Reinterpretation or replacement?
The effects of the information and communication technologies on urban space

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1. INFORMATION AND COMMUNICATION TECHNOLOGIES AND SPACE

The timid question "Virtual spaces or real places?" forms the core of many debates within the spatial sciences addressing the consequences of the rapid development of information and communication technologies[1] on existing spatial structures. So far several opinions rival each other for the interpretation of current and the prediction of future spatial developments. The spacelessness of computer networks and the possibility to transmit data in real-time have lead visionaries to predict a far-reaching devaluation of time and space, so questioning the future importance of traditional spatial structures: The "annihilation of distance and time constraints [in computer networks] could undermine the very rationale for the existence of the city by dissolving the need for physical proximity" (Graham and Marvin 1996: 318). The disappearance of the city into the net, therefore, seems to become a distinct possibility.

Others relate the new technical possibilities with existing social processes to derive spatial consequences whereby the centralization of innovation and decision making and the decentralization of standardized information processing seem to be the main spatial effects of the new technologies (Hepworth 1989: 124pp, 149pp; Graham and Marvin 1996: 123pp; Floeting and Grabow 1998: 25p).

However, this linear conclusion from technical possibilities to spatial effects isn't appropriate to the changes that are actually happening. Technological advances are not determined by a logic inherent to the technologies themselves. Instead they are shaped by a complex social framework (Ray 1995; Kubicek 2000: 11pp). But at the same time the new technologies offer the opportunity to develop new social processes and structures. As Saskia Sassen points out, the "electronic space … is not merely a transmission device, but rather a space where new structures for economic activities and power are created" (Sassen 1997: 117). These in turn have specific localized aspects. The flexibilisation and globalisation of production, for example, neither mean that formerly localized qualities have become ubiquitous nor that the specific place has become irrelevant. On the contrary: Spatially differentiated characteristics, like wages or specialized producer services, are the very reasons for the international organization of production (Läpple 1999: 18p). In collective innovation processes and highly dynamic markets especially direct contacts, personal relationships and common cultural backgrounds gain in importance (Camagni 1994: 74pp). And again, this constellation of multiple material and institutional resources together with culturally rooted forms of communication and cooperation is highly space-specific and localized (Camagni 1994; Läpple 1998: 202pp).

In order to gain insight into the processes that shape our cities under the influence of the information and communication technologies and at the same time recognize emerging spatial characteristics a twofold approach is necessary. On the one hand the structures of communication, innovation and production processes based upon the new technologies have to be researched. On the other hand the relevant, spatially differentiated qualities which determine the actual spatial organization of those processes need to be analysed (Läpple 1989: 213pp).

2. THE PRODUCTION OF INTERNET CONTENT

The effect of the intensive use of the information and communication technologies on spatial patterns can best be researched in a field that is heavily reliant on these technologies and that at the same time is not necessarily predetermined by existing spatial structures. These criteria apply, for example, to the internet industry. Instead of attempting an overview of this wide and fastly developing field, though, a different approach has been applied here. Being largely independent of physical infrastructure and possessing growing importance for the wider internet industry the production of internet content has been chosen as topic of this research. But before presenting its spatial results it is necessary to highlight certain relevant characteristics of this part of the multimedia industry.

The increasing commercial and private use of the internet is enabled by the convergence of the products and markets of information and communication technologies with media content. This means, that customers don't demand single components, but rather integrated products that contain conceptual parts as well as their technical and organisational realization. Many companies within the multimedia industry therefore specialize and cooperate on a project-basis with providers of corresponding services and products (Pavlik 1996: 16pp; Heydebrandt 1999: 56; Zerdick 1999: 179pp). Next to client-specific solutions increasingly standardised products are being developed. And although the last several months have witnessed a considerable slow-down of internet business, the production of content is continuing to be characterized by highly dynamic markets as well as fastly changing technical and legal frameworks (Zerdick 1999: 136pp; Siemer 2001: N3).

Initial analysis clearly shows, that although the product in itself is new, already established industries serve as basis and starting point for the production of internet content. Frequently internet businesses originate in traditional press companies, advertisement agencies, film production services or computer hard- and software providers (Pavlik 1996: 16pp; Schuhmann and Hess 1999: 14). Next to the specific professional and organizational know-how the workforce of those related sectors is essential for the production of internet content (Boehm and Volkert 1998: 15).

[1] *used here synonymously with the term 'new technologies'*

3. INTERREGIONAL AND METROPOLITAN LOCATION PATTERNS

The results of a first, quantitative survey is therefore not surprising. Content producers using the internet as production and distribution medium are concentrated in metropolitan areas, rather than being arbitrarily spread throughout the country (Eckert and Egeln 1997; Zook 1998; Zook 2000).

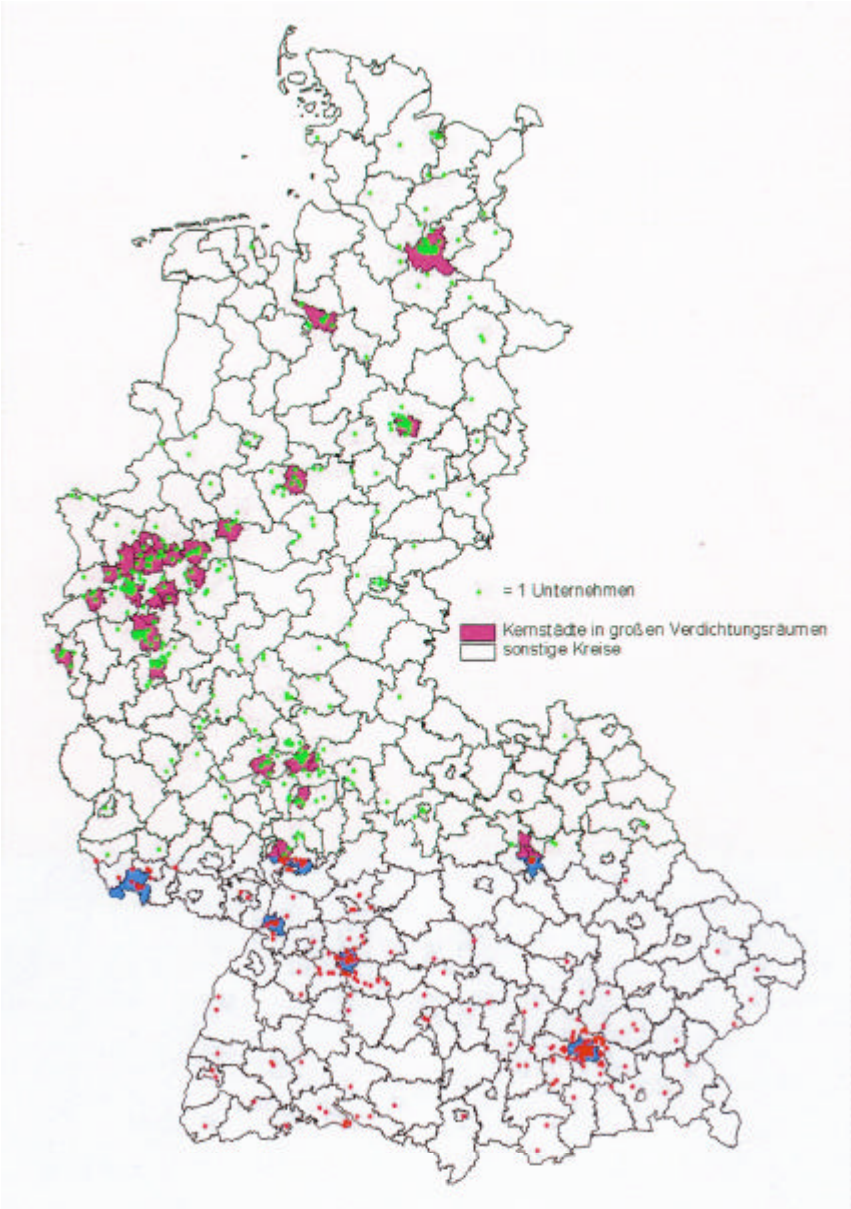

Figure 1: Spatial pattern of multimedia businesses in Western Germany
(source: Eckert, Egeln 1997)

To determine the spatial developments of urban agglomerations in the face of the growing use of the new technologies an additional spatial level needs to be addressed: the metropolitan region. The analysis of the addresses of 128 multimedia companies in the region of Hamburg, an agglomeration of roughly three million inhabitants in northern Germany and a center of the European multimedia industry, shows that this uneven pattern of location continues on the innerregional level. The density of business locations not only varies between center and periphery but also within the urban core (see Figure 2). Not the traditional city but several urban quarters without immediate spatial or functional links are the preferred locations of multimedia companies (yellow circles). More than a third of the analysed businesses are settled here (see Table). Further investigation shows that neither the biography nor the specialization of those firms have a significant influence on the choice of location. Start-ups as well as established multimedia companies of different specializations are settled in the same quarters.

number of businesses per postal code area	
●	over 10
●	7-10
●	5-6
●	*3-4*
●	1-2
○	multimedia quarter

Figure 2: geographical location pattern of multimedia businesses in the central and northern Hamburg city region
(source: own graphic based on MultiMEDIA Jahrbuch 2000)

area	businesses total	percentage
Hamburg region	128	100%
Stadt Hamburg	121	95%
Multimediaquartiere gesamt	47	37%

Table: statistical location pattern of multimedia businesses in the central and northern Hamburg city region
(source: own statistics based on MultiMEDIA Jahrbuch 2000)

4. SPATIAL CHARACTERISTICS OF CONTENT PRODUCTION

While these quantitative surveys yield results on the locations of content producers, they are not sufficient to analyse the reasons for this spatial pattern. This has been achieved through a qualitative survey of the formal organisation of content production as well as the informal contacts and orientations of content producers in Hamburg, Germany. Based upon location categories established through the quantitative survey, interviews with managers of start-ups and established businesses from an 'established multimedia area', an 'emerging multimedia area' and the 'multimedia periphery' were carried out. Additional information was acquired through interviews with multimedia experts and local planners as well as an evaluation of the respective business locations.

The analysis shows the decisive importance of the business biography for the spatial characteristics of content production. The findings presented in the following paragraphs are therefore organized according to age and state of development of the businesses.

4.1 Places and spaces of start-ups

Content producing start-ups rely heavily on local and regional economic structures. But while the cooperation with clients and with partners involved in the development and production of internet content can be carried out regionally, the establishment of these contacts takes place locally. It depends on direct, personal interaction which originates in the immediate spatial and social environment of the actors. And while the internet can be used to keep track of general trends, places like cafés, clubs or fitness studios as well as local events with appeal to a creative technology crowd serve to establish and keep contact with other entrepreneurs and internet specialists. Those places literally allow actors to keep in touch with current developments by giving the opportunity for personal contact. Just as important in the fast paced development of the internet scene is the orientation the venues give about the lifestyles and business identities of the various actors.

The choice of the actual property is correspondingly influenced by its atmosphere and associated image. Regardless of a central or rather peripheral location the businesses try to locate in places that correspond to the internet scene's symbolic visual language, best represented by loft-spaces as well as industrial and office buildings from the beginning of the last century.

At the same time the functional structure of the different quarters is also relevant. The wish to combine working and living within one urban area and the distinctly urban lifestyles of most of the interviewed new media managers are reasons for the high popularity of mixed use urban areas. In other cases where the continuity of family ties and existing social contacts is a priority the wish to maintain in close spatial contact strongly influences the choice of business location.

According to the frequently small profits of the internet start-ups mainly business space of the lowest price category is rented. Especially firms up to three persons also operate from apartments. Because of the dynamic development of the start-ups the flexibility of the individual property is a decision criteria as well.

4.2 Places and spaces of established businesses

As content producers become established the spatial organisation of the production process changes. The acquisition of new clients relies less on personal contact but rather on credentials like successfully completed projects and specialized know-how. This increasing reliance on performance over personal contact holds also true for the establishment of new production networks where in the course of a project cooperations with specialists are established with little attention to the location of the respective partners. The customers and partners may be settled in other regions, even in different countries. Owing to these interregional ties the access to high quality traffic infrastructure gains in importance.

The integration of less specialized services is preferably organized locally, though. Therefore a diverse regional economic structure continues to have a certain relevance for established content producers.

The decisive location factor, however, for all interviewed established businesses is the access to a qualified workforce. This determines the decision whether or not to settle in a metropolitan region. Also the choice of a certain urban area and a specific property is dominated by the preferences of the employees, which were termed in an interview as “the most valuable resource of our firm”. And here again the lifestyles of the graphic designers, software engineers and project managers come in. More important than, say, the availability of parking spaces is rather a surrounding which offers inspiration and opportunities for contact, as well as a variety of functions which allow to organize the daily life in spite of the sometimes very long working hours. And more important than the traditional prestige of the address is the atmosphere of a historic industrial building or the spectacular view onto the docks of the Hamburg harbour. Established content producers are willing to pay high rents for these qualities. However in cases where sub-urban lifestyles dominate on the management level locations in the periphery may be the preferred option.

Next to the atmosphere the flexibility and expandability of the offices are very important. If necessary additional space is acquired in the same urban area. Large content producers are very reluctant to relocate. None of the interviewed businesses could imagine giving up their Hamburg offices completely.

4.3 Reinterpretation of urban patterns

These empirically established location criteria emphasize that the space of content production is not determined by the spacelessness of the information and communication technologies but is strongly influenced by localised aspects. While a diverse economic structure and a qualified workforce are location factors of interregional relevance, the locations of start-ups and established content producers in urban areas are determined mainly by three localized qualities.

Firstly, the preference of personal contact and direct communication with other multimedia actors strongly influences the location decisions especially of start-ups. The resulting concentration effect remains also while the businesses are becoming more established.

Secondly a surrounding which offers a variety of recreational uses, certain kinds of inspiration and the services necessary to organize daily live is preferred.

Thirdly the image and the atmosphere of the property are very relevant. They must correspond to the lifestyles and the self-image of the protagonists and send the intended message to the business partners. Which character of surrounding is favoured depends on the specific tastes, interests and backgrounds of the different decision makers.

The importance of closeness as well as the frequent reference to – localized – images underline the importance of urban areas as the space that content producers both act within and inform through their action. It would be misleading, though, to speak of the typical location. It is the result of a differentiated and case specific spatial concretisation of contacts, relations and orientations. While serving the functional requirements of content producers, a location which allows the continuation of intensive personal contact may be in a housing area, whereas an address at the river or in an stylish innercity area might fit the personal preferences of other actors.

This doesn’t mean, though, that existing spatial patterns continue unchanged. Instead the spatial preferences and property decisions of the interviewed content producers point towards a particular appreciation of spatial qualities. The specific production processes and the interests and preferences of its actors result in a continued use, but also a significant reinterpretation of existing spatial patterns and their subsequent reconfiguration.

5. TOWARDS AN URBAN PLANNING AGENDA

5.1 Fields of spatial reconfiguration

The spatial effects of the intensive integration of information and communication technologies prompt consequences in two different dimensions. One seems obvious and dominates the debate on the metropolis in the digital age. It is about necessary spatial and functional adjustments of existing urban structures. The research presented above points towards three main areas necessary to consider. None of these is new, but the analysis of the spaces and places of content producers emphasize their continued and increasing relevance.

Firstly, the mix of functions needs to be realized on the level of an urban neighbourhood. Of special importance are the opportunities for contact and communication in the public and semi-public realm. This doesn’t mean pursuing the spatial homogenisation of functional characteristics, though. Instead it is necessary to develop quarters with differentiated qualities and distinct characters.

Secondly, urban infrastructure needs to take into account the change of spatial patterns. In spite of the popular ‘virtuality-hype’ physical infrastructure remains important. Transport systems for example need to be more flexible and ‘city-sensitive’ to be able to

adapt to changing spatial patterns rapidly. At the same time local communication infrastructure becomes relevant. Various 'televillage' and 'information district' projects already demonstrate its integration in property aimed at specific target groups (Graham and Marvin 1999: 100pp). In spite of all necessary criticism of the predominantly technical focus of these projects they do provide insights into the integrated development of material, symbolic and virtual space.

The third area of necessary reflection is the legal framework of town planning. The majority of the businesses included in this research were operating in areas that according to the local zoning regulations did not allow that kind of economic use. The strategy to categorize urban functions and assign certain areas to those categories originated from the attempt to minimize the negative side effects of industrial production and regulate dynamic urban growth. However, the idea and practice of zoning doesn't seem appropriate to the present task of dealing with the dynamic reconfiguration of existing urban patterns through the ioncreasing use of the new technologies.

5.2 Integrated urban development strategy

The argument against zoning can easily be misunderstood, though. It doesn't mean that it is superfluous to evaluate and regulate the described spatial developments. Content producers that settle in marginalized neighbourhoods can reinhabit abandoned property and strengthen the local economy. Conversely they can be pioneers of a gentrification process which ultimately will drive away other less affluent or articulate actors.

The above mentioned 'televillages' and 'information districts' highlight another aspect that is frequently forgotten amidst the fascination of high-tech developments. The uneven local availability of powerful telecommunication infrastructure and the lacking connection of many 'tele-'properties with their immediate surroundings demonstrate the danger of a growing segregation of spaces and subsequently of actors within urban areas (Graham and Marvin 1999: 100).

These possible spatial developments must not be left to short-term economic interests but instead have to be integrated into a wider debate. Urban politics and urban planning which are not only concerned with economic performance but also with the quality of life of all inhabitants of an agglomeration need to acknowledge the positive potential as well as the negative consequences of content producer-led developments and react accordingly.

To allow change but at the same time limit negative effects an integrated and integrating strategy is necessary. It needs to combine technological and economic aspects with the wider issues of appropriate living conditions, the public realm and ecologic sustainability. It is of highest importance, though, that this strategy is not technically, but socially oriented.

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