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INSIDE THE INTERNET INDUSTRY
**The Importance of Proximity in Accessing Knowledge in the Agglomeration
of Internet Firms in Stockholm**

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Abstract

This paper deals with the question of agglomeration of economic activities and the internet industry in Stockholm, Sweden. The paper discusses the importance of proximity, especially in the knowledge transmission, and uses a theoretical framework of localized and tacit knowledge. The empirical findings suggest that firms within the internet industry are located in close proximity to each other because of the importance of dense informal interpersonal networks, that facilitate the search for new customers and collaborators. The findings also stress the importance of proximity in creating these dense networks and being in the right place at the right time.

Key words: Internet industry, tacit knowledge, proximity, Stockholm, Sweden.

INTRODUCTION

[p. 211] The ICT and internet sector, and the firms growing up around the new business opportunities created by internet technology, have been widely discussed during the last decade. Up till the spring of 2000 the internet industry, and other ICT related businesses, were emphasized as a central part of a 'new economy' and to some extent the backbone of the future economy in most OECD countries, including Sweden. Since 2000 the bursting of various bubbles has changed the situation in Stockholm dramatically: as the worldwide internet crisis reached the Swedish economy, as well as other economies, and firms involved with information technology went bankrupt and once rich sources of venture capital suddenly dried up. By 2006 Stockholm's internet bubble had well and truly burst.

Taking a brief look at the way that popular media have been describing the Swedish internet industry from the mid 1990s until today, one would automatically think that it [p. 212] has been through both heaven and hell. From the perspective of the mass media, the industry saw a unique growth of firms within the wider ICT-sector during this period. This growth was fuelled by activities in a range of areas: from the building of the backbone infrastructure to internet and wireless content producers. But the existence of the new economy appeared to be shorter than most of its pundits would have expected and by the beginning of 2000 the first signs of a decreasing flow of venture capital and a possible end to ever continuing growth started to appear. A year later, in spring 2001, the internet crisis was in fact a reality, with the technology equity crashing and internet firms going bankrupt.

In light of these developments questions remain as to the extent of today's internet-industry and the roads it has taken after the 'dot.com death'. From research conducted for this article it seems that there is now a growing quantity of firms and employees involved

with the internet industry. In other words it could be concluded that media and other critics, to some extent, have been exaggerating both the bubble and the burst of the internet industry.

When studying the ICT-sector it is important to notice the role of mass media and one has to make a distinction between the wild fluctuations that the industry experienced on the stock market and the actual circumstances and conditions these firms had to face. Beginning in the mid and late 1990's, the financial markets started to take an interest in companies engaged in the new possibilities associated with the internet. The expectations built up were enormous, and to a high degree supported by media and spokesmen of the ICT-sector. In particular, media had a key role in creating the images and opinions about the new economy and the new developing technologies. Thrift (2001, p. 416-417) argues that the message of the 'new economy' was, to a great extent, built up by three main actors: business schools, management consultants and management gurus. These three were backed up a range of intermediaries: standard media (books, magazines, newspapers, internet sites and television), the scale of specialized business media, and the growth of media intermediaries (press officers, publicity consultants, design consultants, advertising agencies). But there was a great mismatch related to the gap between the ideas about the possibilities for the internet and what, in fact, was possible. In other words there was a discrepancy between the new business ideas and the velocity of human adaptability, and, of course, sometimes the business ideas were simply not that good.

The problem was that too few seemed aware of these facts and did not dare to listen to the critics, largely because of a naïve expectation of ever growing profits. Consequently, boosted by a collective gold fever, investors continued to spend their venture capital on every new idea that included the internet in their business plan. And eventually, in the winter of 2000 the financial market became aware of these conditions and the internet crisis finally erupted in spring 2001. Many internet companies were affected by things going

on in the stock market; venture capital dried up and many businesses that were dependent on external capital for their survival collapsed.

An interesting question, interrelated with the development of information and communication technology, is concerned with the so called 'new' conditions for the location of economic activities. A voluminous literature during the last ten years or so has brought up the idea that information technology is a space-shrinking technology, which would make spatial differences insignificant for firm location. Branding concepts in this context include "the death of distance" (Cairncross, 1997), "the weightless world" (Coyle, 1998) and "the end of geography" (O'Brien, 1992). This refers to what Storper (1995) considers being 'the principal dilemma' of contemporary economic geography: the resurgence of regional economies in an era when forces of globalization (transport, telecommunication etc.) may reduce the social [p. 213] and economic world and to a placeless mass. This would particularly be the case for the internet business as it involves the production of virtual products and services that do not require transport or other time and cost consuming functions. Of course, the internet technology will not affect traditional mail-order business selling records, clothes or books, in this respect since these activities still require the same need for space (e.g. keeping stock). Empirical research on the other hand has shown that firms in the internet industry, like many other highly innovative industries, have a tendency to agglomerate and concentrate in certain locations within the global and local economy, especially in larger cities (see for example Pratt 2000, Zook 2005, Leamer & Storper, 2001).

Keeping the question of firm location and technology development in mind it is natural to ask questions about the reasons behind these spatial structures. What is it that forces internet firms to locate in urban settings and to agglomerate in dense inner city milieus, despite negative aspects like high rental costs, expensive labour force and the daily problem with where to park your car, when they theoretically would be able to be located anywhere?

In this paper these questions will be dealt with from a theoretical perspective which focuses on the creation and dispersion of knowledge and information. In particular two questions will be discussed; *what type of knowledge and information are crucial for internet firms in Stockholm, and what are their strategies and practices for acquiring that knowledge and information?*

THE IMPORTANCE OF KNOWLEDGE AND IMPORTANT KNOWLEDGE

Despite the crashes and market failures or perhaps because of them a persistent cluster or agglomeration of internet companies is located in the central Stockholm, and despite considerable costs and financial pressures internet firms are still drawn to this high cost location. The purpose of this paper is to investigate if it is not due to the hope of accessing different forms of knowledge that firms are still drawn to urban centers and each other.

Knowledge and proximity

The creation and communication of knowledge and information is one particularly important factor to consider when thinking about why firms in related industries tend to concentrate together. Many scholars (see for example Maskell & Malmberg 1999, Morgan 1997) have argued that knowledge creation and spatial proximity are closely interconnected. This is particularly so when analysing the producers of immaterial goods and services: like the internet industry. Leamer and Storper (2001) argue that immaterial intellectual production happens best in the ‘centre of the action’: where specialized skills can be acquired, where the ‘buzz’ is keeping you up-dated current and where fresh ideas constantly challenge and change outputs. Indeed much intellectual output cannot be distributed as traditional products and can only be delivered through human interaction. The importance of proximity for the exchange

of ideas is, of course, not limited to the immaterial economy since virtually all production and marketing of goods requires the exchange of knowledge and information.

When talking about the importance of proximity one should remember that historically there have been two opposite forces competing for the researchers' attention. Firstly, there are centrifugal forces arising from the constant transformation of complex coordination tasks into routine activities which can be accomplished in more peripheral and cheaper locations. Secondly, innovation gives rise to more or less new economic activities [p. 214] requiring complex tasks and a certain level of skills, which generate agglomeration. As with previous developments in communication and transport technologies, the internet offers elements of both these forces. It is making some tasks routine but it is also creating a wide range of new activities (Leamer & Storper, 2001).

These two opposite forces may be discussed from a perspective of knowledge creation and dispersion, and the importance of the geography of knowledge. In the first position - 'the learning region' - the foundation is that knowledge, especially in a complex or tacit form, is not easily communicated over distance. The transaction is efficient only through face-to-face communication and this makes proximity utterly important (Gertler, 2003). In an increasingly globalized and inter-linked economy a great deal of knowledge becomes ubiquitous, which makes the crucial and most important knowledge more difficult to obtain and therefore less mobile (Maskell & Malmberg, 1999). The second perspective takes the position that knowledge, rather than being facilitated by proximity, is communicated through 'communities of practice'. These communities are built up of established practices and organizations which promote the dispersion of, in particular, tacit knowledge. Instead of claiming the significance of the local context, this position directs its attention to the organization of the creation and dispersion of knowledge (Brown & Duguid, 1998, Hildreth & Kimble, 2004, Allen, 2000).

The reasons for being located in close proximity to each other are more than just access to knowledge and information, this paper will focus on what kind of knowledge and information it is that firms need in order to survive and be competitive in the market. Although the formation of communities of practice does occur and may offer efficient means of communication, there are certain types of knowledge and information that may not be transferable without face-to-face interaction, and therefore, are more efficient when the actors are located within an agglomeration.

What knowledge is important?

In the literature on knowledge a distinction is often made between knowledge that can be easily communicated (i.e. *explicit* or *codified* knowledge) and knowledge that is very difficult to communicate through symbolic representation (i.e. *implicit* or *tacit* knowledge). The term tacit knowledge has been widely used but is usually traced back to the work of Michael Polanyi (1967). The tacit dimension of knowledge exists in the background of our consciousness and remains largely unspoken and, because of this, the language or the symbolic representation is not fully developed and as a consequence it is very difficult to communicate this form of knowledge in tangible ways. However, tacit knowledge can be learnt from others; and this learning process is best facilitated by the existence of shared social context such as similar norms, language and culture (Gertler 2003).

Another interesting distinction that Polanyi makes considering tacit knowledge is between its experimental and cognitive nature. It is experimental in the sense that tacit knowledge is understood as “know how” gained through practice and experience, and it is cognitive in the sense that it challenges the idea of “conscious articulation”. This means, firstly, that we may not be aware of the knowledge we have or how to communicate it, and

secondly that we are not capable of a conscious articulation of this knowledge since our standard communication tools, like talking, drawing or writing, are not enough (Gertler 2003).

Leamer and Storper (2001) state that if a product is standardized, the information about its features can be codified and therefore communicated via specifications, blueprints, consumer [p. 215] magazines etc. This allows geographic distances between the producer/seller and the buyer. If a product is not codifiable, symbolic systems or physical infrastructure will help little in successfully transmitting a message. More important in such cases may be the existence of a much more intangible communicative infrastructure: e.g. mutual trust and understanding, personal connections, and shared common backgrounds, norms, language and culture.

The tacit dimension of knowledge is especially important to new forms of economic activity (or any activity) such as the internet industry. This is because it takes time to develop a general code system to communicate knowledge between organisations and individuals. As the industry or activities establish the codes (language and conventions) will eventually develop and become standardized. However, in growth stages industries and technologies are likely to develop a myriad of different competing codes and languages that can greatly hinder communication and innovation. For the internet industry the development of standardized codes and shared meanings and communication cultures has been especially problematic. Attempts to overcome communication problems and navigate new opportunities whilst lacking common standards and understandings can perhaps account for why so many internet companies seem to seek proximity to one other.

The idea that innovation means producing fresh and useful knowledge might not be a revolutionary insight in contemporary economic geography. However, the centrality to the internet industry of producing fresh and applicable knowledge at ever greater speeds is crucial in understanding the importance of knowledge and innovation to the location of the

industry, especially its concentration to certain cities and urban districts. In the internet industry innovation needs proximity since knowledge must constantly evolve into fresh knowledge; and because extreme premiums are placed on first movers and fresh ideas.

In line with this argument, Grabher's (2002) description of the localization patterns of the London advertising industry is useful. Firstly, Grabher mentions the importance of *freshness* which represents the never-ending search for *a* or *the* new way of describing, advertising and commercialising goods and services. Secondly, he suggests that for workers in the industry and locality know *who* exceeds know *how* in importance. He also relates this to the tacit dimension of knowledge by stating; "[...] it is rather this particular 'know who' and to a lesser extent the 'know how' that tends to sediment into tacit knowledge" (pp. 252). Consequently, an important aspect of the idea of networks and face-to-face contact is that learning is not so much about acquiring knowledge, but also about becoming an *insider* in order to access important knowledge. In other words it might be the 'map' or the 'guidebook' that is most important since it is these that will lead the actor into the networks of face-to-face contacts where knowledge can be accessed; and less the precise ways in which the knowledge accessed is absorbed or used. Of course, information does not make sense without knowledge and what information is important is determined of which knowledge the individual has (see Weick 1995).

A more general expression of the importance of 'being there' is the concept of *buzz*, which is more than just the circulation of information or being a part of networks. Buzz is both strategically conscious and unconscious collecting of information which "incorporates the upstream conditions of knowing what is happening, intentional face-to-face contacts, and unintentional or more diffuse face-to-face 'rubbing elbows'" (Storper & Venables, 2002, p. 32).

As we can see from above there are a variety of reasons for thinking that tacit forms of knowledge are important to the internet industry's business models and to the industry's location patterns. However, in general there is a lack of empirical research into the tacit dimension of knowledge. Much has been said on the nature of tacit knowledge and the [p. 216] possibility to diffuse such knowledge, but little empirical research has been done to find out what exactly tacit knowledge is made of and what difference it does make within an industry or a sector, in a certain location, or agglomeration. The rest of this paper attempts to contribute to our empirical knowledge of the role of, and foundation for, tacit knowledge but looking at the agglomeration of internet activities in Stockholm.

THE INTERNET INDUSTRY IN STOCKHOLM

What is the internet industry?

Numerous studies has been made taking into account the implications of the new technology on social life and on society in general (Slevin, 2000), while other studies focus upon the new technology and the economy (Castells, 2001). These studies tend to concentrate on the wider information and communication technology (ICT) rather than focusing on the internet- and www-technology, and the internet industry per se. When dealing with questions on industry agglomeration one should remember that the ICT-sector consists of a wide range of industries and types of firms, from genuine service suppliers to pure manufacturers (traditional industries using raw materials to produce goods). Connected to the ideas that the new technology is making firms, industries and sectors increasingly foot-loose, it is of special interest to study firms of which activities are truly *dependent on and arising from the internet*.

Therefore the definition of the internet industry used in this paper is; *firms whose activity/existence is dependent on the internet and whose production and distribution of goods and services are dependent on the internet*. Phrased differently; firms that produce goods and service *for* and *through* the internet.

The intention with using this definition is to get hold of those firms which are truly dependent on, and arising from the internet, but also to distinguish the internet industry from the wider ICT-sector, as well as from research using for example company web pages as a measurement of the size of the internet economy (Zook, 2000, Moss & Townsend 1997, Kolko 1999, Sternberg & Krymalowsky 2002) or adjacent, but not identical, definitions like for example the multimedia industry (Sandberg 1999). The definition used here was modelled by using a data base of the total number of companies in Sweden, and from this data base a search was made of the firms' articles of association. By using a number of concepts, like 'internet', 'web', 'interactive' and similar concepts the internet companies was singled out from the rest of the companies. From this search, then, internet firms located in Stockholm was delimited.

The type of firms included in this study then can be classified in three main categories; web design, on-line business solution consultancy, and content providers. The *web design* category is mainly represented by firms dealing with design of web sites and pages, graphic design and on-line advertising. The general characteristic of the activities of these firms is that they are design intensive and idea consuming. Firms in the *on-line business solution consultancy* category can be divided into business solutions, software systems, internet security and internet survey companies. Compared with the former category, firms in on-line business solution consultancy are less design intensive, but slightly more technology intensive. The category of *content providers* includes a wide range of activities; news and entertainment, portals, search engines, advertising agencies, and on-line games.

The firms and companies in Stockholm studied in this paper are fairly small with approximately 50 % employing five people or less and only about 4 % employing more than 50 people. [p. 217] Another characteristic worth mentioning is that most of the firms were established in the late 1990s with a peak around 1998-99, and naturally, only a very small number of firms established before 1996.

Similar to firms involved in the production of cultural products (Scott, 2000), the activity of the internet firms discussed in this paper is characterized by a production system which is almost always organized in dense networks of small and medium sized firms who are strongly dependent on each other for specialized inputs and services. These networks tend to put forth vast demand on the local labour market and to require a range of skills and qualities. The employment relations are irregular, leading to frequent job search and recruitment activities. In other words, there exists both collaboration and rivalry between these firms. Another characteristic worth mentioning is the low barriers of entry. Since the costs of setting up a new internet firm is marginal, except from salaries, the main base for getting started is access to customers.

The state of the Swedish internet industry

As said in the introduction, the internet industry has faced unpredictable growth and severe hardship during its short existence. However, there is much to be said of the current state of the Swedish internet industry in the way that it has survived the crisis after the internet bubble burst in the beginning of the new century. Table 1 examines the Swedish internet industry, using the definition described above, by looking at the changes in the number of firms and employees. From this table one can see that the internet industry still exists and both the number of firms and employees has been increasing between the year 2001 and 2006. The total growth of number of firms has been 41,9 % with a rapid increase between

2001 and 2003 and then a stabilizing trend between 2003 and 2006. During the same period employment saw a similar trend with a rapid growth between 2001 and 2003, but then a quick decrease and stabilizing in the following years. The internet industry thus appears to be stabilizing and is going into a more mature phase, transcending its early dynamic start up phase, and problems related to that phase.

TABLE 1

Other research conducted on the Swedish internet industry, using a fairly similar definition, confirms the direction of this development, that both the number of firms and employees has been increasing (Sandberg & Augustsson 2002). Either ways, there seems to be clear evidence of a vigorous internet industry in Sweden.

In comparison to the whole ICT-sector, the internet industry in Sweden is fairly small. According to ITPS (Swedish Institute for Growth Policy Studies) the so called ICT service sector [p. 218] included 12 906 firms and 137 888 employees (ITPS, 2005). Unfortunately, because of the many different definitions and measurements there is almost impossible to make a coherent and justifiable comparison between the Stockholm internet industry and research on other internet industry localizations.

The geography of the Swedish internet industry

The internet industry certainly has a clear connection to larger cities and national centres. Several empirical studies, using different but still comparable definitions of the internet industry or new media, graphic design etc., are confirming the idea of the internet industry as very much related to larger cities (Brail & Gertler 1999, Zook 2000, Zook 2002, Sandberg 1999, Pratt 2000, Moss & Townsend 1997, Leamer & Storper 2001).

In a study of the Netherlands Naylor (1999) identifies two different but related patterns of location. Firstly, the internet industry is concentrated in larger cities. Although these firms are represented all over the country there is an unmistakable tendency towards a concentration in the largest cities. Secondly, the industry proves to have a clear pattern within these cities with the larger share of firms located in certain downtown districts. This pattern is far from unique to the internet industry, but may be seen in a wide range of different industries, for example the music (Scott 2000), fashion industry (Rantisi 2002) or other creative industries (see for example Gibson, Murphy & Freestone 2002).

This pattern is also evident in Sweden. Firms within the internet industry are spread throughout every region, but the distribution is anything but equal. The larger proportion of the firms is located in larger cities, especially Stockholm. Earlier research, again, using fairly similar definitions, confirms this pattern by showing that more than 50 % of Sweden's internet firms are located in Stockholm (Sandberg 1999, White & Coronado 2000, Arbetsmarknadsstyrelsen 2001, Birkinshaw 2000).

TABLE 2

Table 2 show the location pattern in the three largest city regions in Sweden and other regions. From this table one can see that 83 % of all employees in internet firms are located in the larger city regions. Stockholm in itself contains 62,4 % of employees. Looking at the location quotients, only Stockholm exhibits a concentration that exceeds the value of 2,0. A value over 1,0 indicates that an activity is more concentrated relative to the whole (Johnston et al., 2000). In other words, it is only the Stockholm [p. 219] region where the concentration of internet firm employees is higher than for Sweden as a whole.

In the same fashion that the internet industry is concentrated in larger city regions, the industry also tends to concentrate *within* these cities (Brail 1998, Brail & Gertler 1999, Moss & Townsend 1997, Zook 2000). This is no exception in the Stockholm case, where the internet firms are concentrated in particular locations in the inner city, specifically in close proximity to certain streets in the district of Södermalm, Östermalm and Norrmalm (figure 1 and 2).

FIGURE 1

FIGURE 2

The concentration of internet firms is very clear in this case and it automatically leads to the question of the cause and factors of this pattern, that is, the reasons behind this geographical distribution of internet firms. A theoretical framework for analysing the importance of proximity to gain specialized information and knowledge is discussed with emphasis on the role of tacit knowledge.

ACCESSING KNOWLEDGE AND INFORMATION IN THE STOCKHOLM INTERNET AGGLOMERATION

After extensive research on the internet industry in Stockholm the acceptance in the industry of the need to just be there was apparent. People talked about why they were there in ways reminiscent of the concepts of ‘buzz’ and of the idea of it ‘being something in the air’ (see Marshall, 1920/1960). Such assertions and assumptions raised a series of recurring questions.

What exactly is it in the 'air' that these firms are breathing? What is the information or knowledge that they are all searching for, the 'substance' that they cannot exist without? Is tacit knowledge the glue that keeps these people and economic activities together? In this section an attempt is made to give the 'air' some substance; what is the hidden dimension of the knowledge and information that exists within the Stockholm internet agglomeration?

In order to attempt to answer some of these questions an extensive set of interviews with Stockholm internet firms was built up and analyzed through the lenses of tacit knowledge, know how, freshness, know who and insider. The empirical material utilized for this paper is the result of interviews conducted during autumn 2002, with internet company founders and other representatives of 30 firms and relevant industry organizations in the inner city of Stockholm. The methodology employed for this purpose was semi-structured interviews (Frankfort-Nachmias & Nachmias, 1996), where the interview questionnaire covered a wide range of relatively open defined topics of which only a limited part will be discussed in this paper.

Freshness

The internet industry in Stockholm is by some measurements using sophisticated technology of course, but from another perspective the level of technology is not that advanced. By this I mean that the competitive advantage of the firms located in the inner city of Stockholm has very little to do with working with or developing cutting edge, new technology. The knowledge produced in the local milieu is in other words something else than related to technological research and development.

The internet industry relies to a great extent on its ability to create new ideas and new ways of using existing technologies; the market is highly volatile. What many firms in the interview study have experienced is that customers may change their need for on-line [p.

220] business strategy [p. 222] services, including advertising budgets, on very short notice, or change which bureau they prefer to work with. The customer wants a creative partner who understands how to develop its brand. This leads to a situation where the customer constantly is searching for the bureau that is ahead of the others and which can offer the best and most profitable solutions. The bureau, on the other hand, has to keep their eyes open, not only for new ideas, but also for new customers since they can never afford to be safely dependent on the existing clientele. The internet firms then find themselves in a never-ending search for new ways of describing and advertising a good or a service, and they are always trying to find new ways of making on-line goods and services easier to understand and more readable. At least they are trying to make things look like they are highly innovative. In many ways it is the freshness of the idea of a campaign, a web site or an on-line business solution that is the central professional criterion.

I think it is in the nature of the bureau...to be some kind of mirror...if I am going to be able to create a unique message that appeals to the market I have to be some kind of kaleidoscope for trends in myself. Otherwise you can not work in a bureau. There are creative people working in a bureau and they will have influences from every direction, it is in the creative soul (Interview with web design firm).

It seems like the ‘soul’ of the bureau is in the creativeness of the people working there. At the same time the quote confirms the idea that it is very hard, not to say impossible, to express what creativity actually is.

In other words it does not mean that the technology per se is without importance since the basic knowledge of the utilized technology has to be in place. Rather it is how they use it that is tacit. In cases where codified knowledge exists everywhere it may become

valuable if it is compounded with less universal knowledge embedded in, or learned within, the local milieu in tacit forms (Asheim, 1999).

It is no rocket-science, no strange ideas, it is very straight forward (Interview with content provider firm).

It is also a question of how to create a team around the existing technology. Therefore the tacit knowledge might be embedded in the skills and knowledge in selecting the most talented project partner from a fragmented and specialized pool of creatives (Grabher, p 252). Using Christopherson's words "the organisation of work around generalized skills (such as knowledge of particular software) also alleviates incompatible incentives by lowering the transaction costs of exit and reemployment for both workers and employers" (Christopherson, 2002, p. 13). The knowledge about the technology (software etc.) is ubiquitous and allows the firm to continuously recreate new constellations or project teams.

Know-who

The importance of who you know and who knows who is essential from two perspectives in the Stockholm agglomeration of internet firms. Linkages are rather between individuals than between firms. Firstly, in the project based mode of work in the internet industry, one crucial factor is the ability to select a high-quality team of creatives with the competence to find new commercial functional ideas with a high level of freshness. One company [p. 223] describes how it works in a network of freelancers and other companies in the process of finding skills and competences to meet the needs of the customer.

We are a networked company with few employees. It is nice to work together with others....we have freelancers sitting in the same space, constantly. But we work together with other companies

in the city to provide what the customers needs. Especially when it comes to more rigid technology, which is not our best feature. It is a very conscious decision since we are a communication bureau. That is where we have to call in for help. We also work together with advertising bureaus when it comes to image and advertising since it is not our niche (Interview with web design firm).

Secondly, know who is important for the capacity to acquire new customers. This is central due to the fact that customers are primarily obtained through personal networks and these networks have to be carefully taken care of. Because of this it does not exist any standardized strategy of how to approach potential new customers. For many firms this seems to be a crucial barrier for their commercial activity.

We have never been good at hunting new customers. All of us think it is really boring and almost humiliating to pick up the phone and sell. None of us like salespersons. And sometimes this feels like a problem...not wanting to sell. But actually...what I think is good...and a way of getting new customers is to go to industry meetings and seminars. Activities like that. Courses and the like...I think that is an easier way because it is a more natural way of starting a conversation about what you are doing. I mean, you are not there to sell. It comes automatically. You will automatically find the people you may work together with or people who need your services (Interview with web design firm).

Since the companies involved in the internet industry in Stockholm are small, the market divisions in these companies are often non existent and therefore the sales function is directed to the company collective. Generally, the selling part of the work is looked upon as something important but uninspiring.

Asking these companies where their (most important) customers are located, the answer is that approximately 90 % are located in Stockholm.

All our customer except one are located in Stockholm. Almost all companies in Sweden have their marketing departments in Stockholm (Interview with web design firm).

The ways to obtain these customers are far from standardized, as mentioned above. New customers are acquired through personal or firm specific networks and these networks require sensitive attention to be built up, expanded and maintained. The way to acquire a new customer seems to be to carefully approach and engender a close informal and personal contact to a potential new customer, and if the timing is right to establish a more professional relationship. This leads to a situation where personal relations and the social networks are extremely important [p. 224]

There is some kind of advantage with all the companies being concentrated in Stockholm. If you are just hanging out and have a beer in the right spots it is quite easy to spread rumors, spread your name and find a network (Interview with on-line business solution consultant firm).

To create these networks is fundamental for the firms in the internet industry, but the knowledge of how to create these networks are far from standardized. In other words, the knowledge of how to get inside, and how to get in touch with the important actors and customers is in many ways tacit. The possibility to be a part of the important network is dependent on the knowledge of common norms and manners. Clearly, you have to be familiar with the 'ritual' when approaching a potential customer. This knowledge is achieved only by being in the right milieu, since this knowledge is very local in its nature.

Customers are acquired through your network and through personal relations. But of course, it happens that you call a potential customer and ask; - Hello, it would be fun to work with you. But that is very rare. I think it's very unpleasant. They have not asked me to call them. It is not like we are selling copying machines. It is just a strange approach. (Interview with web design firm)

In theory it is not a problem describing how to select a high-quality team of creatives in order to get an appropriate mix of skills and qualities or how to create an individual network of customer relations. In other words, it is a simple task to ‘know that’. In practice though, the question of ‘know how’ is much more complicated.

Becoming an insider

Perhaps most important is to become an *insider*, that is a person who understands the larger collective (network), its norms, language and culture. The possibility of being an insider without access to the norms, language and culture of the collective is minimal, not to say non-existent. This is one of these situations when geographical space becomes critical and where geography really matters. The new information technology might have enabled an increased flow of information in quantitative terms, but not as much in the quality of the information. It is (still) hard to overcome distance and thus become an insider through the use of internet since this process involves understanding and trust. Leamer and Storper (2001, p. 15) explain the limitations of information technology on understanding and trust, by stating that it facilitates ‘the conversation’ but not ‘the handshake’.

The term insider, with the focus of being at the right place at the right time to acquire the right information, also implies that there is a selected group of people and companies that are in the position to make contacts with new potential customers. Implicit in this, of course, is the fact that a large group of actors will automatically be excluded from these key networks. Without these key networks you will face severe problems finding contacts and therefore new customers. The formation of crucial and important information remains hidden for the outsider, and this might of course be a more or less intentional strategy by the insiders to keep the outsider an outsider and reduce competition. This is a problem for

actors located in the local milieu, but it more or less makes it impossible for internet firms located outside Stockholm to compete for clients in Stockholm. [p. 225]

Almost all clients are having a pitch....and when there is a pitch for a web bureau there are only web bureaus from Stockholm included. Occasionally there is a company from another city, because they are really good with creating events on the net. Sometimes they will be included....but now they do have a couple of people down here in Stockholm to take care of this type of issues (Interview with web design firm).

In the same fashion internet firms from Stockholm trying to penetrate an external market face the same problems with actually locating potential new customers.

When we ran a business in another town....we did not have a chance to get the big customers that were located there (Interview with on-line business solution consultant firm).

Several firms agreed with this view and were pointing out the fact that customers outside Stockholm had a tendency to consider local suppliers rather than firms located in Stockholm or elsewhere.

When companies or organisations outside Stockholm are purchasing an internet service...they will always encourage a local supplier. That is the feeling you get. It is ok in regions close to Stockholm, but if you go up north or south it is very hard (Interview with on-line business solution consultant firm).

It is important to observe that the process of becoming an insider takes place at a geographic micro-scale. Even if you find yourself in the right spot, you might still end up more alone than ever. Phrased differently, even if you are sitting at the table next to where the

‘buzz’ takes place; you might not really ‘hear’ what they are talking about. Without the right connections and relations to important and highly networked actors, *being there* is just not enough – you might also have to be *within*, that is, being an insider.

The customers would not choose you if they have not seen you. They want to meet you. That means more than you think (Interview with web designer firm).

For example, after a meeting (or similar), where do you connect with other people, and where are the gossip and the rumours shared? If you do not have the knowledge of where the information (gossip, rumour etc.) will be exchanged, you will never be able to create your own individual network and be able to share valuable information. In other words, it is not enough being located in a ‘dynamic’ region or milieu – you may also need to be located in the right ‘spot’ within the region, or at least know where they are. Without the knowledge about the right spots where to connect and gather information you will not create an individual network, neither be a part of the local ‘buzz’ or ‘noise’ and you will simply stand by yourself in the ‘wrong’ corner. If you do not have the tools to penetrate that group of people you will be very alone although you are standing right next to them. One should also remember that the culture surrounding these processes is above all a young male culture, making the entrance hall into these networks even narrower.

[p. 226] The meaning of being an insider is of such importance that the firms interviewed, as a conscious strategy, preferably choose to employ personnel with an already existing network.

We only employ people with an existing network, with which you will always be able to do something with the conversation [with a new customer]; a better flow in the conversation. It is

easier to say; - A friend thought I should call you. You know, someone knows someone who...

(Interview with on-line business solution consultant firm).

When firms employ new personnel the important criteria has not so much to do with the person's formal education, skills or qualities, as with the *social capital* and *social network* this person is bringing with him or her (acquired through experience). The social capital and network that the new employee brings to the firm is considered as a new source of potential customers. Again a comparison with the advertising industry might be appropriate, where Grabher (2002, p. 250) state that "...probably more accounts are lost through personnel changes than through any other reason", meaning that the customer is sometimes very much related to a specific person. This comes from the fact that trust is rooted in experience with an individual, not with a firm, so networks are individual (Christopherson pp. 10-11). Of course there is a cumulative character to a network community where 'your friends are my friends' expanding the possible set of connections and strengthen not only the position of the individual in the local network context, but also the network in itself.

CONCLUSION

The empirical findings presented suggest that firms within the internet industry are located in close proximity to each other because of the importance of dense informal interpersonal networks that facilitate the search for new customers and collaborators and access to important (tacit) knowledge and information. The findings also stress the importance of proximity in creating these dense networks and being in the right place at the right time.

Expanding this analysis the article suggests that important knowledge and information in the internet industry in Stockholm is not particularly related to new technology or advanced use of new technology. Instead, important knowledge and information is, firstly,

constituted by the supply and access to new and fresh ideas and ways of using already existing technology. It is the freshness and novelty of the ideas that is the crucial knowledge and information. Secondly, continuous access to customers is decisive to the existence of internet firms. Knowledge and information about potential customers is only available and accessible by being at the right place at the right time. To be able to access information about potential customers it is of crucial importance who you know and what networks of personal and informal relations a person is participating in. It is a matter of becoming an insider and without being an insider the possibilities of gaining such information diminish and to the outsider the spatial structure or pattern of the formation of valuable knowledge and information is hidden since you have know both *where* and *when* this information is created and communicated.

This study shows the importance of proximity in gaining crucial knowledge and information of the internet industry, but also to interpret this knowledge and information. [p. 227] Proximity facilitates the communication of the important (tacit) knowledge and information. This statement disagree with the idea that thick personal relationships may extend over geographical boundaries, and can exist and spread through relatively dispersed ‘communities of practices’. In the examples presented in this article there is a clear evidence of an existing community of practice although these communities of practice do not generally reach far outside their local context and they are primarily facilitated through proximate face-to-face relations.

That the knowledge and networks they strive to be a part of are hidden from view and that the rational reasons they have for seeking proximity to such knowledge and networks are left unquestioned by participants has a series of implications for how we understand co-location in such industries. Policies and planning for the development of competitive internet agglomerations, for instance, might work to elucidate and build upon the

hidden rationales and mechanisms that drive access to, and acquisition of, vital knowledge and membership structures within the internet industry. It seems that greater understanding on the parts of participants and firms of why they are there, why they seek know who over know how, and why tacit knowledge is the basis upon which they build their businesses could greatly aid their own cluster and business development. Likewise for regional and development authorities understanding the importance of tacit knowledge and network dynamics is important for their work to support the development of well tailored industry specific policies.

REFERENCES

- Allen, J. (2000) Power/economic knowledge: symbolic and spatial formations, in J.R. Bryson, P.W. Daniels, N. Henry and J. Pollard (Eds) *Knowledge, Space, Economy*, pp. 15-33. London: Routledge.
- Arbetsmarknadsstyrelsen (2001) "Var finns jobben år 2001". Arbetsmarknadsstyrelsen, Ura 2001:1.
- Asheim, B. (1999) Interactive Learning and Localized knowledge in Globalising Learning Economies, *GeoJournal*, 49, pp. 345-352.
- Birkinshaw, J. (2000) The Information Technology Cluster in Stockholm; Changes from 1997 to 2000 and prospects for continued growth. Stockholm: *Institute of International Business*.
- Brown, J.S. and Duguid P. (1998) Organizing Knowledge, *California Management Review*, 40, pp. 90-111.
- Brail, S. and Gertler, M.S. (1999) The Digital Regional Economy: Emergence and evolution of Toronto's multimedia cluster" in H-J Braczyk, G. Fuchs, and H-G Wolf (Eds) *Multimedia and Regional Economic Restructuring*. London, New York: Routledge.
- Brail, S. (1998) The Paradox of Technological Change: 'New' Media in 'Old' Urban Areas.
[www.utoronto.ca/progris/Paradox.htm].
- Cairncross, F. (1997) *The Death of Distance: How the communications revolution will change our lives*. Boston: Harvard Business School Press.
- Castells, M. (2001) *The Internet Galaxy – Reflections on the Internet, Business, and Society*. New York: Oxford University Press.
- Christopherson, S. (2002) Why do National Labor Market Practices Continue to Diverge in the Global Economy? The 'missing link' of investment rules. *Economic Geography*, 78, pp. 1-20.
- Coyle, D. (1998) *The Weightless World – Strategies for Managing the Digital Economy*. Cambridge: The MIT Press.
- Frankfort-Nachmias C. and Nachmias D. (1996) *Research Methods in the Social Sciences*. London, New York: Arnold.
- Gertler, M. S. (2003) Tacit Knowledge and the Economic Geography of Context, or The Undefineable Tacitness of Being (There), *Journal of Economic Geography*. 3, pp. 75-94.
- Gibson C, Murphy P, and Freestone R. (2002) Employment and socio-spatial relations in Australia's cultural economy, *Australian Geographer*, 33, 2, 173-189.

- Grabher, G. (2002) The Project Ecology of Advertising: Tasks, Talents and Teams. *Regional Studies*, 36, pp 254-262.
- Hidreth, P. and Kimble, C. (2004) Knowledge Networks: Innovation through communities of practice. Hershey PA.
- ITPS (2003) *Swedish electronics industry and companies in the ICT service sector 2002-2003*. S2005:009. Swedish Institute for Growth Policy Studies.
- Johnston, R. J., Gregory, D., Pratt, G. and Watts, M. (Eds) (2000) *The Dictionary of Human Geography*. Oxford. Blackwell.
- Kolko, J. (1999) *The Death of Cities? The Death of Distance? Evidence from the geography of commercial Internet usage*. Paper presented at the Global Information Society Conference, Newcastle upon Tyne, November 22-24, 1999.
- Leamer, E. and Storper, M. (2001) The Economic Geography of the Internet Age, *Journal of International Business Studies*, 32, pp 641 – 665.
- Marshall, A. (1920/1960) *Principles of Economics, Book IV: The Agents of Production, Land, Labour, Capital and Organization*. London: Macmillan & Co.
- Maskell, P. and Malmberg, A. (1999) Localised Learning and Industrial Competitiveness, *Cambridge Journal of Economics*, 23, pp. 167-185.
- Morgan, K. (1997) "The Learning Region: Institutions, Innovation and Regional Renewal". *Regional Studies*, 31, pp. 491-503.
- Moss, M. and Townsend A.M. (1997) Tracking the Net: Using domain names to measure the growth of the internet in U.S. cities, *Journal of Urban Technology*, 4, pp. 47-60.
- Naylor, R. (1999) Multimedia and uneven urban and regional development: The internet industry in the Netherlands, in H-J. Braczyk, G. Fuchs, and H-G. Wolf (Eds) *Multimedia and Regional Economic Restructuring*. London, New York: Routledge.
- O'Brien, R. (1992) *Global Financial Integration: The End of Geography*. London: The Royal Institute of International Affairs.
- Polanyi, M. (1967) *The Tacit Dimension*. London: Routledge & Kegan Paul Ltd.
- Pratt, A. (2000) New Media, the New Economy and New Spaces, *Geoforum*, 31, pp. 425-436.
- Rantisi, N. (2002) The Local Innovation System as a Source of 'Variety': Openness and Adaptability in New York City's Garment District, *Regional Studies*, 36, pp. 587-602.

- Ryle, G. (1949) *The Concept of Mind*. Chicago: The University of Chicago Press.
- Sandberg, Å and F. Augustsson (2002) *Interactive Media in Sweden 2001 – the Second Interactive Media, Internet and Multimedia Industry Survey*. Stockholm: *Arbetslivsinstitutet* 2002:2.
- Sandberg, Å. (1999) The multimedia Industry in Sweden and the Emerging Stockholm Cluster, in H-J. Braczyk, G. Fuchs, and H-G. Wolf (Eds) *Multimedia and Regional Economic Restructuring*. London, New York: Routledge.
- Scott, A. (2000) *The Cultural Economy of Cities*. London: SAGE Publications.
- Slevin, J. (2000) *The Internet and Society*. Oxford: Polity Press.
- Sternberg, R and Krymalowsky, M. (2002) Internet domains and the innovativeness of cities/regions – Evidence from Germany and Munich. *European Planning Studies*. Vol 10. No. 2. pp. 251-273.
- Storper, M. and Venables, A. (2002) *Buzz: The economic force of the city*. Paper presented at the DRUID summer conference on “Industrial dynamics of the new economy – who embracing who”, Copenhagen June 2002.
- Storper, M. (1995) The Resurgence of Regional Economics, Ten Years Later: The Region as a Nexus of Untraded Interdependencies, *European Urban & Regional Studies*, 2, pp. 191-221.
- Thrift, N. (2001) 'It's the romance, not the finance, that makes the business worth pursuing': disclosing a new market culture, *Economy and Society*, 30, pp. 412-432.
- Weick, K.E. (1995) *Sensemaking in Organizations*. Sage. Thousand Oaks.
- White, A. and Coronado, R. (2000) *Networks.com – A Study of Interlocking Directorates in the Swedish Internet Industry*. Stockholm: *Stockholm School of Economics*.
- Zook, M. (2005) *The Geography of the Internet Industry: Venture capital, dot-coms, and local knowledge*. Malden: Blackwell Publishing.
- Zook, M. (2002) Grounded Capital: Venture financing and the geography of the internet industry, 1994-2000, *Journal of Economic Geography*, 2, pp. 151-177.
- Zook, M. (2000) The Web of Production: The economic geography of commercial internet content production in the United States, *Environment and Planning A*, 32, pp. 411-426.

Table 1

Table 1: Changes in the number of firms and employees in the Swedish internet industry, 2001-2006.

Year	Number of firms	Number of employees
2001	2069	22252
2002	2277	25246
2003	2844	27348
2004	2820	24155
2005	2843	22939
2006	2936	22282

(Source: Affärsdata 2006)

Table 2

Table 2: The regional distribution of internet firms and employees in the Swedish internet industry, 2006.

Region	No. of firms	No. of employees in internet firms	Prop. of employees in internet firms	Location quotient ¹
Stockholms	1541	13899	62,4%	2,61
Göteborg	375	2428	10,9%	0,63
Malmö	344	2172	9,7%	0,80
Other regions	676	3783	17, 0%	0,36
Total	2936	22282	100%	-

(Source: Affärsdata 2006)

¹ A measure of the relative significance of a phenomenon in a region compared with its significance in a larger region (the country as a whole). The location quotients are created from the region's proportion of internet employees divided by the region's proportion of the total workforce.

Figure 1

Figure 1: Map of internet firms in central Stockholm. Kungsholmen, Vasastan, Norrmalm, Gamla stan och Östermalm (Source: Affärsdata, 2001 and Lantmäteriet, 2005)

Figure 2

Figure 2: Map of internet firms in central Stockholm. Södermalm (Source: Affärsdata, 2001 and Lantmäteriet, 2005)