.444**	.214**	.252**	.179*	.106	.260**	.188*	-.050
C	.471**	.217**	-.026	-.115	.491**	**.550****	.146	.124	.133	.154*	.329**	.037	-.139
SM	.184*	.084	-.060	-.158*	.086	.176*	**.538****	.418**	.218**	.246**	.236**	.147	-.032
VFT	.224**	.051	-.074	-.118	.128	.181*	.466**	**.670****	.292**	.229**	.177*	.226**	-.054
Ph	.181*	.207**	-.039	-.122	.227**	.246**	.191*	.299**	**.523****	.222**	.192*	.139	.035
A	.115	.252**	.210**	.119	.034	.076	.232**	.277**	.227**	**.555****	.379**	.067	.061
IG	.139	.224**	.086	-.030	.135	.220**	.153*	.143	.218**	.453**	**.463****	-.019	.020
Ac	.234**	.030	-.147	-.099	.118	.130	.328**	.384**	.214**	.116	.128	**.296****	-.107
E	-.015	.004	.225**	.341**	.112	-.014	-.152*	-.017	.004	.062	-.009	-.110	**.452****
PM	.285**	.069	.108	.123	.200**	.178	.018	.111	-.092	.067	.131	-.002	-.009
SA	.246**	-.002	-.006	.116	.205**	.185*	-.047	-.052	-.042	-.010	.084	-.036	.008

*: $p<0.05$ **: $p<.01$, n: 162-174

Table 29. Correlations between activities performed by firms producing interactive media solutions and those handled by customers themselves. Source: 2001 firm level survey.

Performed By firm	by customers themselves														
	CD	GD	P	SD	CR	C	SM	VFT	Ph	A	IG	Ac	E	PM	SA
CD	**-.139****	-.147*	.037	.048	-.036	-.108	-.007	-.006	-.184**	-.033	-.146*	-.050	.024	-.107	-.044
GD	-.009	**-.172****	-.102	-.051	-.044	-.015	-.082	-.092	-.043	-.195**	-.077	-.012	-.112	-.064	-.156
P	.010	-.159*	**-.268****	-.183**	.151	.036	-.008	-.026	.037	-.140*	-.002	.040	-.073	.013	-.077
SD	.049	.016	-.196**	**-.200****	.055	.096	.072	.071	-.025	.012	.124	.146*	-.093	-.024	-.043
CR	-.141*	-.171*	-.067	-.023	**-.179****	-.199**	-.185**	-.115	-.196**	-.175**	-.250**	-.065	-.049	-.094	-.096
C	-.194**	-.334	-.210**	-.114	-.089	**-.121**	-.178**	-.137*	-.253**	-.227**	-.321**	-.044	-.064	-.063	-.128
SM	-.003	-.141*	-.085	-.009	-.019	-.124	**-.054**	-.088	-.214**	-.075	-.183**	-.067	-.055	-.031	-.051
VFT	-.056	-.151*	-.061	.047	-.052	-.047	-.105	**-.100**	-.134*	-.067	-.047	-.088	-.005	-.062	-.050
Ph	.055	-.128	-.191**	-.149*	-.074	-.131*	-.226**	-.203**	**-.150***	-.156*	-.156*	-.132	-.255**	-.146*	-.221**
A	-.005	-.213**	-.141*	-.063	.089	-.040-	.191**	-.177**	-.106	**-.279****	-.145*	-.006	-.089	-.025	-.064
IG	-.035	-.179**	-.151*	-.129	.032	-.148*	-.163*	-.171*	-.107	-.258**	**-.233****	.001	-.098	-.072	-.090
Ac	-.110	-.200**	-.132	-.018	-.023	-.194**	-.129	-.124	-.111	-.080	-.117	**-.128**	-.032	-.104	-.038
E	.030	.037	-.081	-.103	.097	.045	-.034	-.030	-.058	-.021	-.015	.040	**-.126**	-.038	.032
PM	-.099	-.159*	-.114	-.071	.054	-.064	-.114	-.069	-.145*	-.093	-.113	-.036	-.072	**-.014**	-.094
SA	-.076	.005	-.004	.058	-.028	.002	.027	.047	-.109	.026	-.067	.102	.050	.036	**-.012**

*: p<0.05 **: p<.01, n: 213-230

Table 30. Correlations between activities performed by firms producing interactive media solutions in 2001 and 2003. Source: 2001 and 2003 firm level surveys.

							2003								
2001	CD	GD	P	SD	CR	C	SM	VFT	Ph	A	IG	Ac	E	PM	SA
CD	**.438****	.049	-.078	-.002	.308*	.443**	.088	.077	.100	.042	.218	.191	-.027	.337*	.359*
GD	.130	**.620****	.271	.366**	.025	.071	-.236	-.307*	.122	.032	.042	-.245	.314*	.220	.259
P	.070	.499**	**.428****	.483**	.164	.120	-.252	-.267	.080	.121	-.039	-.172	.386**	.227	.375*
SD	.219	.175	.212	**.637****	.058	.107	-.077	-.134	-.029	.164	.083	-.093	.459**	.300*	.339*
CR	.456**	.265	-.008	.158	**.469****	.513**	.076	.015	.316*	.321*	.302*	.191	.148	.362*	.338*
C	.441**	.213	.052	.222	.490**	**.603****	-.020	.001	.201	.242	.296*	-.006	.108	.277	.459**
SM	.249	.004	-.198	-.309*	.381*	.367	**.597****	.471**	.463**	.175	.129	.567**	.059	.253	.078
VFT	-.018	.306*	.008	.014	.048	-.036	.650**	**.704****	.406**	.127	.126	.618**	-.021	.253	.136
Ph	.166	.259	-.159	-.157	.287	.218	.259	-.043	**.603****	.270	.309*	.294*	-.305	.000	.000
A	-.018	.306*	.008	.014	.048	-.036	-.022	-.105	.319*	**.397****	.211	.158	.132	.185	-.060
IG	.200	.417**	.060	-.029	.279	.189	-.084	-.213	.223	.332*	**.436****	.090	.078	.193	.103
Ac	.345*	.042	-.235	-.198	.346*	.415**	.549**	.206	.411**	.169	-.009	**.632****	.175	.341*	.289*
E	.196	.019	.34	.224	.331	.263	.095	-.059	.161	.217	.131	.236	**.507****	.267	.396**
PM	.284*	.077	.102	.197	.307*	.305	.007	.030	.086	.137	.180	.187	.270	**.469****	.422**
SA	.035	.081	.061	.288*	.024	.172	-.085	-.152	-.158	-.025	-.006	-.081	.330*	.347*	**.380****

*: p<0.05 **: p<.01, n: 43-49

Table 31. Correlations between activities performed by firms producing interactive media solutions and their employees. Source: 2003 firm level and individual level surveys.

Firm	Individual worker															
	CD	GD	P	SD	CR	C	SM	VFT	Ph	A	IG	Ac	E	PM	SA	U
CD	**.179****	-.092	-.135*	-.147*	.114	.039	.125	.247**	.063	.065	-.003	.202**	-.015	.080	.040	-.005
GD	.042	**.147***	.202**	.205**	.067	.012	-.108	-.219**	.075	.156**	.132*	-.063	.069	.109	.085	.138*
P	.020	.087	**.247****	.241**	-.014	-.028	-.244**	-.314**	-.107	.026	.038	-.201**	.071	.122*	.074	.113
SD	.000	.117*	.326**	**.318****	.029	-.011	-.230**	-.388**	-.085	-.002	.001	-.231**	.163**	.124*	.120*	.216**
CR	.186**	-.054	-.067	-.085	**.205****	.078	.130*	.284**	.035	.074	.016	.204**	.041	.153**	.052	.020
C	-.033	-.165**	-.269**	-.229**	.001	**.079**	.202**	.187**	-.015	-.055	-.057	.178**	-.230**	-.097	-.109	-.129*
SM	-.017	-.061	-.100	-.117	-.058	.060	**.388****	.398**	.140*	-.012	-.014	.289**	-.023	-.022	-.072	-.028
VFT	.059	.019	-.094	-.100	.018	.085	.133*	**.386****	.192**	.058	.045	.171**	-.058	-.004	.025	-.038
Ph	.115	.040	.018	-.077	.086	.094	.139*	.252**	**.264****	.118*	.068	.232**	.138*	.079	.059	.038
A	.078	-.001	.113	.076	.083	.024	.056	.191**	.031	**.156****	.028	.002	.155**	.171**	.172**	.116*
IG	.104	.043	.056	.015	.095	.044	-.005	.161**	.067	.187**	**.124***	.049	.075	.155**	.126*	.049
Ac	-.020	-.031	.001	-.037	-.029	.025	.359**	.440**	.108	-.010	-.016	**.290****	.032	.063	.006	-.009
E	-.018	.086	.262**	.246**	.055	.016	-.072	-.258**	-.008	.002	-.010	-.160**	**.263****	.107	.143*	.321**
PM	-.016	-.104	.044	.062	.060	.002	.010	.078	-.110	-.074	-.168**	-.016	.078	**.093**	.132*	.107
SA	-.153	-.108	-.016	-.010	-.055	-.039	-.040	-.206**	-.17**	-.143**	-.124*	-.070	-.049	-.082	**.011**	.116*

*: p<0.05 **: p<.01
n: 278-304

Table 32. Correlations between core activities and activities that firms perform besides interactive media production. Source 2001 firm level survey.

core activities	besides interactive media									
	Adv	Ppub	GP	D	SwD	VFT	AM	ITC	MGTC	EG
CD	.184**	.020	.067	.055	-.133*	.256**	.020	-.124*	.153*	-.110
GD	.157*	.096	.256**	.249**	.023	-.046	.078	.028	-.035	.016
P	.039	-.018	.080	.075	.212**	-.087	-.004	.202**	-.015	.004
SD	-.070	-.093	-.028	.047	.409**	.215**	-.060	.231**	.092	-.044
CR	.243**	.165**	.179**	.156*	-.137*	.134*	-.071	-.154*	.228**	-.075
C	.406**	.235**	.322**	.280**	-.207**	.087	-.050	-.103	.175**	-.130*
SM	.092	.015	.175**	.060	-.156*	.387**	.342**	-.120	-.010	.042
VFT	.054	.018	.052	.004	-.121	.556**	.196**	-.141*	.040	.056
Ph	.082	.124*	.222**	.166**	-.165**	.326**	.065	-.059	-.023	.072
A	.120	.097	.181**	.098	-.065	.231**	.112	-.040	-.060	.012
IG	.211**	.190**	.329**	.259**	-.116	.122	.076	-.052	-.005	.002
Ac	.024	.040	.047	.022	-.187**	.396**	.267**	-.107	.052	.001
E	.002	-.111	-.106	-.065	.249**	-.020	-.068	.234**	.139*	.275**
PM	.131*	.039	.079	.046	.112	.021	-.040	-.019	.173**	.058
SA	.114	.061	.073	.118	.121	.011	-.075	.177**	.273**	.070

*: $p<0.05$ **: $p<.01$, n: 247-260