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Regional And Global Linkages In The Development Of New Industries

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Regional and Global Linkages in the Development of New Industries

I. Introduction

In recent years, the emergence of an information society on a global scale has been heralded as one of the most promising developments for spurring technology, economic growth, job creation, and socio-political change in virtually all advanced industrialized countries (see Castells 1996). Being “wired” is seen as the means to enter the global economy. Countries, regions, and locales are eager to transform themselves into digital societies.

Many authors have argued that such developments represent a change that will totally transform society, a metamorphosis that will be as great as that which resulted from industrialization. Authors like Negroponte, Toffler and others, argue that the information age will herald in a new epoch in which education, work, social structures, and political institutions will be totally transformed. These changes will result from the nature of the commodity produced in the information age: information. Information as a commodity does not expire with its usage and can be transferred to any place on the globe almost instantaneously. Such activity is only limited by the interconnectivity of people around the globe.

The means for this linkage is the Internet. The Internet has two characteristics that give it the potential for creating social change. It has the potential to connect anyone, at any place, to the network. The Internet also integrates software that allows for the display of different types of data and media, such as audio, video, graphics, and text. These properties provide for communicative opportunities that never existed before in the history of mankind.

Not surprisingly, advocates of the information society are enthusiastically drawing a picture of a paradise-like digital future which for the first time would allow for the disappearance of inequalities, imbalances in social life, and of the unequal access to economic, political and social participation.² Literature in this tradition contains an impressive collection of ideas, concepts, dreams, visions, and utopias along with some useful information. In most cases the

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content of such books, however, consists of questionable forecasts and normative descriptions of how the world would or should look like - in case the development will take the direction the authors are favoring. As long as the story of the future is presented in the light of what is technically possible, however, or what might be possible the next time around, this story will never be an adequate representation of events to come.

This paper will examine the claims regarding the nature of work in the emerging knowledge economy. Particularly, we will be concerned with challenging the “Death of Distance” thesis presented by F. Cairncross (1997), Beck (1998), and others. This view suggests that geography is increasingly irrelevant to the nature and conditions of labor in the information age. The reasoning for such a belief is expressed by Martin Carnoy (1998:123), “...[The] new information technologies facilitate the decentralization of work tasks and their coordination in an interactive network or communication in real time, be it between continents or between floors of the same building.” Carnoy continues by stating that the decentralization of work tasks provides the possibility for reintegration of the worker into the home and community. Information and Communications Technologies (ITCs) will alter the forces that have shaped the emergence of agglomerated production found in the industrial age. The further assumption of this point of view is that this will produce a more even distribution of economic development and overcome the fragmentation created by the industrial age. The problem with such an assessment is that it creates the idea that this is the emergent nature of labor for the vast majority of workers. In fact, such employment patterns are not the emerging norm, not even in the high-tech sector itself.

I will examine the nature of work within the high-tech production sector known as “multimedia.”. The paper will discuss in detail the spatial distribution of the industry as well as its industrial organization.

Spatial distribution. The locational needs of the industry are supposed to be severely altered, since firms will no longer need to concentrate within territorially-based clusters. Physical proximity will be replaced by the ability to communicate and transfer products over the ‘net’. The ‘Death of Distance’ (Cairncross 1997) and an increasing irrelevance of geography are widely postulated. It is assumed that globalization based on ICTs as a catalytic element will replace the hitherto driving forces towards industrial agglomerations. If this is

² A lot of these promises are instrumental for developing policies in Europe and elsewhere and in creating new

true a more balanced spatial distribution of (in our case) multimedia production structures is to be expected. In case, however, a further concentration and cluster formation perhaps even in urban agglomerations can be found, the expectation of a more equal spatial distribution in favor of areas that have until now less benefited from globalization and from the advantages of ICT is then obviously misleading.

Industrial organization. A second expectation is related to new forms of industrial organizations which are supposed to be a characteristic for the information society and for which multimedia is supposed to function as a style-setting forerunner. Catchwords for this would be virtual organizations and enterprises, network organizations and so on. There is already an extensive literature often closely connected with multimedia and associated industries which assumes that the actors in this field prefer very flexible, loosely coupled and primarily temporally maintained relations with their contractors, partners, and employees. There is a widespread expectation that companies in the multimedia sector are very virtual, which is again based on the assumption that companies using very intensively new ICTs should also have organizational forms that reflect the heavy use of ICTs. Is this expectation justified?

After defining Multimedia I will discuss the issue of “where” employment in the multimedia sector is located (spatial aspect) and “how” work is organized in this sector (organizational aspect). With these two aspects central expectations concerning the changing nature of work in the information society are associated. Before that I will look at the discussion in the social sciences on the importance of regionalization and globalization.

II. Regionalization vs. Globalization

The debate on the future of work in the knowledge economy will be discussed against the background of a scientific as well as policy oriented discussion on globalization and regionalization in the development of economic regions. Simplifying this discussion, two patterns of argumentation can be distinguished. Each one describing a certain kind of ties as crucial. The first argumentation pattern may be described as the „regionalization thesis“. This thesis is often used in works on industrial districts and emphasizes the importance of quantity and quality of intraregional networking not at least as a means to protect one region against the effects of globalization.

At the same time as the regionalist argument, the second pattern of argumentation, the so-called „globalization thesis“, was gaining popularity. According to this pattern the embeddedness of economic flows in regional networks will decrease in importance and there will be a process of disembedding from regional contexts. According to the globalization argumentation on the one hand an environment without any ties will develop as a consequence of globalization. On the other hand and much more relevant in this respect is the argument that certain, i.e. global kinds of ties are crucial within the context of a globalized economy.

The regionalization and the globalization thesis are frequently discussed as contradicting one another or their relationship is treated as a “paradox” (see Boekholt/van der Weele 1998, Huggins 1997). The point of view presented here is different: The medium- and long-term development of regional economic areas is dependent on a combination of regional and global ties. The combination of both kinds of ties is crucial. Without any doubt there is a conflict between regional and global ties, but assuming a fundamental contradiction is misleading.

II.1. Regional Ties

Pointing out the importance of the regional context for economic development is nothing new. The basic argument can be traced back to the work of Marshall on industrial districts from the turn of the century. Yet this regional context was given only little attention (see Scott 1995) until about 15 years ago when the rise of „neo-regionalism” began. The neo-regionalist research perspective consists of various approaches. In the beginning there were studies on *industrial districts* of the so-called „Third Italy“ with their distinct pattern of flexible specialization of mainly small companies. Later, regions with similar characteristics were found in other countries, i.e. Baden-Württemberg (see Piore/Sabel 1984, Pyke/Sengenberger (ed.) 1992). At the same time the concept of an „*innovative milieu*“ developed (Aydalot/Keeble (eds.) 1988, Camagni (ed.) 1991) describing a complex network of social relations within a limited area promoting the capacity of the respective region to learn and innovate (see Camagni 1991:3). Related arguments for the importance of the regional level in the development of economic systems, especially its capacity to support the generation of innovations, can be found in the literature on innovation systems, particularly in the literature on *regional innovation systems* (see Braczyk/Cooke/Heidenreich (eds.) 1998). Finally, works

of Porter (1990), Krugman (1991), Enright (1996) and Fischer (1998) describe the conditions under which spatially concentrated *industrial clusters* with high productivity and competitiveness develop.

These approaches are partly complementary, but they are also contradictory to a certain extent. This cannot be discussed in detail in this context.¹ Nevertheless there are some basic arguments that can be extracted which are useful for our discussion. A testable hypothesis could be the following: If there is a close network of companies and between companies and institutions in a certain region, the competitiveness and economic development of this region will be promoted. To emphasize the positive effects of networking it can be said – based on the standard literature on this subject - that regional networks

- enable companies to use a common pool of resources (qualified labor, infrastructure, services of supporting institutions etc.),
- help companies to exchange knowledge and to generate innovations; most important are „technology spillovers“ among the companies in a region and the possibility to pass on „tacit knowledge“ via networks (see Bramanti/Maggioni, 1997: 323),
- help them to be in close contact with clients or users and their special requirements,
- facilitate a division of labor so that highly specialized firms can combine and pool competencies.

The neo-regionalist research perspective thus discusses the strengths of regional networks or intraregional ties. There has been a lot of criticism concerning this research work. Some authors found fault with the emphasis on a few outstanding and successful model regions and the neglect of „normal regions“ with less favorable conditions. It was also criticized that the regions were frequently described using a neo-regionalist vocabulary without an exact empirical verification whether there were actually important characteristics to be found like a structure of predominantly small firms and an intensive cooperation of companies (see Krumbein et al. 1994, Markusen 1996, Staber 1996a: 23, Sternberg 1998, Voelzkow 1999). In contrast to the original thesis by Marshall a lot of the research concentrated exclusively on

¹ Storper (1997) provides a detailed survey of the competing approaches.

the issue of networking between companies with an increasing number of studies questioning the beneficial aspects and even the existence of extensive networking in successful agglomerations.³

Without any doubt, this criticism is partly justified and supports the need for a more differentiated treatment of the neo-regionalist arguments. Obviously, the strengths of intraregional networking are only effective under certain regional and sectoral conditions. Regional networking seems to be advantageous

- in sectors with a high amount of small and medium-sized companies (SME). A flexible cooperation with other firms may even replace – at least partially – the advantages of organizational size. Larger companies in contrast can hold necessary competencies within their own organization (see Almeida/Kogut 1997);
- in sectors with a high rate of technological change and a high degree of innovations. Works on innovation research prove (see Feldman 1994, Almeida/Kogut 1997, Gehrke/Legler 1998) that especially research- and knowledge-intensive industries show a tendency for spatial concentration;
- in sectors where predominantly little standardized but customer-specific products are manufactured and where the close contact between manufacturer and customer is particularly important (see Scott 1988);
- in cases where a sectoral mix can be found, which makes it easier for innovative ideas to float more easily. The ecological argument of cross-industry and resource spillovers leads to the prediction that location in areas with firms operating in a variety of related industries enhances firms' survival chances. (Staber 1999:8)

As will be shown below, these conditions can – to a very high degree – be found in the multimedia industry. Thus the neo-regionalist approach may principally be applied to this industry and the strengths of regional ties are even characteristic for this industry.

³ „By selecting samples on the dependent variable (i.e., district success and proximity), investigators have not been able to test the possibility that spatial proximity (1) may be important only under certain conditions, and (2) has variable consequences for firms and networks. Proximity may lead to co-operation or competition, and co-operation among close-nit firms does not automatically induce innovation.“ (Staber 1999:1)

With innovation becoming more and more important for the success of regions and considering the assumption that innovation is highly dependent on information and knowledge, innovativeness also seems to imply the ability to access such highly intangible assets by the way of networking. It is to be admitted that a definition for networks or networking is hard to come about in the literature. The appeal of the concept seems to stem exactly from the fact that it encompasses important relationships which are difficult to summarize under a poignant definition. Networking capacity at a very basic level can be seen as the disposition of actors to collaborate and communicate to achieve mutually beneficial ends. Actors can be employees as well as employers, companies, associations, public funding agencies, research institutes etc.

Yet in how far is the globalization argument contradicting these assumptions?

II.2. Global Ties

Globalization is the outcome of three main processes which are releasing firms from the constraints of physical distance and from national regulatory frameworks: (i) the substantial decline in transport costs; (ii) the rapid development of telematics, which is the combination and joint development of telecommunication and information technologies; (iii) the gradual removal of barriers to trade and to circulation of capital. As a consequence, it is often argued that globalization is weakening nation states and eliminating the importance of space and territory as relevant dimensions of economic activity. Transnational firms can spread their activities around the world, creating subsidiaries and branch plants in many places, whilst there is also scope for the globalization of Small and Medium Sized Enterprises (SMEs). One of the most appealing imageries is that of virtual firms navigating in cyberspace, where the best suppliers and customers can be found and all types of business contracts can be made, no matter the geographical location and the size of the partners. According to this view, a globalised world is a very favorable environment for footloose forms with an atomistic behavior, only guided by individual self-interest and by the invisible hand of the market.

The purest version of such considerations can be found in various popular publications (see Martin/Schumann 1996, Forrester 1997). In a more moderate form the thesis is also

mentioned in numerous publications from social scientists or economists (see Thurow 1996, Altvater /Mahnkopf 1996, Castells 1996). Briefly summarized, the globalization thesis argues that because of the rapidly advancing globalization economic structures and flows are increasingly disembedded from regional contexts and regional embeddedness is losing importance. According to the globalization thesis companies act on a global level and the most globalized companies become key actors whose strategies will increasingly determine the possibilities for the development of certain regions. „Regions become the object of companies in the process of international restructuring“ (see Iwer/Rehberg 1999). And for Ash Amin (1993: 288) the consequence is: „The meaning of place is becoming defined within the hyperspace of global corporate activity.“

This perspective emphasizes the importance of global ties. Quantity and quality of intraregional networking is no longer crucial but the integration of economic regions in worldwide networks. The position of regions in the organizational structures and networks of „global players“ determines the possibilities for economic development. Even the often analyzed „model regions“ of the industrial district research come under pressure due to globalization (see Voelzkow 1999).

The possible strength of global ties may be to counterbalance the lack of flexibility in regional structures. As a matter of fact, the strengths of a distinct regional network may change into weaknesses if they hinder the adjustment of regional economies to modified technological and economic conditions. This is also acknowledged by the neo-regionalist research perspective (see Grabher 1993a on the Ruhr region, Heidenreich/Krauss 1996 on Baden-Wuerttemberg). Regional economies frequently develop along stable trajectories. To leave these trajectories impulses from outside are necessary. In this context, Camagni (1991:3ff) sees the special function of innovation networks in the chance for one innovative milieu to come into contact with others and to use these contacts to import new technological possibilities, organizational models and commercial ideas into the system as well as to protect it from „death by entropy“.

For multimedia and other young growth industries in particular, this correlation is most significant. If one compares specific regions (see Braczyk/Fuchs/Wolf (eds.) 1999), it can be demonstrated that regions having developed exemplary strengths in mature industries do not necessarily have advantages concerning multimedia production structures. Existent and working networks in established industries do not guarantee a rapid growth in innovative

future industries. Exogenous regional strategies are relevant aiming at establishing competence in new sectors by attracting highly competent actors outside of a certain region. In other words: global ties have special strengths for the case that regions want to tread new paths for which the previous economic and structural development did not offer favorable starting conditions. Global networking provides contacts for regions to sectoral „centers of excellence“ in research and development and connections to extraregional markets.

In a large part of the above-mentioned literature on the globalization thesis the strengths of global ties are less emphasized than the problems and risks from the viewpoint of economic regions pointing out the restrictions of the regional ability to act proactively and the fragility of global ties. Regional policies are forced to provide attractive conditions for global players probably leading to a process of competitive dumping among the regions (Iwer/Rehberg 1999). Moreover, globalized companies with weak ties to a specific location will probably remove business units from a region at short notice. The more important these business units are for the economic performance and employment of a regional economy the more problems arise due to decisions to remove operations from a region.

The issues of the importance of place in economic organization is a very complex one. Our research shows, that „place“ still does play a significant role, but this role has also changed. While it is worthwhile to look at old theories on agglomeration dynamics, it is equally important to take account of changes. There are without any doubt significant changes in the way corporations decide on the location of their research and production units (cp. Jürgens 1999, Reger 1999). There is at the same time a greater importance of place characteristics as well as greater flexibility of corporate strategists.

III. The Multimedia Sector

I will now try to test such assumptions by looking at the multimedia sector. At the moment multimedia is a widely used catchword. It is difficult to find a precise definition or a concept on which there is agreement across disciplinary boundaries. The technical artifact ‘multimedia’ is usually described as a combination of several digital media, which are partly time sensitive (e.g. sound or moving pictures) and partly time insensitive (e.g. graphics or text) and which can be used interactively and in an integrative manner. Multimedia products can be used locally (off-line, e.g. CD-ROM) or by using telecommunications networks (on-line). In the latter case they build upon an existing or a developing telecommunications infrastructure.

In more general terms multimedia is used to describe the present state in the development of ICTs. Important actors in this field are content developers, program and service providers, network operators and new suppliers of network transmission capacities, software producers, hardware producers from the areas of the computer industry, telecommunications industry, and the consumer electronics industry. This broad characterization is useful in order to identify the actors that are possibly participating in the ‘multimedia’ value chain. There will be few exclusive multimedia actors or multimedia corporations, although many corporate actors are in a position to contribute something to multimedia development. In the foreground of multimedia, however, is “content”. The growing importance of the creation, manipulation and packaging of digital content has been stressed in a variety of studies on multimedia (cp. Scott 1998).

The focus of the research presented here is especially on one group of participants in the multimedia value chain: the producers of multimedia-content. It has to be stressed that even though a larger number of firms engage in the practice of developing part of their business in the direction of multimedia (such a publishing, broadcasting and advertising), there is a very small number of companies that concentrates exclusively on such activities. There is a bigger number of firms which develop part of their business in the direction of multimedia. They belong to sectors with a high affinity to multimedia like publishing, broadcasting, advertising (see table 1). Multimedia as such may not represent a sector in its own right. For the sake of brevity I will leave this discussion aside and talk about a multimedia sector nevertheless – well knowing that for some multimedia represents first of all a cross-sectoral productive and service activity.

<please insert table one here>

The lack of clear-cut sector boundaries renders the analysis of the emerging multimedia industry difficult. Adding to this, the newness and rapid development of multimedia implies that multimedia production is very inadequately registered in most official statistics. Thus, a lot of what is presented here draws on exploratory work, case studies and qualitative interviews. Inevitably, therefore, the inter-regional comparison that is being done in this paper has to be looked upon with some caution.

IV. The spatial logic of multimedia production

Contrary to many expectations all available research shows that multimedia producers are concentrated in some few locations. Multimedia production clusters do exist: a concentration of production in certain regions is manifest (see Braczyk/Fuchs/Wolf [eds.] 1999). While the power of this technology opens up new possibilities for long-range collaboration, it does not, as some suggest, end the importance of place in economic organization. The emerging business of multimedia content creation, which is best prepared to take advantage of the space-transcending ability of the Internet, exhibits much of the traditional unevenness that has characterized urban and economic development in the past. The fact that information and content can be easily and widely distributed is often mistaken for an indication that the organization of this business is also necessarily diffused. In fact, there is a much more complicated dynamic involving the connection of specific places to global networks resulting in a system of production that is both place-rooted and networked at the same time.

Available research on the multimedia industry shows that typically multimedia clusters develop in metropolitan regions with service-oriented economies.⁴ For example, the majority of Canadian multimedia corporations are to be found in Toronto, in Stockholm 47 percent of all Swedish firms are concentrated. In peripheral and/or less favored regions there is usually only a low density of multimedia production. The typical locational pattern within regions can be characterised as a concentration within urban centers or even specific streets, housing complexes or buildings (facilitated by a low need for office space and the locational preferences of the creative key personnel). A good example for this phenomenon is the concentration of New York firms: 1.106 out of 4.881 firms are concentrated in one small area of Manhattan ('Silicon Alley') (see table 2). This bespeaks the persistence of agglomeration effects (the concentration of multimedia production attracts even more firms and staff). It seems very likely then for regional disparities to persist or even to increase in importance.

<please insert table 2 here>

⁴ Various research has shown that, due to knowledge spill-overs, agglomerated regions in highly developed countries are better 'breeding places' for innovation than rural areas (see e.g. Feldman 1994). Considering the locational bias of multimedia production towards urban places, it becomes apparent that the popular metaphor of the 'global village' (MacLuhan/Powers 1989) is misleading with respect to this aspect of the emerging information society.

The industry in general - irrespective of remarkable regional differences in maturity - is still in its pre-mature phase. The actors involved may experiment with different forms of organization, including electronic tele-co-operation, but up to now they apparently prefer face-to-face communication as far as their core production is concerned. Within the framework of conventional but very flexible in-house organization the firms practice cross-organizational collaboration with changing partners who, again, prefer to maintain and to rely heavily on direct communication. There is some evidence that the multimedia core production underlies a functional dependency on deepened discussions among those people that participate in developing and producing multimedia products. A necessity for close discursive relations with customers from the beginning of a project until the product is implemented in the customer's environs adds up to this preference. The local or regional character of the multimedia production is confirmed by a variety of survey data as well. Most companies very much stress the ties that they are having to their specific location. Most of their customers are there as well and the co-operation partners usually also (see Fuchs/Wolf 1999a). This even holds true for most of the free lance work, that even if it takes place at the home of the employee, this home is usually in the same area as is the office of the employer (Cp. Böhm/Volkert 1998).⁵

As one can see from the available research, multimedia producers are exposed to a tight labor market. The supply of personnel is generally considered to be a very crucial variable. The lack of personnel across the different regions analyzed, has been named as an important obstacle for potential future growth. In virtually all regions, a mismatch between the skills available on the labor market and the skills needed most urgently by the multimedia producers is an acute or potential problem.

The more important it is to be able to lure people to the important multimedia locations. This is a factor stressed even for thriving regions like California (which attracts significant numbers of non-state workers), Toronto, New York, Stockholm and Munich. The experts and specialists needed prefer to stay and to work in the centers of metropolitan cities. Insofar, to a certain extent the present shape of the multimedia labor market serves as a force which attracts firms and new entrepreneurs to such locales. Concerning the present tightness of the multimedia labor market one should take into consideration that even the most attractive

⁵ The Electronic Commerce Enquete II asked questions about the cooperative behavior of firms in general. 49% of the companies surveyed said they would not cooperate via the Internet with unknown partners. Only 4% of the companies voiced a strong support for this practice (Computer Zeitung 1999).

places to live and to work at will, as it were, compete with one another for best qualified and skilled labor. In that respect, the distinct local profile of a place will range under the top factors in connection with the further development of regional multimedia clusters.

Eventually, the core production of multimedia not only aims at tailoring products according to individual customers' needs but also processes content which is predominantly culturally coined. Insofar, production is embedded in and part of a given local understanding, signification and interpretation of 'the world' which obviously favors face-to-face communication. One can say that parts of the multimedia core production are depending on economically valuing and exploiting regionally bound cultural assets.

It is no wonder therefore that we also see a strong case of path dependency in the Multimedia sector. Multimedia in the different locations researched draws on the advantages and disadvantages created by the pre-existing economic base. Multimedia firms are not linked to each other. They are linked to their customers. Who their customers are makes a difference in the organization of production, the workforce skills, and product-specific expertise. Again we see that the industry is not as footloose as it is often expected. Prime customers for the multimedia industry are traditional media corporations. Therefore most of the multimedia agglomerations are to be found in the traditional centers of the media industry like New York (publishing), Hollywood (film), Munich (film and public radio and television) and so on. Even in the US data show a clear specialization of Multimedia clusters that can be attributed to the specific prehistory and market conditions in the specific locations (Egan/Saxeninan 1999).

Table 3: Percentage of U.S. Multimedia Firms in Five Metropolitan Regions, By Stage in the Value Chain, 1997

	San Francisco	Los Angeles	New York	Boston	Seattle	Other U.S.
	Region	Region	Region	Region	Region	Regions
Digital Input Devices	11.4%	11.0%	9.9%	8.8%	2.1%	56.8%
Multimedia Hardware	20.4%	10.5%	7.7%	8.1%	1.5%	51.8%
Development Software	13.1%	6.4%	7.4%	10.9%	3.0%	59.2%

Multimedia Products (CD--ROMs)	13.0%	6.1%	7.9%	9.0%	3.7%	60.3%
Telecom. Hard-- & software	15.6%	7.4%	10.4%	10.0%	1.6%	55.0%
Digital output devices	9.2%	12.1%	12.1%	10.5%	2.5%	53.6%

Source: Corporate Technology Information Services; Egan/Saxenian 1999

In a recent study Zook (1999, 2000) further confirmed this view for the USA by using a methodologically innovative approach for studying the Internet content industry. In particular, three regions – San Francisco, New York and Los Angeles – appear as leading centers for Internet content in the United States both in terms of absolute size and degree of specialization.⁶ Moreover, it appears that there is a stronger connection between Internet content and information intensive industries than between Internet content and the industries providing the computer and telecommunications technology necessary for the Internet to operate. However, one of the most interesting aspects about the three leading regions is that although they all have a significant Internet presence, they are very dissimilar to one another in basic industrial makeup. This suggests that there are multiple pathways towards the development of an Internet contents specialization. Industry analysts often point to the existing high technology industries of Silicon Valley, the financial and publishing industries of New York, and the entertainment industry of Southern California to explain their high concentrations of Internet related activity. Zook distinguishes between two hypotheses:

1. The growth of the commercial Internet is largely based on the technological abilities contained within a region. Therefore regions which have strong high-tech industries have an advantage in developing firms producing Internet content.
2. The real competitive advantage in the Internet content business lies in a region's ability to produce information to be distributed via the Internet. Therefore regions with large media or entertainment sectors such as New York and Los Angeles would be at an advantage.

This first industrial cluster –Internet Technology – is defined to include computer manufacturers, telecommunications, and software. The second industrial cluster – Informational – is made up of Media and Publishing, Entertainment, Advertising and Public

⁶ The top five metropolitan concentrations of domain names New York, Los Angeles, San Francisco, London and Washington, DC contain 17.5% of all domain names. US Regions with the most domain names per 1000

Relations and Advanced Users. In other words, is the growth of Internet content production more closely tied to the technological capacity brought by specialization in technology or the supply of informational products from a specialization in informational industries? Zook's analysis provided an impressive support for the second hypotheses. Industrial strength in traditional ICT-industries does not seem to be strong indicator for future strength in the Internet industry. The informational cluster, however, works as a powerful indicator.⁷

Although the Internet's dispersal allows for greater accessibility to the content put forth by anyone, recent research by Adamic and Huberman (1999) suggests that rather than leveling the playing field for many content sites, the Internet tends towards reinforcing and increasing the gains of leading information creators and providers. (Zook 2000: 19)

These arguments confirm a more general impression from innovation research which suggests that knowledge-intensive businesses are not as footloose as it is often expected. An important argument relates to so-called 'tacit' knowledge. It has been suggested that in addition to formalized, well-documented and tradable knowledge, 'tacit' knowledge plays an important role in innovative activities. Tacit knowledge is based on practical experience with certain technologies. It has also been characterized as 'implicit', 'idiosyncratic' or 'uncodified' knowledge. It is not available in textbooks or training courses, but it may be transferred from person to person (see Polanyi 1962, Dosi 1988, Storper 1996). These properties of 'tacitness' have a number of implications for firm behavior: most importantly, the dependency of firms' operation on tacit knowledge requires personal contact and physical proximity.

V. The organizational logic of Multimedia production

There are marked differences among regions in industrialized countries around the world in terms of the maturity, competitiveness, density and specialization of their multimedia production sectors. Clearly, thus, geography still makes a difference. This, however, is only half of the picture. The other half is a remarkable amount of similarities in the development of

firms are: San Francisco 1,719, Provo, UT 1,648, Los Angeles, 1,246, San Diego 1,226, Las Vegas 1,195 (Zook 1999).

⁷ For the case of Germany, cp. Eckert/Egeln 1997.

multimedia production all over the globe. In many respects, multimedia production seems to be organized quite the same way in American, European or Asian regions. So while we find diversity on the one hand, we find uniformity and isomorphism on the other. What factors are supporting trends towards universal structures in multimedia production and what are these universal structures?

The broad availability of standardized software tools for multimedia production, driven by market expansion strategies of some multinational key players (see above), is the first important factor. As a consequence, there is comparatively little variance in the technological base and in the production processes multimedia producers in different regions use. In general, the capital requirements for launching an enterprise and running a multimedia production are comparatively low (at least when compared to other high-tech sectors such as biotechnology). This allows for low barriers to market entry and a high level of firm foundations. Of course, low entry barriers do not guarantee for good survival prospects. In fact, a comparatively high rate of firm mortality is also typical of the multimedia industry in many regions. The average size of multimedia firms is small (see table 3), their average age is young (see table 4), and in both respects there are only minor inter-regional differences. Given the small average size of the companies in the core sector of multimedia production, the extent of job creation in this core sector is comparatively small and not sufficient to solve the labor market problems which are due to a general process of economic restructuring and the loss of jobs in manufacturing. This even holds true for the most advanced multimedia clusters.

Table 4: Staff size of multimedia-producing companies

Region	Average number of employees
Scotland	9.4
North East of England	10
Stockholm	10 ^{a)}
Stuttgart	10.5
Dusseldorf	12
Toronto	13 ^{b)}
Tampere	14.7
New York	21.6 ^{c)}
San Francisco	44% have less than 10 employees

a) median

b) excluding one very large firm in the sample

c) including freelancers

Table 5: Age of multimedia-producing companies

	Year of foundation
Toronto	40 % founded after 1993
Stuttgart	61 % founded after 1993
San Francisco	64 % founded after 1993
Saarland ^{a)}	most companies founded after 1995
Stockholm	50 % founded after 1996

a) see Matthäi/Schmidt (1998: 16)

Also in virtually all regions, not only the companies but also the firm founders themselves and their employees are very young.⁸ This seems to be related to the specific image of multimedia

⁸ Cornford (1997: 9) cites the example of a company in North East England: 'The firm has 14 full time employees (two have just been taken on); (...) the oldest employee is 45, the next oldest is 35 and almost all others are in their 20s.'. In a sample of multimedia firms in Silicon Alley analyzed by Heydebrand (1999a), the

(a technology most popular among the young) but also to the specific qualification requirements. Multimedia entrepreneurs and their employees all over the world are highly qualified and skilled. Many firm founders start their businesses immediately after graduation from a university and the percentage of academically trained personnel is remarkably high. As multimedia is a very fast-changing technology, the employees must be able and willing to constantly adapt and learn. On average, these employees are highly motivated, ready to work many hours during the week and at 'unusual' times during day and night, and to accept flexible forms of work organization as well as occupational patterns.⁹ From the place where they work they expect, among other things, a vivid and varied cultural scene. This is part of the explanation for the locational preferences of multimedia firms we described above. Moreover, the rapidly changing qualification requirements make it difficult for the education and training institutions to keep pace, and stable training schemes are hard to establish in multimedia production.

An important attribute of the Multimedia workforce is therefore its flexibility. This can be demonstrated by the high degree of irregular or contingent employment. Baden-Württemberg companies' have on average a 2:1 ratio between regular employed staff and free lancers. In New York almost half are part-time, independent workers or independent contractors. The average length of employment for a Multimedia worker in New York is six months.

The literature on project-based work and its implications for the workforce has focussed how individuals construct a career by acquiring new skills and exploiting social networks. It suggests that people engaged in project-based work not only need to work differently than those who are employed in a traditional firm but also that they need to see their career progression in very different terms. The skills that are necessary are usually acquired by self instruction. This shows for example a survey of the Multimedia workforce in New York. 90% of the respondents call it the most important source of skill training, followed by on-the-job training (70%) and friends, peers and colleagues (50%).

Multimedia workers cope with these insecurities in a variety of ways. Interestingly the most advanced forms of self-organization can be found in the US: in New York or in California. In these cases workers are organizing formal and informal networks to provide them with

average age of the CEO is 32. According to the Coopers and Lybrand study on New York, the average Multimedia executive was 42, 36% of the workforce was under 30 years.

⁹ The New York survey done by Christopherson (1999) found an average work week of 52.5 hours.

knowledge about market developments, job information, and to negotiate for group health insurance, and lobby on their behalf (cp. Christopherson 1999).

Another feature of the industrial organization of the Multimedia sectors are the special types of co-operation that have developed there. Multimedia products (CD-ROMs or WWW presentations) are complex, integrating different media and combining programming know-how with artistic, didactic and design skills. Few multimedia firms, especially given their small average size, can afford to have all these necessary skills in-house. As a consequence, as mentioned above, a comparatively high level of interfirm co-operation¹⁰ and of free-lance employment in the multimedia industry can be found.

This can even be shown for a Multimedia latecomer like Baden-Württemberg and its climate that is not very inducive to inter-firm-co-operation. In a survey conducted by Fuchs/Wolf (1999a), only 12% of the companies said that they do not routinely co-operate with others in conducting projects.

Another factor which puts a limit to diversity is the dominance of the English language in the world of Internet and multimedia. This is not to say that non-English languages were unimportant in the development of regional multimedia clusters. The examples of Wales (Cooke/Hughes 1999) and Finland (Schienstock/Räsänen/Kaukonen 1999) demonstrate that regional multimedia producers may occupy a niche for products in the respective language and adapted to the respective cultural environment. Within these niches, the multimedia companies may develop and grow. However, the size of their market will remain limited unless they are able to produce in English, too. English language skills thus are of paramount importance to the long-term development perspectives of regional multimedia industries. In fact, the examples of Ireland (Fuchs/Wolf 1999b), the Netherlands (Naylor 1999) and the Scandinavian countries (Sandberg 1999) show how a high level of English skills favors the development of multimedia production.

It seems very likely that the tendencies towards uniformity will be amplified by the spread of IT-applications in electronic commerce and related fields. Electronic commerce is commonly expected to grow very rapidly in the short and medium term. In fact, 'e-commerce' has become the new buzzword which even outshines 'multimedia' (although the subject-matter

denoted by both words overlaps to a certain extent). Most observers agree that a set of norms, standards and mass products (e.g. standardized software for encryption and electronic payment) are necessary prerequisites of complete electronically-based economic transactions. If this expectation is justified then the growth of electronic commerce will go along with a trend towards more uniformity. This, in turn, may further restrict the scope - and the market - for the individual multimedia solutions most of the specialized multimedia companies focus on today. Increasingly, these companies may have to specialize on add-ons to the standardized products offered by some key producers.

Thus, to sum up the argument of this section, more than differences between nations or regions, sectoral properties that are not space-bound seem to shape many important aspects and development prospects of industrial organization in multimedia production. From the perspective of theories of industrial governance, this is a very interesting result. There has been a long-standing debate (see, for example, Hollingsworth/Streeck 1994) about whether the organization of an industry mostly depends on the national economic and institutional framework (and therefore varies between different countries and regions) or on properties of the respective sector (and therefore is rather similar irrespective of the country or region). Our analysis gives some support for the latter hypothesis and can thus be seen as confirming the theoretical position (which perhaps is best elaborated in Kitschelt 1991) that sectoral, basically technological, properties are a crucial explaining factor with regard to sector organization. At least this holds true if we focus our attention on two dimensions of sector organization, namely division of labor and intrasectoral co-operation. Whether it is also true for other dimensions, such as the organized representation of sectoral interests or the linkages between the political system and the industry, cannot be elaborated here but would be worthwhile of further research.

VI. Summary

Considering the data and interpretations brought forward, a lot of the standard expectations why industry would localize in the same region still seem valid. The Information Society and

¹⁰ For instance, in the case of Stockholm, 'three quarters of the companies say that they co-operate with other new media companies working on new productions' (Sandberg 1999).

Multimedia do not bring forward radical changes in this respect. Just as a remembrance: the Marshallian tradition (see Krugman 1991) claims that industry concentrates

- because concentration in the same region provides a pooled market for workers with specialized skills;
- because an industrial district allows for the provision of a greater variety of inputs by specialized suppliers;
- inter-firm information flows are enhanced by physical proximity. By concentrating within an industrial district, firms can more easily take advantage of technological spillovers.

All these characteristics are elements that have an important part in the description of the locational logic of the Multimedia industry.¹¹

The multimedia industry in many respects is typical for a specific type of service industries. According to Strambach (1993) these industries are characterized by an intensive process of co-operative interaction and exchange of information between service provider and client which derives from the client's need for explanation, clarification, interpretation and detailed instructions for applications (Heydebrand 1999b). This accentuates the importance of locational proximity. Insofar the expectations that distance does not any longer matter cannot be validated.

An often cited example is the geographical concentration of the financial services industry. E.g. in the City of London. Foreign banks opening offices in London often cite the availability of a skilled labor pool and their employees have a choice of hundreds of potential employers. The subsidiary industries are there, from telecommunications companies and information providers such as Reuters to the huge range of fancy wine bars. Even a more product-oriented industry like biotechnology concentrates in a few number of locations for similar reasons. It is important to note, however, that these economic sectors do not all concentrate in the same region and the attracting factors may be different for each sector under inspection. Banks may be able to concentrate all their trading in one place to exploit the undoubted economies of scale, the pool of skilled staff, because it costs almost nothing to ship the finished 'product' – the electronically registered financial transaction – to the right computer in the right place.

¹¹ Although all three of Marshall's forces are clearly operating in the real world. The new geography models have generally downplayed the first two, essentially because they remain hard to model in any explicit way.

Should this be a determining factor for the financial services industry, this is not an important consideration for multimedia producers or even biotech companies – to name another sector that is characterized by an extensive concentration of companies. In these sectors it becomes also clear that that electronic communication is not so much a substitute, rather than complementary to face-to-face contacts.

In almost all economic branches jobs involving far-reaching decision-making authority and requiring a high level of education as well as frequent face-to-face contacts with other highly qualified specialists show a strong tendency toward spatial concentration in a few centers, whereas routine activities in production and administration calling for low levels of educational achievement show a trend towards decentralization (Date/Schmid 2000) . The higher the educational level of the employees the higher the spatial concentration of their jobs.

The question concerning which parts of an organization and which services and professions are bound to higher-ranking central places as well as the question to which economic activities or parts of an organization can be moved to smaller cities or peripheral regions without a loss or even with a gain in efficiency and competitiveness depends increasingly on the importance and necessity of face-to-face contacts. Many studies have shown that the higher the professional status in an organization, the greater the amount of external face-to-face contacts to decision-makers of other organizations and the higher the amount of contacts involving planning and orientation and the lower the proportion of routine and indirect contacts.

Uncertainty generally increases the need for and the frequency of face-to-face contacts with important decision-makers of other political, economic and cultural organizations. Functions and subsystems in the middle levels of the hierarchy have a more limited number of choices of fitting locations. The requirements of face-to-face contacts of the upper management levels of a large organization can be expected only in a few major cities.

Only in major agglomerations is the indispensable environment available that enables fast and spontaneous face-to-face contacts among decision makers in government, large industrial corporations, research, finance and insurance, international news agencies etc. Proximity to these institutions provides the top management with a lead when it comes to crucial information, thus facilitating their adaptation to new situations and developments. Early

information is especially important in areas that have to deal with a high degree of uncertainty and where economic success often depends on fast, risky decisions. The most important reassurance against the uncertainties of business life is prompt knowledge of innovations, economic developments and political changes.

Table 1: Multimedia Producers and Peripheries

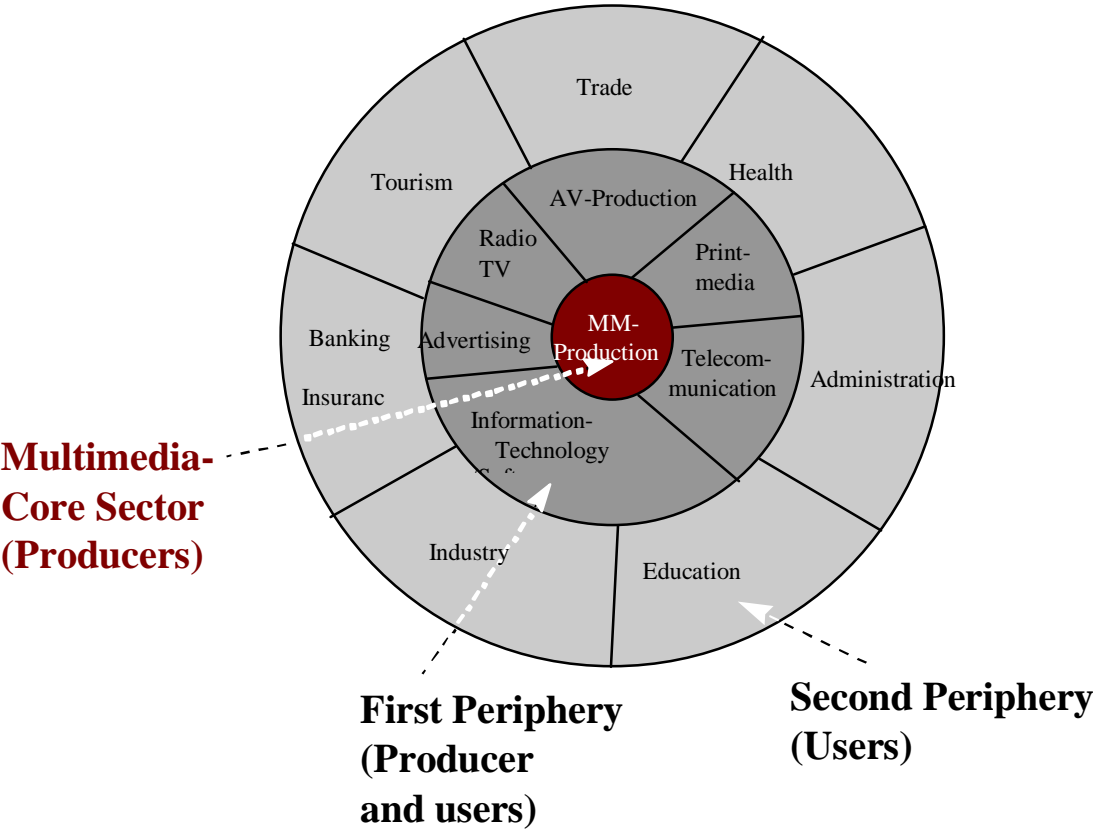
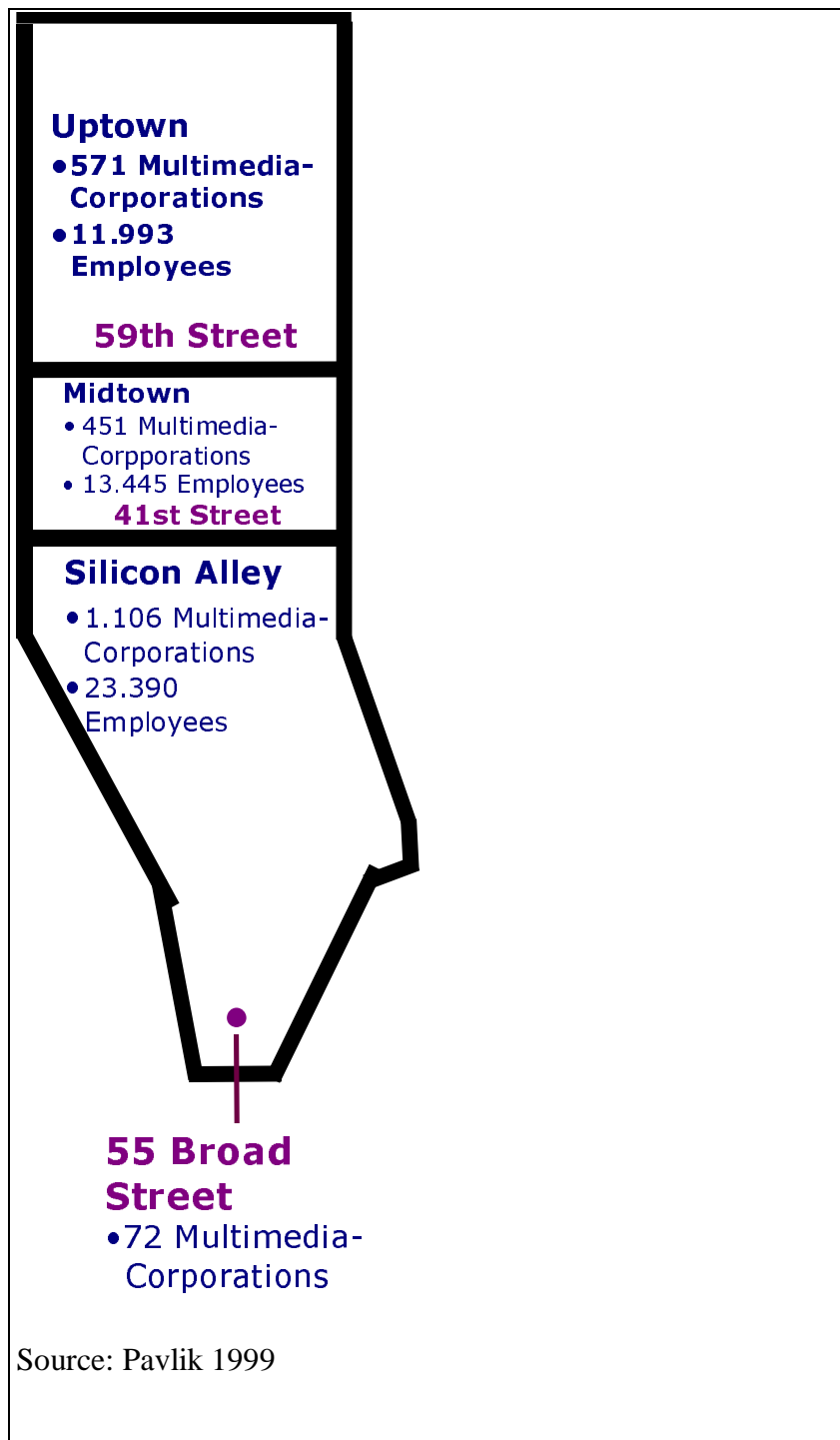


Table 2: Multimedia-employment in Manhattan



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