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Social Computing: Study on the Use and Impact of Online Social Networking

IPTS Exploratory Research on the Socio-economic Impact of Social Computing

Romina Cachia

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PREFACE

The European Commission's Joint Research Centre runs an exploratory research scheme which aims to build competences in strategically relevant scientific fields. One of the selected projects at IPTS,[1] following a call for proposals, was "Exploratory Research on Social Computing" (ERoSC). This was carried out by the Information Society (IS) Unit at IPTS during 2007 – 2008.

This ERoSC project aims to explore (1) the socio-economic impact of social computing; (2) the sustainability of social computing applications (business models and viability); (3) the relative position of Europe in terms of creation, use and adoption; and (4) options for EU research and innovation policies. Such research is important and urgent because social computing is already impacting many aspects of society and the previously available evidence was largely anecdotal and not comparable. Also, the recent nature of social computing applications, their strong growth in terms of creation, use and adoption, and the continuous changes in technologies, applications and user behaviour, reinforce the need for continuous monitoring and scientific capacity building. To our knowledge, very little research in the field undertakes the European scope. Accordingly, the ERoSC project undertook a systematic empirical assessment of the socio-economic impact of social computing applications in Europe.

The methodological framework for the assessment consisted of desk-based research using available studies, reports and statistics on social computing in general and on collaborative content and social networks in particular. A validation and policy options workshop was organised to tackle the challenges emerging from the domain of social computing applications, which is a recent phenomenon which is also changing rapidly. In addition, interviews with experts in the field were also conducted to validate conclusions drawn from the reports and the workshop.

The research was undertaken in-house by a number of key researchers, supported by a larger multidisciplinary team of people belonging to the different areas of activity of the IS Unit.

This is the third of five reports from the ERoSC project. This report provides an analysis of digital applications that facilitate social networking and multimedia interaction amongst individuals, highlighting changes and their implications in how people network, manage and operate their social contacts. All the ERoSC reports will be available at http://is.jrc.ec.europa.eu/.

While completing the ERoSC project, the IS Unit at IPTS is continuing its work on social computing, and is currently researching the impacts of social computing on health, government, learning, inclusion, competitiveness and the ICT/media industries.

[1] IPTS (Institute for Prospective Technological Studies) is one of the seven research institutes of the European Commission's Joint Research Centre (JRC).

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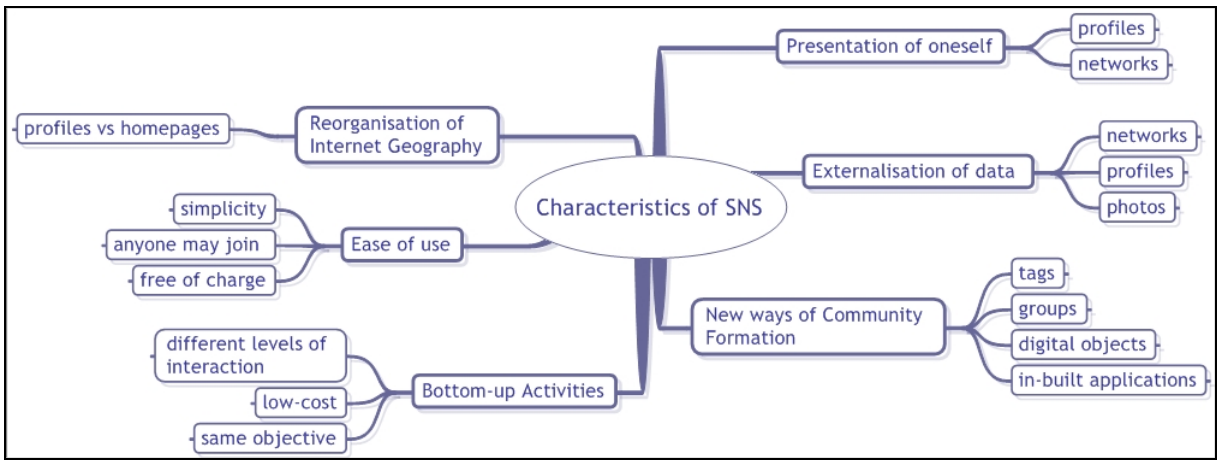
Executive Summary

A social networking phenomenon has emerged over the past five years. In that time, social networking sites (SNS) have grown from a niche to a mass online activity, in which tens of millions of internet users are engaged, both in their leisure time, and at work. However, there has been very little research on the socio-economic impact of these sites in the European context. This report presents results of a case study on SNS recently conducted by JRC IPTS, as part of an exploratory research project. The study aims to explore and identify the social and economic implications of SNS in Europe and to suggest policy options and avenues for further research. The main conclusions and observations of the study are presented below.

… similar, yet different

SNS, at a basic technological level, combine social networking, a list of contacts and a profile. They may also be characterised in the way they differ from other online applications:



Though SNS can appear to be similar, many of them are, in fact, quite different in terms of their purpose and the types of users they attract. It is also important, especially in terms of policy and future research, to delve deeper into each and every category. This is done later in the report. However, at this point the following general conclusions have been drawn:

… new ways of managing and maintaining social networks

These sites have led to new ways of maintaining and managing social networks. Most users use them to 'social search' people they have met offline, to stay in touch and to consolidate relations with core friends. Others extend their networks, using their online visibility to augment professional opportunities, amplify weak ties and to exploit their *15 minutes of fame*.

…externalisation of social networks

SNS support various forms of network visualisation. Until recently, visualisations of social networks were typically articulated in address books or diaries, both of which tend to be associated with some level of privacy. SNS support the sharing and disclosure of online social networks. This is possibly

one of the first times online users have been able to view their own online social networks and how their friends are connected between themselves. The visualisation of online social networks raises various issues. It is important to understand what motivates users to have large networks, what are the implications of publishing one's network and to what extent SNS technology is pushing users to accept the publication of their data, though this would previously have been seen by them as an infringement of their privacy.

…from the virtual to the real

The dynamic ways in which users present themselves on SNS suggest that these sites allow a process of self exploration, identity redefinition and negotiation of social structures. Notions of anonymity and pseudonimity previously associated with online communication are being replaced by information about the seemingly *real* self. For many adolescents, SNS and other online applications become the first locations where they can hover alone without their parents Profiles act like hyperlinked avatars, creating intricate narratives according to the interactions and movement of the users. A*lways-on* usage, the blurring of the distinction between the virtual and the real and disclosure of private data are other aspects which emerge as a result of increased usage of SNS. For some people - especially young people - the distinction between the virtual and the real may already be purely semantic.

…more awareness-raising and education for safe usage

Young people are both at the core of these emerging technologies as they use them the most, but they are also at risk. For some adolescents, these platforms have become a way to advertise their own selves and to *declare their identity.* As with any other social problem or threat to young people in society, banning access to these sites is not the best solution. Young internet users are often intelligent enough to find new ways of accessing SNS. As suggested by the European Network and Information Security Agency (ENISA), more awareness-raising and educational campaigns highlighting safe usage of SNS are needed. It is important that people learn how to manage their online data.

...linguistic and cultural differences dominate the European SNS market

The take-up of SNS in European countries is not homogenous, mainly because local SNS enjoy a substantial share of this market. Linguistic and cultural differences seem to dominate European SNS uptake. Seemingly, as users increasingly influence the development of SNS, the closer SNS get to practices that are deeply embedded in local cultural value. Language, for example, is a major driver leading to the success of local SNS. At the same time, the enduring popularity of the big SNS in Europe suggests that these also play a significant role. These global SNS each provide one network through which users across different countries and continents can connect to each other.

… in search of a business model

The value of SNS is not based on finance, but rather on the accumulation of 'reputation capital'. Part of the attraction of SNS for users is the fact that they do not have to pay for the services offered. The exceptions to the rule are *dating* SNS, which often request an initial membership fee for the matching

service they provide. However, in general terms, we observe that no business model for SNS seems to be dominant at present, though new models may be emerging. A major challenge for most SNS is the definition of a business model that is sustainable and generates revenue. Currently, email providers and SNS are striving for the loyalty of their users, and it may be that these two players may be competing against each other in the near future.

…future research needs and policy recommendations

The emergence of SNS plays an important role for understanding developments in ICT and the social and economic implications of new technologies. Various analysts have observed that SNS are continuously evolving. Not only are they opening up new opportunities but they are also raising concerns. Accordingly, more research is required on the European context, the take up of these applications in everyday life, the cognitive effect on patterns of behaviour and thinking and issues related to identity and self-development, especially in the context of young users.

The need for the enhancement of innovation policy, as a way to foster a culture of software development in Europe and the enabling of portability, interoperability and openness of applications has been highlighted. However, as the SNS market is driven by commercial enterprises, the protection of user rights and regulation of abuse should become a priority. Given that the market is still immature, the European Union needs to observe its evolution for a longer period, while also supporting research and development in this field. Future research should consider the difference between the number of subscriptions and actual usage of SNS, and also attempt to gauge what drives the usage of these applications. This study shows that SNS have an impact on the way people manage their identities, on patterns of behaviour and thinking and disclosure of privacy.

1. Introduction

"The most profound technologies are those that disappear.
They weave themselves into the fabric of everyday life until they are indistinguishable from it".
(Weiser, 1991).

Social networking is a phenomenon which has existed since society began.[2] Human beings have always sought to live in social environments. The proliferation of social networking sites (SNS) and their pervasion in everyday practices is affecting how Western societies manage their social networks. To a significant extent, SNS have shifted social networking to the Internet. In less than five years, these sites have grown from a niche online activity into a phenomenon through which tens of millions of internet users are connected, both in their leisure time, and at work.[3]

There are various factors which have prompted us to consider the implications of these technologies for policy-making. One of these is the willingness of users to embrace SNS as a means of communication and social networking in everyday life. The increasing dependence on technology for basic communication also highlights the importance of analysing how SNS are affecting daily processes. Sites like Facebook, Friendster and LinkedIn are influencing the way users establish, maintain and cultivate a range of social relationships, from close friendships to casual acquaintances. Finally, there has been very little research on the socio-economic impact of these sites in the European context.

1.1 . Aim of paper

This report aims to explore and identify the social and economic implications of SNS in Europe and to suggest policy options and avenues for further research.

1.2 . Method

A multi-mode approach was used for the study on which this report is based. Most of the data was gathered through desk research, and interviews with experts in the field. The major issues and conclusions were then validated during an expert workshop which took place in IPTS in February 2008.

For the desk research, the sources used were mainly peer-reviewed journals. In addition, data from comScore.com and the Pew Research Centre were included. The data from the comScore Global Network has been useful, as it provides an overview of SNS usage in Europe. However, comScore is a marketing research company and we have not had the opportunity to see and analyse the raw data. We are also grateful for the work carried out by the Pew Internet Project, as this has helped us select important areas for further exploration. The Pew Research Centre is a non-profit "fact tank" which provides information on issues, attitudes and trends in the US.

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[2] Barabasi, A.L. (2002). *Linked: The New Science of Networks*. Cambridge, MA: Perseus

1.3 . Structure of the report

The report is divided into three main sections. The first section includes insights from various research studies and highlights the major theories that apply to a study of SNS. The second section explores SNS in the European context and the final section presents an analysis of the social and economic trends emerging from the proliferation of SNS. The report concludes with an overview of the relevant social and economic impacts of SNS in Europe and their implications for policy.

1.4 . Characteristics of social networking sites

This section identifies the basic characteristics which differentiate SNS from other online applications. These are presented in the table below.

[3] Lenhart, A. & Maddan, M. (2007). Social Networking Websites and Teens: An Overview. *Pew/ Internet* Retrieved from http://www.pewinternet.org/pdfs/PIP_SNS_Data_Memo_Jan_2007.pdf

Table 1: Characteristics of SNS

Features	Description
Presentation of oneself	The basic level of entry in most SNS is the setting up of a 'profile': a personalised page developed by the user in which he/she presents him/herself to peers, through text, photos, music and videos amongst others functionalities. SNS allow users to mobilise and organise their social contacts and profiles in the way they want other members to *see* them.
Externalisation of data	Most SNS allow their members to view the networks of their contacts and also in many cases, to traverse them.[4] The externalisation of networks is possibly one of the first times online users have been able to view their own online social networks, and share them with friends and the general public. Some SNS also support applications which allow users to describe the relation between themselves and other members.
New ways for community formation	Though notions of virtual communities have existed since the beginning of online applications, SNS support new ways for people to connect between themselves. Users of these sites may choose to communicate through various digital objects, such as tags and in-built applications within the SNS, such as the 'visual shelf' application in Facebook.[5] Users may join a community of book readers, connecting through books they have liked.
Bottom-up activities	SNS provide the ideal platforms through which users with similar values and interests can come together to collaborate effectively and cheaply. For instance, doctors can share and double check rare medical cases on health SNS such as Within3, or activists can organise a protest through sites like Care2.
Ease of use	A major attribute of SNS' popularity is their simplicity. Anyone with basic internet skills can create and manage an online SNS presence. Prior to SNS, users gained an online presence by having a personal homepage. The drawbacks were that these homepages are not easy to create and development and hosting of the site often incur costs. In contrast, SNS are free of charge and open for anyone to join. Most of them require registration, while others limit membership through an invitation from members who are already members of the site.
Reorganisation of Internet geography	SNS support new points of entry to the internet: people's personal worlds. Until recently, people spoke of the internet in metaphors of places (cities, addresses, homepages). SNS have shifted such *location*-based metaphors to *personal* ones (profiles, blogs, my pictures, my space etc). [6]

Taking all these characteristics together, we can observe significant changes in how users network and operate their social contacts according to different social environments. In particular, SNS seem to be influencing and shaping the way we communicate between ourselves and how we manage our social contacts.

[4] boyd, d. (2006). Friends, Friendsters and Top 8: Writing community into being on social network sites. *First Monday,* 11(12). Retrieved from http://www.firstmonday.org/issues/issue11_12/boyd/

[5] This application allows users to connect through books they read or would like to read.

[6] Maddon, M. & Fox, S. (2006). Riding the waves of "Web2.0": More than a buzzword, but still not easy to define. *Pew Internet Project.* Retrieved from http://www.pewinternet.org/pdfs/PIP_Web_2.0.pdf

1.5 . Differences between social networking sites?

The first SNS appeared more than a decade ago. Early SNS tended to focus on ties with former school friends, such as Classmates.com (1995) and dating. Since then, many different start-ups have tried to repeat the success of the major SNS. Recent SNS focus more on the networking aspect. They provide users a space whereby they can present themselves and network with their friends. In 2005, it was reported that MySpace was getting more page views than Google and Facebook.

Though SNS can appear to be similar, many of them are, in fact, quite different in terms of their purpose and the types of users they attract. While MySpace connects users through the 'MySpace' profile to friends, especially musicians, YouTube links people through videos. Other SNS are oriented towards professional contacts (LinkedIn; Xing), photo sharing (Flickr; Badoo), exclusive communities (aSmallWorld), activism (Care2) and health (Within3), to mention but a few.

When Friendster was launched, users utilised the site to get in touch with old friends. It was innovative and for many young people, it was a networking site mainly for flirting and dating. Although MySpace was also launched with the idea of connecting people, it rapidly evolved into more of a music platform. Its early success lay mainly with teenagers, who used the site to share photos, communicate with friends and design their own profiles. MySpace, however, made the strategic decision to follow the needs and demands of users and developed the site accordingly. This enabled MySpace to maintain its already heavy user-base, and also attract new users. The provision of an application which allowed users to upload four MP3s was a major milestone for MySpace. At the time, it was the only platform that enabled users to share their music with friends and with the public on a networking site without listeners having to download it onto their computers. This attracted numerous musicians to the site, as it allowed them to share their new music with friends and fans. MySpace also leveraged its position in the market by allowing Fakesters (fake accounts), just when all the fake accounts on Friendster were being deleted (sometimes referred to as the *Fakester Genocide*).[7] It also supported freedom of expression, posting anything unless it was directly destructive, at a time when Friendster was censoring user-generated content.[8]

The popularity of SNS photo sharing prompted the launch of various photo sharing sites. One of the pioneers in 2004 was Flickr, which became known for its dynamic platform for sharing photos, comments, tags and photo repositories for blogs. In addition, the self-organisation and collaborative element of the site allowed users to also create assembled galleries and communities of interest. The latter in particular created a niche market of people connecting between themselves through pictures.

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7 'Fakesters' is a term used to describe fake profiles. These refer to a type of account pertaining to bands, movies, celebrities etc. Initially, Friendster opted to discourage the creation of fake accounts (e.g. accounts for pets) and at one point deleted more than 200,000 accounts, many of which were pet accounts. However, when Friendster realised the significance and value of these accounts, and the popularity of such accounts on other SNS, it created the official SNS Fakesters (Roush,W. (2006). Fakesters, *Technology Review*. Retrieved from http://www.technologyreview.com/InfoTech/17713/

8 Haddon, K. (2006). *A changing business model for a virtual phenomenon*. Myers Publishing LLC. Retrieved from http://www.mediavillage.com/jmr/2006/09/25/MySpace_A_Changing_Business_Model_for_a_Vitrual_Phenomenon.pdf

To date, Facebook, with its 90 million active members, is still one of the most successful SNS.[9] Facebook was founded in 2004 as a private network for Harvard students. Following its initial success, it rapidly expanded to other university students. The exclusivity (only college students with an 'edu' email address could register) it maintained at the beginning gave it a strong competitive edge over other SNS. Since September 2006, Facebook has opened its network to all users over 18.

A major attribute of Facebook's success is arguably its simple and ordered profiles. As opposed to MySpace, Facebook restricts profile design through the provision of a uniform interface to all members. As a result, their interfaces are clear and simple. As Facebook profiles have a uniform design, it is easy to look for things in other users' profiles, which is not the case on most other SNS. The vast number of plug-ins and platforms which add a *fun* aspect to Facebook are seemingly other important attributes. It is the only SNS which offers a 'Wall'. This is an application which allows users to post messages, pictures of videos on one another's Wall which everyone can see. Friends can also share places they have travelled through a virtual map, buy animated gifts for their friends, such as plants which grow with time, or simply 'poke' around. The word *poke* does not really mean anything. People poke each other as a form of greeting, to flirt or to keep in touch. It is one of those activities that may be interpreted differently by users. Similar to other activities, such as 'tossing a potato', it has gained a meaning which is culturally specific to Facebook users.

Facebook keeps track of what users in your networks are doing through a centralised newsfeed (see Screenshot 2). The opening of Facebook's Application Programming Interface (API), which allows third parties to integrate foreign applications, also marks an important historical moment in the success of Facebook and online applications in general.

Screenshot 2: Facebook News Feed

[9] Statistics. Facebook. Retrieved on 1, August, 2008.

Research suggests that the wide spectrum of SNS has also led to distinct usage and adoption by different users. Correlations between gender, race, ethnicity and parental educational background have been observed.[10] Hargottai (2007) observed that in a sample of a group of ethnically mixed college students (18-19 year olds), Hispanic students were more likely to use MySpace than Whites. On the other hand, Asian and Asian American students were significantly less likely to use MySpace, and more likely to use Xanga and Friendster than Whites. This could be because the sample was predominantly made up of immigrants and these sites are popular in their home countries.[11] It seems that there is less intermingling of users from varying backgrounds on SNS, which suggests that online actions cannot be interpreted independently of existing offline identities. This study is interesting because it highlights that diversity of usage of SNS may also vary within groups of people that share similar social places offline.

[10] Hargittai, E. (2007). Whose space? Differences among users and non-users of social network sites. *Journal of Computer-Mediated Communication*, *13*(1), article 14. Retrieved from http://jcmc.indiana.edu/vol13/issue1/hargittai.html

[11] boyd, d. & Ellison, N. B. (2007). Social network sites: Definition, history, and scholarship. *Journal of Computer-Mediated Communication*, *13*(1), article 11. [Online]. http://jcmc.indiana.edu/vol13/issue1/boyd.ellison.html

2. Theoretical Background

This section explores the theoretical grounding which enables better understanding and analysis of the socio-economic impact of SNS, in three areas, namely: audiences and users, appropriation and domestication and diffusion and network effects.

2.1. Audiences and users

For many years, technology research overlooked the role of the user as a significant variable in studying technology and media. Influenced by early mass communication theories, such as the hypodermic needle model, media users were studied as an undifferentiated mass audience.[12] This theory suggests that mass media can *shoot* messages at an audience and can have a universal, homogeneous effect on them. As scientific research into communication intensified, especially during World War II, it became apparent to researchers that although audiences can be divided by some common characteristics, each member of society is unique. In 1944, *The People's Choice* study (1944),[13] which explored the effect of mass media on voters' choices, reported that media was not the only channel through which people received information. Secondary interpersonal channels of communication, especially opinion leaders, also played a major role. This led to the development of the two-step flow theory, which asserts that media messages move in two distinct stages: from the media to the audience, and from the opinion leaders amongst the audience to other people in the audience. This theory evolved further with the recognition that dispersal of information involves more than just two steps, as opinion leaders also have their own opinion leaders.

The emergence of new approaches in studying audiences in the 80s and the 90s challenged traditional mass communication theories. Drawing from a rich mixture of semiotic theory, cultural studies, anthropological and audience ethnographies, different perspectives on how to study audiences were investigated. Different schools of thought shifted attention to the power of audiences to resist media manipulation and interpret their own meanings.[14]

As audiences began to be recognised as being active, participative and interactive, research in audience studies widened in scope and delved into new areas, such as participation (with the focus on user-generated content and interactivity), globalisation (highlighting contextual diversity), domestication (integrating audience studies with consumption studies) and youth culture (as the

[12] Wimmer, R. D. & Dominick, J. R. (1994). Mass media research: An introduction. California: Wadworth Publishing Company.
[13] Lazarsfeld, P. F., Berelson, B. and Gaudet, H. (1944). The people's choice: How the voter makes up his mind in a presidential campaign. New York: Duell, Sloan and Pearce.
[14] Kellner, D. (1995). Media culture: Cultural studies, identity and politics between the modern and the postmodern. London and New York: Routledge.

pioneers of new media).[15] The shift in terminology has also been significant. New media research is now focused more on the *user* as opposed to the *audience*.[16]

As SNS evolve around the usage of their members, understanding their role, how they are using SNS as tools of communication and what they make of them is an important aspect for understanding the impact of these new technologies. In the context of SNS, there are various studies which are investigating the role of the user. One recent study explores differences between people who use SNS and non-users (Hargittai, 2007).[17] Using a diverse sample of 18-19 year old students at the University of Illinois (Chicago),[18] the study examines usage and non-usage of the following SNS: Facebook, MySpace, Xanga and Friendster. The research seeks to examine whether people's demographic characteristics and the social surroundings in which they use SNS might relate to the particular sites they choose. The results show that their existing offline networks influence which site they use. It is often the case that people use SNS to connect to their already existing social networks rather than to search for new contacts.

2.2. Appropriation and domestication

Literature on appropriation and domestication reflects the work of the social constructionists who argue that development of technology should be analysed in terms of how it is socially and culturally used and appropriated by different social groups.[19] This school of thought became popular with the seminal work of Bijker, Hughes & Pinch (1989) 'The Social Construction of Technological Systems'. Known also as SCOT (Social Construction of Technology), this approach to studying technology emerged out of Science and Technology Studies. SCOT theorists argue that human action shapes the way technology develops, rather than the other way round. The argument is based on the idea that technologies are embedded in social contexts and hence, you cannot understand how they evolve unless you explore how the people using the technology are also shaping it.

In the context of SNS, the tensions between users and creators of the site has been explored by boyd (2004) using an ethnographic approach. She argues that usage is not entirely determined by the architecture, but is also influenced by the social norms and values of the users. While the objective of Friendster was to enable people to connect, how users interacted with it (articulation of public identity, reshaping how groups of people verbally identify relationships and creative play through social

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15 boyd, d. (2004). Friendster and publicly articulated social networks. Paper presented at the Conference on Human Factors and Computing Systems (CHI 2004).Retrieved 15 January, 2008 from http://www.danah.org/papers/CHI2004Friendster.pdf

16 Livingstone, S. (2007). Engaging with media – A matter of literacy? Keynote presentation at the conference on Transforming Audiences: Identity/Creativity/Everyday Life. Retrieved 15 January, 2008 from http://eprints.lse.ac.uk/2763/1/engaging_with_media.pdf

17 Hargittai, E. (2007). Whose space? Differences among users and non-users of social networking sites. J*ournal of Computer-Mediated Communication*, *13*(1), article 14. [Online] http://jcmc.indiana.edu/vol13/issue1/hargittai.html

18 U.S. News and World Report (2006) ranks this campus among the top 10 national university as regards ethnic diversity. U.S. News and World Report (2006). Campus ethnic diversity: National universities. *America's best colleges 2007.* Retrieved from http://colleges.usnews.rankingsandreviews.com/usnews/edu/college/rankings/brief/natudoc_campdiv_brief.php

19 Hartmann, M., Berker, T., Punie, Y. & Ward, K. (eds.) (2006). *Domestication of Media and Technology*, Open University Press - McGraw Hill

interaction) unveiled other impacts on the communities using it. Users repurposed the technology to present their identity, so as to be able to use it in a personally meaningful way.[20]

2.3. Diffusion and network effects

Studies on the adoption and diffusion of technologies have also contributed to the understanding of innovative technology's impact on society and the economy. Most of these studies have been conducted using the 'diffusion of innovations' framework originally proposed by Everett Rogers (1968; 1995).[21] Until the mid 1980s, the diffusionism perspective was the most popular theory in diffusion of innovation studies. This discipline focused on presenting and describing the process of diffusion, that is, the adoption of innovations at micro-level, and the spread of innovations within a social system at a macro-level.

Much of the diffusion literature downplays the role of innovation itself in the diffusion process. Throughout the diffusion process, the innovation under consideration changes and improves, which in turn makes it more attractive to the marginal adopter. This enables the marginal adopter to penetrate new market segments, leading to further improvements and scale economies (the diffusion process drives innovation and vice versa). There are multiple sources of such positive feedback effects - for instance, learning by using, learning by producing, scale economies, etc.[22]

One source of positive feedback, likely to be of particular importance for social networking, is *network effects*. To a customer, the network effect is the value of a good or service which depends on the number of other customers who own the good or are users of the service.[23] Network effects could therefore be regarded as a kind of economy of scale on the demand side. A consequence of network effects is that another (marginal) purchase (adoption) of a good or use of a service indirectly benefits those who already own the good or use the services. Since this effect is not part of the transaction, thus being a side-effect outside the price/market system, network effects are sometimes termed network externalities.

Literature has identified two types of network effects. Direct network effects are those generated directly by the number of users on the value of a product (c.f. fax machines). Indirect network effects are “market-mediated effects” such as those where complementary goods (e.g. toner cartridges) are more readily available or lower in price as the number of users of a good (printers) increases. In the case of SNS, we expect both effects to be present. The value of Facebook, for instance, quite

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20 boyd, d. (2004) "Friendster and Publicly Articulated Social Networks." Conference on Human Factors and Computing Systems (CHI 2004). Vienna: ACM, April 24-29, 2004. [Online] http://www.danah.org/papers/CHI2004Friendster.pdf

21 Rogers, E. M. (1968). *Diffusions of Innovations.* New York: Free Press. (1995). *Diffusions of Innovations.* 4th edn. New York: Free Press.

22 Arthur, B. (1988) “Competing Technologies: An Overview”. In Dosi et al. (Eds.), *Technical Change and Economic Theory*, Pinter Publishers, London, pp. 590-607; Arthur, B. (1990) “Positive Feedbacks in the Economy”, *Scientific American*, February 1990, pp. 92-99.

23 For overviews on the literature on network effects see e.g. Economides, N. (1996) “The Economics of Networks”, *International Journal of Industrial Organization*, Vol. 16, No. 4, pp. 673-699; Liebowitz, S. and Margolis, S. (1998) “Network Externality”, *the New Palgrave Dictionary of Economics*, MacMillan, London;

obviously increases as more users sign-up, through direct network effects. This also attracts application providers to develop complementary products and services, improving the functionality of Facebook, increasing its attractiveness further, in a virtuous circle.

Network effects may cause the market to lock-in to one or a few dominant technologies, platforms or suppliers. In markets characterized by strong network effects, businesses need to attract early users in order to build *critical mass*. When critical mass has been reached, further growth seems to be self-reinforcing, since the value to the marginal user is higher than the cost of hooking up to a network, partly because of network effects. This implies that the service/network/platform needs to provide some value, which is also the case when there are only a few other users. It has been argued that smaller self-sufficient groups of users may contribute to a critical mass, if network effects are present within those groups.[24]

Social Network Analysis (SNA) is another suitable method for the study of SNS. SNA is based on the assumption that relationships among interacting units in a network are significant and can be used as units for analysis (Wasserman and Faust, 1994).[25] Accordingly, SNA has evolved as a method of analysing social structures, with the specific objective of investigating the relational aspect of these structures (Scott, 1992).[26] Typically, most SNS aim to unveil the structure and composition of a particular network, as well as issues of centrality (which individuals are best connected to others) and connectivity (how individuals are connected or not with each other) (Newman, 2003).[27]

The significance of SNA in studying online applications has been demonstrated by various studies. One of the first demonstrated the utility of SNA for studying computer-mediated social processes (Garton et al, 1997).[28] Other studies include the exploration of Club Nexus, an online community at Stanford University;[29] the analysis of the meaning of friendship in Friendster (one of the most popular SNS at the time of the study);[30] and the evolution of structure within large SNS.[31]

The aim of this section was not to offer an exhaustive list of theories or conclusions on their relative merits, but rather to present the theories we have explored in the conduct of the study on which this report is based.

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[24] Liebowitz, S. and Margolis, S. (2001) *Winners, Losers & Microsoft. Competition and Antitrust in High Technology*, rev. 2nd ed., The Independent Institute, Oakland, CA; and (http://en.wikipedia.org/wiki/Network_effects#_note-Rohlfs, J. (1974) "A theory for interdependent demand for a communications service", *Bell Journal of Economics*, Vol. 5, No. 1, pp. 16-37. For a treatment of critical mass in communication services see Rogers, E. (1990) "The 'Critical Mass' in the Diffusion of Interactive Technologies", in Carnevale, M., Lucertini, M. and Nicosia, S. (eds.) *Modelling the Innovation: Communications and Information Systems*, Elsevier Science Publishers, North-Holland.

[25] Wasserman, S., Faust, K. (1994). *Social Network Analysis: Methods and Applications*. Cambridge Univ. Press, Cambridge.

[26] Scott, J. (1991). *Social Network Analysis: A Handbook*. Sage Publications, Newbury Park

[27] Newman, M. E. J., (2001). The structure of scientific collaboration networks. *Proc. Natl.Acad. Sci. USA*, 98, 404-409.

[28] Garton, L., Haythornthwaite, C. & Wellman, B. (1997). Studying online social networks. *Journal of Computer-Mediated Communication, 3*(1). [Online] http://www. ascusc.org/jcmc/vol3/issue1/garton.htm.

[29] Adamic, L. Orkut, B. & Eytan, A. (2003). A social network caught in the Web. *First Monday*. Retrieved from http://www.firstmonday.org/issues/issue8_6/adamic/index.html

[30] boyd, d. (2006). Friends, Friendsters, and MySpace Top 8: Writing Community Into Being on Social Network Sites. *First Monday*. 11 (12). Retrieved from http://www.firstmonday.org/issues/issue11_12/boyd/index.html

[31] Kumar, R., Novak, J. & Tomkins, A. (2006). Stucture and evolution of online social networks. *KDD'06*. {Online] http://www.tomkinshome.com/papers/starpower/starpower.pdf

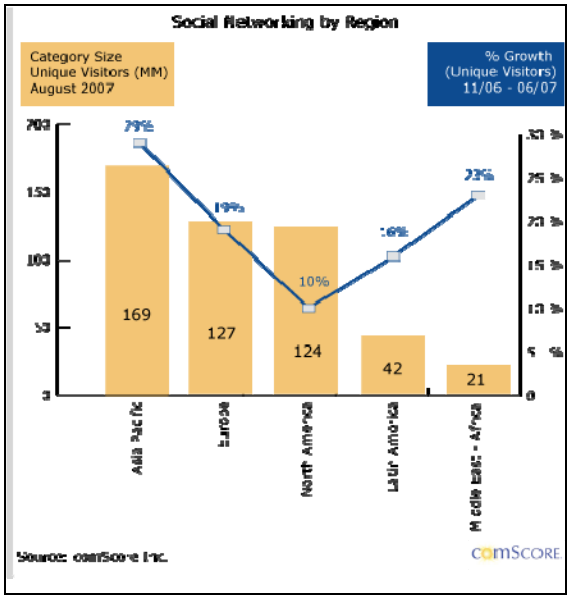
3. Social Networking in the European Context

3.1. Usage of social networking sites in Europe[32]

In August 2007, the European social networking community stood at 127.3 million unique visitors, preceded by Asia Pacific which stood at 169 million unique visitors.[33] Usage of SNS in the US was at a lower rate than Asia Pacific and Europe with 124 million unique visitors, followed by Latin America with 42 million visitors.

Asia Pacific has attained the highest social networking usage and also the best growing usage percentage. The second highest growth in terms of usage is seen in the Middle East, which at the time of the research, only had 21 million social networking users. In Europe and North America, usage grew by 19% and 10%, respectively.[34]

Graph 1: Social Networking by Region



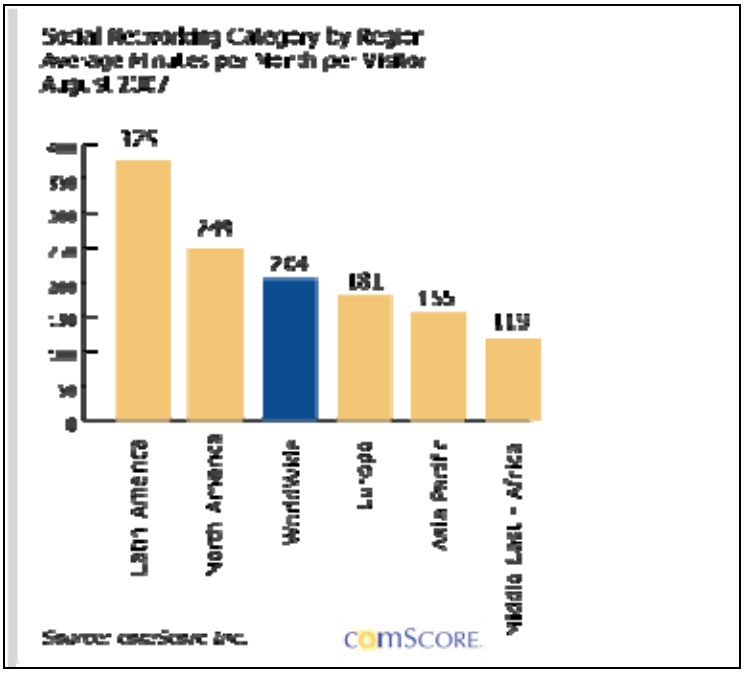
Europeans spend substantially less time on SNS than Latin and North Americans (see Graph 2). SNS users in Europe spend an average of 181 minutes per month on SNS. This is lower than the worldwide average which is calculated to be 204 minutes per month. Latin American users spend the most time on SNS, with an average of 375 minutes per month.

[32] The data used for this section is based on research carried out in July and August 2007 by comScore.com. Kindly refer to Section 1.2 for more details.

[33] http://www.comscore.com/press/release.asp?press=1801

[34] For more information about the growth of other social computing applications, pls refer to another work by IPTS: Pascu, C. (2008) An empirical analysis of the creation, use and adoption of social computing applications. Report from Exploratory Research on Social Computing (ERoSC), IPTS, European Commission, in press.

Graph 2: Social Networking Category by Region / Average Minutes per month per Visitor



3.2. The European market

SNS usage in Europe is highest in the United Kingdom (UK) with 24.9 million unique visitors (78% of the total UK online population and 41% of the UK population).[35] This was measured according to the hours spent on SNS, pages viewed and the number of visits per month. An average user in the UK spends an average of 5.8 hours logged on to SNS and makes an average of 23.3 visits (August 2007). This shows a significantly heavier usage than in Germany, with 3.1 hours spent on SNS and 13.8 visits and France, with 2 hours logged-on time and 16.8 visits (See Table 2). Heavy users of social networking in the UK (around 20% of the SNS community) devote 22 hours per month and make 71 visits, while light users (around 50% of the SNS community) spent significantly less time, making just 4.6 visits per person.

[35] Population Estimates: http://www.statistics.gov.uk/CCI/nugget.asp?ID=6

Table 2: Use of Social Networking Sites in a number of European Countries

European Usage of Social Networking Sites – Selected Countries
Ranked by Total Unique Visitors Age 15+
August 2007
Source: comScore World Metrix

Territory	Total Unique Visitors (000)	% Reach of Country's Total Online Population	Average Hours per User	Average Pages per User	Average Visits per User
Europe	127,297	56.4	3.0	523	15.8
U.K.	24,857	77.9	5.8	839	23.3
Germany	15,475	46.9	3.1	423	13.8
France	13,332	49.6	2.0	476	16.8
Spain	8,828	61.5	1.8	251	14.9
Italy	8,736	49.3	1.8	346	12.6

** Age 15+, home & work locations; Excludes traffic from public computers such as Internet cafes or access from mobile phones or PDAs.*

SOURCE: **comScore World Metrix** (August 2007)[36]

The most accessed SNS in Europe are MySpace.com (25,176,000 users), Skyrock Network (11,327,000 users) and Bebo (7,461,000 users) (See Table 3). Although MySpace is by far the most popular SNS, Skyrock Network and Bebo also enjoy a substantial part of the market share in Europe. Skyrock Network is a French SNS which was launched in December 2002 as part of the French radio station Skyrock, while Bebo is a California-based company which was started by a British person in July 2005 and is backed by Benchmark Capital Europe.[37] MySpace's popularity with musicians and bands and the translation of the main interface into various languages in 2007 could be some reasons why it retains high popularity in Europe.[38]

[36] http://www.comscore.com/press/release.asp?press=1801
[37] http://bebo.com/Press.jsp?PressPageId=3252049380
[38] MySpace's strategic decision to localise the sites by offering targeted content in native languages has raised its traffic in Europe by 24 percent from the Jan 07 to Jul 07, making it the most popular SNS in Europe. The company has signed up various local bands, added native language videos and staged important local events.

Table 3: SNS ranked by number of European Unique Visitors [39]

Property	Total Unique Visitors (000)		
	Jan 2007	July 2007	% Change
Total European Internet Audience	218,063	224,759	3%
MYSPACE.COM	20,341	25,176	24%
Skyrock Network	11,327	13,785	22%
BEBO.COM	7,461	12,101	62%
FACEBOOK.COM	2,066	10,795	422%
HI5.COM	6,979	9,554	37%
PICZO.COM	7,557	8,035	6%
NETLOG.COM	8,140	7,450	-8%
DADA.NET	4,957	6,689	35%
MSN Groups	6,941	5,528	-20%
BADOO.COM	1,923	5,192	170%

SOURCE: **comScore World Metrix** (August 2007)

In France, SNS attracted 13.2 million unique visitors in July 07. The dominating SNS in France is the local site Skyrock Network, with 9.1 million unique visitors. Since 2002, Skyrock, the national radio station, has been the host of nearly 11 million blogs. The hip-hop / R&B radio site has expanded to blogs, chat, friend profiles and messaging, making it the most popular site in France. Skyrock is unique in the SNS context as, unlike most other SNS, it was born out of a traditional media company. MySpace ranked a distant second with 2.3 million visitors, while Badoo ranked third with 1.3 million visitors. This is hardly surprising as Badoo has its own version of MySpace, where artists have their official skyblog updated with photos and tour dates. Other popular sites in France are Netlog (Belgian), Hi5 (based in the US but mostly popular in Latin America, Europe, Asia and Africa), Lexode (French) and Dada (Italian).

It may be observed that local European SNS are language-specific sites. Accordingly, though a number of unique visitors originate from other countries they speak the same language. For instance, Skyrock attracts 856,000 visitors from Belgium and 371,000 from Switzerland. This could also be a reason why the take up of Facebook is higher in countries where English is predominantly spoken.

In Germany, SNS have reached 45% of the country's online population with 14.8 million unique visitors in July 2007 (see Table 3), with MySpace ranking as the most used site.[40] The local German SNS StudiVZalso and JUX.DE also showed strong traffic with 3.1 million and 2.6 million visitors, respectively. It is interesting to observe that Facebook, even though it recorded 422% growth in

[39] Based on a selection of comparable sites, does not constitute a direct ranking. Total European, Age 15+ – Home and Work Locations. Excludes traffic from public computers such as Internet cafes or access from mobile phones or PDAs.

[40] Press Release: German Social Networking Community Reaches 14.8 Million. [Onlinie] http://www.comscore.com/press/release.asp?press=1737

Europe (July 2007), reaching 10.8 million European unique visitors, does not feature in the top 10 SNS in Germany. This shows that the usage of Facebook in Europe is segmented by different countries. For example, in the UK, Facebook attracted 7.6 million visitors compared to 177,000 German visitors during the same period. Other popular German SNS are PISZO.COM, STAYFRIENDS.DE and NETLOG.COM, amongst others. The German-based business networking site Xing.com is ranked at 8th place with 685,000 users, which is still relatively low. Nonetheless, this site seems to be the major competitor for the business networking site LinkedIn.

Table 4: A selection of leading SNS ranked by German Unique Visitors

Property	Total Unique Visitors (000)
Total German Internet Audience	32,924
Social Networking	14,804
MYSPACE.COM	3,650
StudiVZ Sites	3,113
JUX.DE	2,614
PICZO.COM	2,004
STAYFRIENDS.DE	1,335
NETLOG.COM	1,251
SEVENLOAD.COM	1,143
Xing	685
Skyrock Network	507
MSN Groups	440

SOURCE:comSCORE World Metric (July 2007)

3.3. Social networking sites by region

As can be noted from Table 6, two of the SNS with the heaviest European user traffic are, in fact, European sites, namely, Skyrock Network and Netlog.com. Most of these networks have a linear growth rate (see Graph 3). MySpace and Facebook show similar sharp increases in usage, though MySpace usage seems to fluctuate slightly more than Facebook. Skyrock.com and Netlog.com also show an increase in usage, but on a relatively much smaller scale. The Bebo.com site shows the least growth in terms of worldwide daily reach, but nonetheless has an important stake in the European market.

Graph 3: Comparing Daily Reach of OSNs

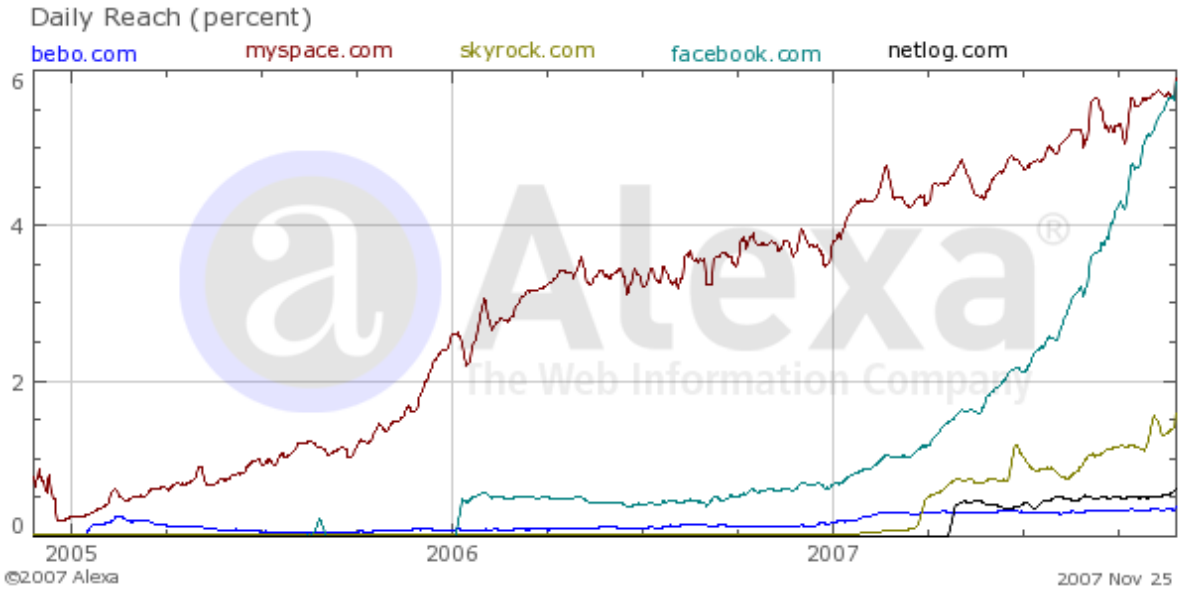


Table 5: Traffic of SNS by Region

Most Heavily Trafficked Social Networking Sites by Region
Total Time Spent (Millions of Hours)
August 2007

Asia Pacific		Europe		North America	
Friendster	89.9	Bebo.com	65.3	MySpace	223.1
CyWorld	73.8	MySpace	42.5	Facebook	173.2
Orkut	65.3	Skyrock Network	40.8	Bebo.com	22.2
Mixi.jp	36.0	Facebook	38.8	GalaOnline.com	7.9
MySpace	20.8	Netlog.com	24.2	Nexopia.com	6.3

Latin America		Middle East – Africa	
Orkut	156.2	Facebook	15.8
HI5.com	44.6	HI5.com	4.2
Metroflog.com	23.9	Netlog.com	3.8
MySpace	11.6	Yonja.com	3.4
Windows Live Spaces	4.5	Skyrock Network	2.9

Source: comScore Inc.

3.4. Culture and language are important

Available data suggests that European local sites enjoy high usage within their countries of origin. This suggests that in Europe we seem to prefer the idea of localised networks, which contradicts the initial discourse around SNS that one can connect with everyone and anyone, anywhere.[41]

Linguistic and cultural differences in Europe seem to present major challenges to US-based companies, as the "one-size-fits-all" approach to SNS common in the US, does not enjoy the same

[41] See Appendix: Interview by Hartmann.

success in Europe.[42] One reason for this difference is that the closer SNS get to what is of personal importance to people, like for instance, how they present their identity or the way they relate to other people, the more they get close to things that are deeply embedded in cultural values.[43]

On the other hand, the fact that some big US sites like Facebook and MySpace still enjoy a substantial part of the SNS market share in Europe cannot be ignored. This could be a result of direct network effects (See Section 2.3). High usage attracts complementary products and service development, which in turn enhances functionality, and in the end attracts even more users. Another important aspect is the fact that users wanting to keep in touch with friends abroad often cannot do this through local sites, as most of their foreign friends will not be members. This could partly explain why most people are registered in more than one site. As discussed previously, though SNS appear to be similar, many of them are, in fact, quite different in terms of their purpose and the types of users they attract.

As can be observed from this section, understanding and analysing how SNS are socially and culturally used and appropriated by different groups is important. Are SNS users members of various sites just like they have more than one email account? Why do people register in more than one SNS? As the work of the social constructivists highlights, we cannot understand how technology evolves unless we explore how the people using the technology are also shaping it.

[42] Scott, M. (2006). MySpace no free ride in Europe. Business Week. September, 11. [Online]. http://www.businessweek.com/technology/content/sep2006/tc20060911_501990.htm

[43] See Appendix: Interview with Kaplan

4. Socio-economic Impacts

This section explores how new ways of operating and engaging with SNS are producing social and economic consequences which are important to understand. Such ways of operating and engaging with media communications reflect new practices of contemporary society. In order to understand the implications, we will evaluate the following issues: privacy, identity and business models.

4.1. Social ties go public

The externalisation of networks has allowed, possibly for one of the first times, online users to view their own online social networks and how their friends are connected between themselves. SNS support new ways for users to extend their online social networks, and also to share and disclose online social networks. Networks vary according to the objectives of the site, from professional networks to friendships and hobbies, etc.

Until recently, visualisations of social networks were typically articulated in address books or diaries, both of which tend to be associated with some level of privacy. The proliferation of mobile phones enabled mobile users to manage their social relations through a portable medium, which allowed them to connect with anyone. However, hardly any mobile support functions allow users to view all their contacts at once in, for instance, a social graph. More importantly in this context, a mobile phone does not typically support visualisation of how your own contacts are connected between themselves. Disclosure of this kind of data on mobiles would indeed raise various privacy issues, as it would on email service. Nevertheless, this data is available on most SNS. These sites support various forms of network visualisation according to various path lengths. Possibly, this is the first time users have had the opportunity to view their online network and also their friends networks.

The visualisation of these networks and the fact that some networks of *friends* are becoming larger and larger, have raised various debates. On the one hand, the significance of these contacts is questioned. Can such 'contacts' be termed 'friends' at all? Or do they serve the same function as ‘weak ties’? Why is there a sudden need to have large networks of friends/acquaintances? On the other hand, what are the implications of publishing seemingly *private* data online, like, for instance a visualisation of your network and all the data that it contains? To what extent are SNS pushing users to accept the publication of their data, though this would previously have been seen by them as an infringement of their privacy? The sections below will explore these aspects.

4.1.1. Who are your friends?

Each and every user participates in an SNS through a profile which is attached to a personal network. The networked ties within an SNS are major components of group relations. In the context of young users, these ties play a major role as very often, friendship networks are key components in the

development of social relationships and self development.[44] In this respect, understanding who users are befriending on SNS has become an important line of research, especially when taking into consideration that the usage of SNS amongst adolescents is continuously increasing and becoming more deeply embedded in their everyday practices.

A study about the use of Facebook by first-year students at Michigan State University reports that most users utilise the site to keep in touch with old friends or people they knew from the past.[45] Users also use the site to 'check out the Facebook profile of someone they met socially' and to 'get information about people that live in the dorm, fraternity or sorority'. In the same study, finding casual sex partners, people to date, or people to meet offline were all lower on the expectation scales. The conclusions drawn show that Facebook members use the site mostly to maintain previous relationships and to 'social search' people they have met offline.

Another study carried out by Pew Internet on the use of social networking sites yield similar results.[46] Most American youngsters use SNS to stay in touch with friends they see a lot and with friends they rarely see in person (See **Error! Reference source not found.**). While half the respondents used SNS to make new friends, the other half explicitly stated that they do not use SNS to make new friends. Only 17% of all social networking teens used these sites to flirt.

Table 6: Teens & Friends on Social Networking Sites

Teens & Friends on Social Networking Sites *What are the different ways you use social networking sites? Do you ever use those sites to…?*		
	Yes	*No*
Stay in touch with friends you see a lot	91%	9%
Stay in touch with friends you rarely see in person	82	18
Make plans with your friends	72	28
Make new friends	49	50
Flirt with someone	17	83

Source: *Pew Internet & American Life Project Parents & Teens Survey, October-November 2006.*[47]

4.1.2. My-15-minutes-of-fame

While the core group of friends remains an important element of a user's personal network, it may also be observed that some users extend their networks way beyond people they know. Warhol's prophetic statement that everybody will be world-famous and have their *15 minutes of fame* could be

[44] Cotterell, J. (2007*). Social networks in youth and adolescence*. London: Routledge.

[45] Cliff, L., Ellison, N. & Steinfield, C. (2006). A face(book) in the crowd: social Searching vs. social browsing. *Proceedings of the 2006 20th anniversary conference on Computer supported cooperative work*. Retrieved from http://portal.acm.org/citation.cfm?id=1180901&coll=GUIDE&dl=GUIDE&CFID=30311724&CFTOKEN=22585442&ret=1#Fulltext

[46] Lenhart, A. & Maddan, M. (2007). Social Networking Websites and Teens: An Overview. *Pew/ Internet* Retrieved from http://www.pewinternet.org/pdfs/PIP_SNS_Data_Memo_Jan_2007.pdf

[47] Based on teens who use social networking sites [N=493] Margin of error is ±5%.

one reason for such behaviour. It seems that the more connections users have and the bigger their networks, the more opportunities they have, especially in their *offline* world.

This drive to popularity on SNS is possible a repercussion of the concept of celebrity prevalent in our societies. Celebrity, as we know it today, is to a great extent characterised by the media culture. The proliferation of reality shows brings home the idea that anybody can become a famous person. Being known is hyped and seems to be associated with status, money and having an edge over other people, as opposed to the traditional meaning which was associated with the idea of transcending death.[48] The endless opportunities supported by SNS to network and promote one self or an event seems to provide a means to this status of fame.

For example, the contact list of artist Tila Nyugen is composed of 3,092,996 *friends* (May 2008).[49] Her popular MySpace profile even played a significant role in the initial launch and subsequent success of MySpace.[50] Tom Anderson, MySpace founder, invited Nguyen to his new site, after Friendster banned her because of her outsized profile and confrontational personality.[51] There are many other personalities like Tila, whose fame and celebrity are closely associated and perhaps inconceivable outside the realm of the SNS. Lily Allen, a British singer also became a celebrity through her MySpace profile. Allen, known as the MySpace Queen, opted to load her music online, after refusing to implement the changes proposed by major labels. She currently has 475,018 friends. The success achieved by these two youngsters is sought by many, prompting users to extend their networks to people they not necessarily know.

Screenshot 1: Friends of Tila Tequila on MySpace as of 16/05/2008

The endorsement of large social networks on SNS could imply that the perception, meaning and significance of social contacts in our societies are changing. Whereas a person looking for a job could previously only rely on his/her social network, he/she can now utilise contacts on SNS to search for employment opportunities.

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48 See Appendix: Interview with Mangion.
49 http://www.myspace.com/tilatequila
50 http://en.wikipedia.org/wiki/Tila_Tequila
51 Grossman, L. (2007). Power to the people. *Time*. December 26 – January 1.

4.1.3. 24/7

The always-on idea advocated by current new technological innovations, such as light laptops, wireless, blackberry, amongst many others, may also be seen in the realm of SNS. Frequent visits to SNS, in order to update a profile or respond to messages left by friends, demonstrate some level of addiction. The integration of remote communications into the flow of life could have an impact on face-to-face communications (Turkle, 2006).[52] 'Always-on communication' could be impoverishing one's ability to be alone and manage and contain one's emotion. Turkle's point is that instantaneous communication is creating a new form of dependency, where people need to communicate with others to feel their own feelings. Teenagers growing up in this always-on culture are expected to give rapid responses to messages received, without taking time to process information.

While the first few SNS were used as a form of leisure, current usage of these sites show that they have become highly embedded in the practice of everyday life, especially for adolescents. The seemingly naïve question on each Facebook profile 'What are you doing right now?' is one simple application which demonstrates the frequency with which users log on and update their Facebook profiles. Two random screenshots, one week apart on the author's profile capture the frequency of daily updates on Facebook profiles. As can be observed from **Error! Reference source not found.**, contacts in the author's personal network updated their profiles in less than 4 hours.

The research conducted by the Pew Internet research group reports that half the teenagers with SNS profiles visit the sites either once a day (26%) or several times a day (22%).[53] Respondents claimed that SNS profiles are more engaging if they change frequently.

Screenshot 2: Status Updates

The high usage of SNS on daily basis, especially among young users, may suggest that these sites are becoming increasingly integrated in daily processes. For a generation that does not know teenage

[52] Turkle, S. (2006). Always-on/Always-on-you: The Tethered Self. [Online] http://web.mit.edu/sturkle/www/Always-on%20Always-on-you_The%20Tethered%20Self_ST.pdf

[53] Lenhart, A. & Maddan, M. (2007). Social Networking Websites and Teens: An Overview. *Pew/ Internet* Retrieved from http://www.pewinternet.org/pdfs/PIP_SNS_Data_Memo_Jan_2007.pdf

years outside the realm of SNS, the line between what happens on SNS and in real life, especially in terms of social relationships, may not be as sharp. This can have both positive and negative consequences. For instance, for some young people the distinction between the virtual and the real may already be purely semantic. Tyles (2007) reports that participation in social online environments can reinforce offline and classroom learning.

Levels of addiction may also be attributed to youthful behaviour. It may be argued that similar to television and videogames, young people will use SNS because they feel they are doing something new. Accordingly, usage will decline once the novelty wears off (See Appendix).[54]

4.1.4. The power of weak links

The significance of online relations and virtual social networking has also become an important topic of discussion especially in the context of social capital. Literature about social capital and the Internet demonstrates an ongoing debate about whether the Internet increases or decreases social capital in societies. One view suggests that the lack of face-to-face communication inherent of Internet communication decreases social capital, as the trust factor in geographically local networks is difficult to create and maintain on the Internet.[55] The other perspective suggests that because the Internet facilitates new ways of communication and social contact, it can thus build and transform social capital.[56] It is argued that virtual ties are becoming as significant as 'real' life ones, reflecting community ties which are intermittent, specialised and varying in strength (Wellman & Gulia, 1999).[57] Such weak links are evolving into new forms of *social capital bridging,* a term used to describe looser, less committed connections, like those with acquaintances and colleagues.

Research shows that users of Facebook use this application, on the one hand, to keep in touch with old friends and on the other hand, to intensify latent ties into weak ties.[58] It is understood that such weak ties may provide additional information and opportunities in the form of social capital bridging. This could be one reason why some users choose to extend their networks beyond core friends. The same study also highlighted that Facebook is also used to help overcome barriers faced by students with low satisfaction and self-esteem.

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54 See Appendix: Interview with Garnham

55 Putman, R. D. (2000). *Bowling alone: The collapse and revival of American community.* New York: Simon & Schuster

56 Wellman, B & Gulia, M. (1999). *Virtual Communities as Communities: Net Surfers Don't Ride Alone*. [Online] http://www.chass.utoronto.ca/~wellman/publications/netsurfers/netsurfers.pdf
Wellman, B., Haase, A. Q., et al. (2001). Does the Internet increase, decrease, or supplement social capital? Social networks, participation and community commitment. *American Behavioral Scientist (45)* 3, p. 436 – 455.
van Bavel, R., Punie, Y. & Tuomi, I., 2004, ICT-Enabled Changes in Social Capital, The IPTS Report, Special issue: Building the Information Society in Europe: the contribution of socio-economic research, Issue 85, June 2004, 28-32. www.jrc.es
Scott, J. K. & Johnson, T. G. (2005). Bowling alone but online together: Social capital in e-communities. *Journal of the Community Development Society (36)* 1.
Best, S. J. & Krueger, B. S. (2006). Online interactions and social capital: Distinguishing between new and existing ties. *Social Science Computer Review (24)* 4.

57 Wellman, B & Gulia, M. (1999). *Virtual Communities as Communities: Net Surfers Don't Ride Alone*. [Online] http://www.chass.utoronto.ca/~wellman/publications/netsurfers/netsurfers.pdf

58 Ellison, N.B., Steinfield, C. & Lampe, C. (2007). The benefits of Facebook ''friends:'' Social capital and college students' use of online social network sites. *Journal of Computer –Mediated Communication, 12*(4), article 1.

Another study, which collected data through instant messaging (IM), demonstrates how online users, especially young users, may benefit from social support (Tynes, 2007).[59] Tynes found that many respondents struggling with personal problems enter online environments to find others who share their concerns. For them, contacting someone outside their family and peers at school was crucial. The same study also shows how Facebook is used by some young people to seek help with homework and advice on courses.

The potential of social networking in enhancing weak ties has been recognised by IPTS. Following a workshop on the potential use of information, communication and technology (ICT) by immigrants and ethnic minorities,[60] IPTS is currently conducting research to analyse the usage trends and implications of social computing usage by immigrants and ethnic minorities. The results will be available in late 2008.

4.2. The unbearable lightness of the virtual self

Researchers of identity recognise the complexity of identity formation in contemporary societies. In pre-modern societies, people were not confronted with high levels of choice over fundamental matters of personal meaning as currently happens in Western societies.[61] Identity formation was not a matter of individual choice and negotiation but rather a straightforward process, only restricted by the social context of the society. Western societies are increasingly characterised by the identification and associations sought outside one's community.

Online technology seems to be adding another component to this complexity, as it provides users new means through which some aspects of identity formation may be processed. SNS support the technical infrastructure used by people to identify themselves to communities outside their immediate context. For some adolescents, these platforms have become a playground for self-exploration, a way to advertise themselves and a means of identity redefinition.

The act of joining a SNS is, in itself, an act of presenting oneself to an online networked community. Most SNS encourage publication of personal information such as name, date of birth, location, email address etc. This kind of data seems to serve the function of introducing the user to his/her own public, a form of physical appearance. On another level, SNS support various other interactive applications which allow users to define themselves to their peers. Users may opt to present themselves through photos or videos. Others may prefer to use text to describe themselves. The possibilities for finding new ways and means of presenting oneself are endless. As Turkle (2006) contends, the selection of a mundane music playlists 'becomes a way of capturing one's personae at a

[59] Tynes, B.M. (2007). Internet safety gone wild? Sacrificing the educational and psychosocial benefits of online social environments. *Journal of Adolescent Research, 22*(6), 575-584.

[60] Cachia, R., Kluzer, S., Cabrera, M., Centeno, C. & Punie, Y. (2007). ICT, Social Capital and Cultural Diversity. Report on a Joint IPTS-DG INFSO Workshop held in Istanbul (Turkey), 25th April 2007. EUR 23047 EN – 2007. Retrieved from http://ftp.jrc.es/EURdoc/23047-ExeSumm.pdf

[61] Côté, J. e. & Levine, C. G. (2002). Identity formation, agency and culture. A social psychological synthesis. Mahwah: Lawrence Erlbaum Associates, Publishers.

moment in time' (p. 8).[62] Similarly, the articulation of religious and political views or the posting of comments on other people's profiles are all components of one's self definition on these sites.

The work of Talamo & Ligurio (2001) on the perception and construction of the self in cyberspace showed that users constructed their identities using strategic "positioning" based on the interactive situation. The study was based on a collaborative virtual environment in which users had to use avatars to interact. The conclusions drawn from this study suggest that people use their avatars not to describe their identity, but to construct it. This observation is a significant one, which should be looked at more closely in the context of SNS.

Though users of SNS do not create avatars, their profiles act like a *hyperlinked avatar*. Any digital trace, be it in the form of a comment or photo, left within the site is hyperlinked to the user's profile. The fragmented traces left by users show how users negotiate their identity and chose to express it. In defining how to present oneself on a profile, which comments to leave, which photos to tag, which applications to share with other users etc., users are seemingly using SNS to negotiate their online selves. The continuous process of redefinition, through creating and recreating identities, is a primary goal of adolescent development (Greenfield et al, 2006).

Just as SNS profiles offer users, perhaps for the first time, the opportunity to visualise networks, they also offer young users the opportunity to visualise their own selves, ironically outside of themselves. Seeking approval from their peers, users negotiate and construct their identities based on the feedback received to their comments, photos or music. This process of self definition through SNS and how it may be influenced by peer validation will be discussed in the next section.

4.2.1. Peer validation

Young people are at the core of these emerging technologies as they use them the most, but they are also at risk. For many teenagers in the US, SNS and other online technologies are one of the primary shifts they experience from relationships with their parents to relationships with friends.[63] These virtual spaces have become the first locations where adolescents can be alone without their parents. Not knowing the potential risks of online participation can lead to various negative impacts.

Applying Kohut's idea of narcissism in her work on mobile phones, Turkle (2006) explains how adolescents have multiple options for self-validation with digital technology.[64] Kohut contends that people who are fragile turn to others to define themselves. Turkle argues that this is leading adolescents to perceive their fragile adolescent selves through their contact lists. Social identity and peer validation can be highly complicated for teenagers. As discussed in the previous section, the search for peer validation may prompt users to disclose personal data to people they do not

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62 Turkle, S. (2006). Always-on/Always-on-you: The Tethered Self. [Online] http://web.mit.edu/sturkle/www/Always-on%20Always-on-you_The%20Tethered%20Self_ST.pdf

63 http://www.pewinternet.org/PPF/r/77/presentation_display.asp

64 Turkle, S. (2006). Always-on/Always-on-you: The Tethered Self. [Online] http://web.mit.edu/sturkle/www/Always-on%20Always-on-you_The%20Tethered%20Self_ST.pdf

necessarily know or to others who may not be trusted or who might abuse the data for different purposes.

The case of Megan Meier is an example of such fragility.[65] Although, this is not a common incident (although others have also been reported in UK), there are various other cases, in which users go through emotional upheavals. Careful consideration of implications of this kind is particularly important because of the viral effect of these networks.

In addition, the fact that people can change their identity whenever they want can have implications for the way we deal with identity issues today. Having a polymorphous entity online also means that 'identities can be selected or discarded almost at will, as in a game or a fiction'.[66] For some youngsters, it also means that *bad* behaviour, like bullying may be performed online as the 'unbearable lightness' of virtual behaviour may be impalpable.

4.2.1 Playing with the power of the real

The eagerness and enthusiasm of users to display data about their *real* selves marks an unprecedented shift in online interaction. Many virtual communities in the 90s based their appeal on offering users the opportunity to play at being anyone. Notions of anonymity and pseudonimity previously associated with chatrooms, multi-user domains (MUDs) and virtual communities seem to have been replaced by performative behaviour about the real self. This prompts the question: why the sudden need to disclose *real* data?

From a technology deterministic point of view, it may be argued that this kind of communication has emerged because of affordances of current technology, which tend to promote interactions based on *real* data. In most SNS, the submission of fictitious data is considered inappropriate, as it seemingly defeats the purpose of the applications. As can be noted in Screenshot 3, the required fields in searches for other contacts in this SNS are based on real data. Research demonstrates that one of the motivations for using SNS is the opportunity to browse and poke into other people's lives by seeing their pictures or profiles.[67] In this respect, it is important for us to question to what extent SNS are redefining how we interact with online applications.

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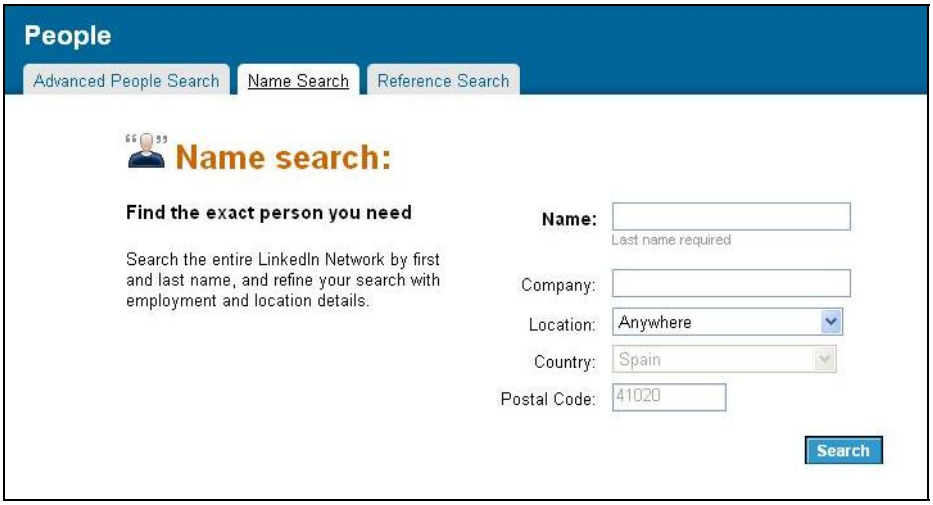
[65] Meier committed suicide after receiving hostile messages from a pseudo friend on her MySpace profile. See: Collins, L. (2008) Friend game. Behind the online hoax that led to a girl's suicide. *New Yorker.* Retrieved from http://www.newyorker.com/reporting/2008/01/21/080121fa_fact_collins

[66] Robins, K. (2000). 'Cyberspace and the World We Live in'. In: David Bell and Barbara M. Kennedy (editors). *The Cybercultures Reader.* New York: Routledge, pp. 77-95.

[67] O'Morchu, I., Berslin, J. G. & Decker, S. (2004). Online social and business networking communities. [Online] http://www.deri.ie/fileadmin/documents/DERI-TR-2004-08-11.pdf

Screenshot 3: People Search in LinkedIn



Another view is that most users are not aware of the risks of providing personal information on SNS. Various young users in the US are happy to provide personal data and very few opt for limiting their privacy preferences.[68] Another study in Europe reflected similar results, with 57% of youngsters making their SNS public and disclosing various kind of information.[69] The same study also indicated that a third of youngsters were not aware of what they need to do to make their information public or private. This shows that while some users are oblivious to the existence of privacy settings, others are willing to sacrifice privacy because the benefits they expect from public disclosure surpass its perceived costs. In some contexts, especially in the case of young people, peer pressure could also be a major factor for disclosure of private information.

The third interpretation is that SNS users are aware of the risks brought about by these sites, but they exploit their online visibility to enhance their possibilities for actions and opportunities. The list of *friends/contacts* listed by users is not a simple collection of close ties, but rather, as boyd (2007) argues, it is their "imagined audience", which they see as part of their world.[70] For some adolescents, these platforms provide a way to advertise their own selves and to *declare their identity,* to borrow a term from Katz and Rice (2002).

Current research in this area points to the idea that adolescents could be using these SNS as identity capital.[71] For instance, the work carried out by the Next-Generation Internet Foundation (FING) looks at what a *resumé* will be like in 20 years time.[72] Today prior to hiring, most enterprises will Google their candidates. In the near future, networks could also be integrated in this process, and used, for

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68 Gross, R. & Acquisti, A. (2005). Information Revelation and Privacy in Online Social Networks (The Facebook case). Pre-proceedings version. ACM Workshop on Privacy in the Electronic Society (WPES), 2005. [Online] http://www.heinz.cmu.edu/~acquisti/papers/privacy-facebook-gross-acquisti.pdf

69 http://www.europeanschoolnet.org/ww/en/pub/eun/news/eunpr/insafesurvey.htm

70 boyd, d. (2007). Social Network Sites: Public, Private, or What?, *Knowledge Tree* 13, May. Retrieved from http://kt.flexiblelearning.net.au/tkt2007/?page_id=28

71 See Appendix: Interview with Lusoli

72 See Appendix: Interview with Kaplan

instance, to look, at degrees of separations or to look for someone on the same network who could comment on the future candidate. The URL of a SNS profile could become additional information on your business card, similar to an email address. On a less personal level, this can already be observed with music bands. MySpace profiles already seem to be replacing bands' website on posters of events and concerts.

4.2.3 Privacy and security implications

Some of the problems related to privacy issues stem from the fact that SNS do not always make clear whether the users own their own personal data, including their own social networks, or whether the site owns such personal data. As can be observed by the privacy policy of Facebook below, Facebook retain their members' data:

> "When you use Facebook, you may set up your personal profile, form relationships, send messages, perform searches and queries, form groups, set up events, add applications, and transmit information through various channels. We collect this information so that we can provide you the service and offer personalized features. In most cases, we retain it so that, for instance, you can return to view prior messages you have sent or easily see your friend list. When you update information, we usually keep a backup copy of the prior version for a reasonable period of time to enable reversion to the prior version of that information."

This has triggered various privacy debates, like to what extent can SNS keep such data? Users wanting to delete their profiles have also found that some SNS keep their data for a period of time, in case they want to become a member again. Another issue is that deleting a profile is one thing, but deleting all the data, such as comments or photos posted on other people's sites, is much more difficult and laborious.

The work carried out by the European Network and Information Security Agency (ENISA) illustrates how the provision of private information on SNS could pose various threats,[73] - for example, stalking and bullying. If one chooses to participate in more than one social network, but want to be identified as the same person, the probabilities of providing a lot of information about oneself are huge. Participation in most SNS also discloses information about the location and schedule of users and this could be highly threatening if young people are being stalked. A study in 2005 on one university's Facebook network showed that 20% of users disclosed their personal full address, as well as at least two classes they were attending.[74]

The report by ENISA suggests that more awareness-raising and educational campaigns highlighting safe usage of SNS are needed. It is important that people learn how to manage their online data. It seems that banning access to SNS is not the best solution. Many parents often opt for filtering software to monitor interaction or try to reach an agreement with their children on how they can use

[73] ENISA (2007). Security issues and recommedations for online social networks. [Online] http://www.enisa.europa.eu/doc/pdf/deliverables/enisa_pp_social_networks.pdf

SNS. However, these methods often fail as young internet users are often intelligent enough to find alternative ways and means of accessing SNS (Tynes, 2007).[75] In addition, Tynes explores how monitoring access to SNS too closely might limit avenues for beneficial cognitive and psychosocial development. This suggests that educational campaigns should also be directed at parents.

4.3 In search of a business model

The internet has paved the way for new forms of communication and interaction. This is altering various facets of the media industry. Until few years ago, the top-down approach of traditional media companies was predominant in media business administration. This approach leveraged on the agenda-setting of media moguls, providing little space for audience intervention, except for features like letters to the editor in newspapers and phone-ins on television and radio, all of which undergo a filtering process.

One of the most debated topics about new media is whether and how it will alter traditional business models. Although, there seems to be agreement that Internet will give rise to new business models or will reinvent existing ones (as is the case with auctions), at the moment we are still analysing which models will succeed. The majority of SNS users are not interested in activities which require payment, but rather in securing a free service. The exceptions to the rule are *dating* SNS. These sites tend to request an initial membership fee for the matching service they provide. As a result, the billion dollar question which still haunts most SNS investors is how can participation be turned into profitable consumption?[76]

It can be argued that the value of SNS, like other Internet services, is not based on finance, on the accumulation of 'reputation capital'.[77] In the case of SNS, we observe that no business model seem to be dominant, however, some new models are emerging. A major challenge for most SNS is the definition of a business model that is sustainable and generates revenue.[78]

Albeit with harsh online competition, SNS came onto the market with a unique service, that of networking people. This created a new niche in the market. Like many other online services, SNS face few barriers to setting up their services. They connect people at low cost and require few other resources to kick off. Almost none of the SNS charge money for basic membership.

Most SNS attempt to generate revenue through advertising. Nonetheless, advertisers are still sceptical that SNS will become great advertising platforms. Advertisers view SNS as 'work in

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[74] Gross, R. & Acquisti, A. (2005). Information Revelation and Privacy in Online Social Networks (The Facebook case). Pre-proceedings version. ACM Workshop on Privacy in the Electronic Society (WPES), 2005. [Online] http://www.heinz.cmu.edu/~acquisti/papers/privacy-facebook-gross-acquisti.pdf

[75] Tynes, B.M. (2007). Internet safety gone wild? Sacrificing the educational and psychosocial benefits of online social environments. *Journal of Adolescent Research, 22*(6), 575-584.

[76] Atal, M. (2007). Profiting from Social Networking. *Business Week.* August, 22. [Online] http://www.businessweek.com/magazine/content/07_45/b4057047.htm?chan=search
Ghosh, R. A (1998). Cooking pot markets: An economic model for trade in free goods and services on the Internet. *First Monday.* [Online] http://www.firstmonday.org/issues/issue3_3/ghosh/

[78] http://techupdate.zdnet.com/techupdate/stories/main/Social_Computing_print.html

progress' and still are not sure how they will develop and what return they can achieve.[79] At the end of 2007, the first signs of decline in terms of audience in one of the big sites could be noted. In the third quarter, MySpace showed its first-ever quarterly decline, after peaking at 70.5 million in June.[80] Also, after the initial excitement of MySpace, users are now spending less time on the site - from an average of 3 hours, down 26% from a year earlier. In the same third quarter of 2007, Facebook users were spending an average of 3 hours and 33 minutes on Facebook, which is a 23% increase for the year.[81]

By the end of 2007, revenues from social networking were expected to reach $965 million and to grow to $2.4 billion by 2010.[82] This has become debatable, as while SNS trust most of their fate to advertising, it is also a fact that the majority of users of these sites who spend large amounts of time are young people, either at the beginning of their careers or still studying. In other words, they are users with limited potential buying power. In relation to TV advertising, SNS adverts are substantially cheaper at $1.86 per thousand views for MySpace, in relation to $30 per thousand for prime-time TV. However, it is also a reality that the impact of an advert on TV is not the same as a banner posted on a SNS.

Some SNS are adopting innovative ways to bring in financial income. The table below summarises some of the business models pertaining to SNS that we have observed:

[79] Ante, S. E., Grover, R. & Green, H. (2007). In Search of MyProfits. November, 5. Retrieved from http://www.businessweek.com/magazine/content/07_45/b4057047.htm?chan=search

[80] Ante, S. E., Grover, R. & Green, H. (2007). In Search of MyProfits. November, 5. Retrieved from http://www.businessweek.com/magazine/content/07_45/b4057047.htm?chan=search

[81] Atal, M. (2007). Profiting from Social Networking. *Business Week.* August, 22. Retrieved from http://www.businessweek.com/innovate/content/aug2007/id20070822_791378.htm

[82] http://www.dailyrecord.co.uk/news/business-news/2007/10/18/bebo-boom-as-230million-sign-up-86908-19969288/

Model	Description	Examples
Premium Services	Users pay for some levels of functionality.	Flickr supports Pro accounts at $24.95 for a year. These accounts have unlimited uploads and storage, video uploads and unlimited sets and collections, amongst other features.
Advertising	This is an extension of the traditional advertising model. Companies pay SNS to have banners on users' profiles. Although the audience targeting on SNS is very effective, the number of clicks per advert is said to be very low.	Facebook MySpace
Buyouts	The most successful SNS have bought out the big enterprises. Disney paid $350 million for Club Penguin, a social site for kids, and the cost of Facebook has also dominated various SNS debates.	- Disney paid $350 million for Club Penguin, a social site for kids - NewsCorp paid $580 million for MySpace (this has been argued to be a relatively cheap deal for the actual value cost of MySpace) - Yahoo! bought Flickr for an undisclosed amount of money, rumoured to be around $40m. [83] - In March 06, Facebook declined an offer of $750 million[84] and in September 2007, Facebook was reporting seeking investment that valued the company at around $10 billion, more than twice the market cap of The Times. In October 07, Microsoft purchased a 1.6% share of Facebook for $240 million.[85]
Third party developers	This is often based on the opening the SNS API for developers and allowing anyone to create extendable widgets for use on the SNS.	Some applications on Facebook are Visual Shelf, Scrabble, Birthday Calendar and Nexus. [86]

As more and more applications become integrated on major SNS, rumours about whether SNS like Facebook will become strong enough to compete in the realm of operating systems take shape, mainly because these sites will "own the majority of users' time online".[87] The integration of complex and intriguing applications enhance SNS, as they provide new reasons for users to remain logged on to a particular site. Also, the backbone of the SNS is not only strengthened, but made wide enough to provide something for every user's taste. Moreover, with more people spending more effort in

[83] http://www.readwriteweb.com/archives/yahoo_acquisition_pattern.php

[84] Rosenbush, S. (2006). Facebook on the block. *Business Week.* March, 28. [Online]. http://www.businessweek.com/technology/content/mar2006/tc20060327_215976.htm

[85] Stone, B. (2007). Microsoft to pay $240 million for stake in Facebook. *The New York Times.* October, 25. Retrieved from http://www.nytimes.com/2007/10/25/technology/24cnd-facebook.html?ex=1350964800&en=c27e6c86844c7723&ei=5088&partner=rssnyt&emc=rss

[86] In 2007 Facebook opened its API to allow integration of foreign applications. *Visual Bookshelf* is one of such applications allowing Facebook users to build up a virtual bookshelf by searching the Amazon book inventory. Users of this application can see what their friends are reading, who else on Facebook is reading the same book, recommend books and read and create reviews. According to Kevin Rablois from Slide[86], there are two ways for such business applications to grow, namely: exploiting their social side and providing users a means of self-expression. Daniel Carroll from HedgeStop.com advises that advertising cannot be intrusive, because young people tend to be wary of manipulation and are easily turned off. Jobster is another interesting example, as companies wanting to access people's resume have to pay for a subscription service (Atal, 2007). The hiring industry seems to be one potential area for another form of revenue. (Atal, M. (2007). Profiting from Social Networking. *Business Week.* August, 22. Retrieved from http://www.businessweek.com/innovate/content/aug2007/id20070822_791378.htm

[87] Holahan, C., Hof, R. & Ante, S. E. (2007). Facebook: $10 billion social network? *Business Week.* September 25. Retrieved from http://www.businessweek.com/technology/content/sep2007/tc20070924_995913.htm

developing complex and intriguing applications, SNS are not only enhanced and provide better products, but they also become more powerful. Tokuda, CEO of RockYou! (a leading provider of programmes for social networks) therefore argues that, as more young people increase their time on these sites, some major sites will attain the role of operating systems. [88]

SNS' success in enhancing the functionalities of how people maintain their social networks has also been recognised by major email providers. Recent developments in email services which allow users to perform sociable functions, such as tracking friends and creating personal-profile pages, are being provided by Yahoo Inc., Microsoft Corp. and Time Warner Inc.'s AOL unit. Both Yahoo and Google email accounts now include an application which allows users to see when their friends are online and to send them Instant Messenger through a chat box. Google also allows users to share pictures, word documents and excel sheets through their email account.

In the near future, this could heighten competition between email providers and social networks. As both email providers and SNS strive for user loyalty, it can be observed that these two distinct players will be competing against each other. Email providers could have problems if their users shift to an SNS email account, as this could reduce their advertising revenue generated by usage.[89]

As with any other new technology, the future of SNS remains unclear. Experts in the field suggest that SNS will develop or merge with other online applications, so as to provide an enhanced service. The current interest is expected to decline when the novelty wears off. The phenomenon of social networking seems to be the one component of SNS that will definitely stay. SNS highlight the need for contact and relationships, and therefore the basic notions of community will continue to be explored by technologies. New applications will probably put a new kind of emphasis on what social networking might be. The movement seems to be heading towards portability, compatibility and interoperability. Thus, users may gain control of their own relationship management. Social interactivity, social aggregation and possibly socially-oriented goals could also be part of applications in the near future. The shift of SNS from a leisure activity to something more related to work is another scenario. For instance, SNS could be used for research in biomedicine to connect families, patients, carers and

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88 Ante, S. E., Grover, R. & Green, H. (2007). In search of Myprofits. November, 5. [Online] http://www.businessweek.com/magazine/content/07_45/b4057047.htm?chan=search

89 Delaney, K. & Vara, V. (2007). Will social features make email sexy again? *The Wall Street Journal.* October, 18. [Online] http://online.wsj.com/article/SB119266491901362735.html

researchers and to connect communities of physicians for the exchange of clinical advice on special cases for second opinions, like the SNS Within3.[90] [91]

[90] This aspect of SNS will be analysed in an exploratory research recently launched by IPTS on the use of SNS for rare diseases.

[91] More information about the prospective development of IPTS is provided in: Punie, Y. (2008). The socio-economic impact of social computing: Proceedings of a validation and policy options workshop. In publication.

5. Final Remarks

While social networking is a phenomenon which has existed since the beginning of societies, SNS are a recent trend. In less than five years, these sites have shifted from a niche online activity to a phenomenon in which tens of millions of internet users are engaged. Discussion on the emergence of a new social phenomenon has permeated both industry and academia. Based on the research of this report, the following conclusions have been drawn:

- SNS are those sites which, on a basic technological level, combine social networking, a list of contacts and a profile. They are distinct from other applications in the way they support people's presentation of themselves, externalisation of data, new ways of community formation, and bottom-up activities. They are also distinguished by their ease of use and their reorganisation of Internet geography.
- SNS users may want to consolidate their close social relations while others may want to extend their social networks. What users want has an influence on how they behave on SNS and how they interact with these sites.
- Though SNS can appear to be similar, many of them are, in fact, quite different in terms of their purpose and the types of users they attract. This is especially the case in Europe with the emergence of a great number of local sites. To date, very little data is available on European sites and how they are integrated in the lives of Europeans. More cross-cultural data, comparable across different countries, is needed. Our interpretation is that language and cultures are major drivers for the success of local SNS in Europe. It is also important that Europe identifies which other drivers are pushing this culturally diverse market.
- This work highlights the significant role of SNS in processes of self-exploration, identity redefinition and peer validation. Adolescents often experience the first shift in their relationships, from parents to friends, through SNS. Cognitive effects on patterns of thinking and identity development may be observed. These areas require further exploration.
- A*lways-on* usage may lead to a blurring of the distinction between the virtual and the real. A better understanding is needed of whether such distinctions still exist amongst young people. Are they purely semantic and how do users, again especially the young ones, perceive the influence of these technologies on their lives?
- While some users are oblivious to the fact that privacy settings exist, others are willing to sacrifice privacy because the benefits they expect from public disclosure surpass the perceived costs. The social implications of disclosure of private data are mainly related to the fact that it is not always clear who owns data published on SNS; it is not easy to delete one's profile; most of the data on profiles can be accessed by third parties and data may be exploited outside the realm of SNS.
- As with any other social problem and threat related to young people in society, banning access to SNS is not the best solution. Young internet users are often intelligent enough to

- In the context of SNS, traditional model of advertising remains a major business model, though some innovative models also seem to be emerging. As both email providers and SNS strive for user loyalty, it can be observed that these two distinct players may be competing against each other in the near future.
- Though the exponential growth of SNS over the past few years is an important indicator, it is not the only way to analyse the implications of SNS. Future studies should consider the difference between the number of subscriptions and actual usage of SNS, and also attempt to gauge what drives the usage of these applications. They should also try to gauge their implicit and latent effects.
- Our interpretation from this analysis is that SNS may be having a significant impact on adolescents' social behaviour. Both positive and negative consequences have been observed. The positive consequences of SNS usage are related to extension of immediate social networks, social support and identity exploration amongst others. Negative consequences observed are cases of bullying, the publication of seemingly private data, the search for peer validation from unknown contacts and different levels of addiction, amongst others.

What is the role of the European Union in all this? Experts in the field suggest that the EU could enable the European market by fostering a software development culture as part of its innovation policy. As this market is driven by commercial enterprises, the EC should also monitor and regulate abuse and aim to protect the rights of the users. However, prior to intervention, it should also look at the market for a longer period, as the market is still immature. Accordingly, at this point it is also important to support further research and development and to find innovative ways to enable developments in terms of portability, interoperability and openness of applications.

In conclusion, the emergence of SNS plays an important role in understanding developments in ICT and the social and economic implications of new technologies. As observed by various SNS analysts, the continuous evolution of SNS brings with it new opportunities and concerns. Accordingly, more research is required, especially into the European context. This work has attempted to provide some modest contributions about the various social trends and their impacts inherent to the emergence of SNS today. This preliminary analysis aims to highlight important areas for policy recommendations and future research.

Appendix 1: Adaptation of Interviews

Interview with Maren Hartmann
Professor, Universität der Künste, Berlin

SNS are, first of all, the networking aspect - in the sense that it is not necessarily information given from one site to others, but the idea that particular users interact in a network and they all provide something, some more than others. It is a network in terms of the distribution of information, but also who is behind the whole thing. There might be an initial starting point, which comes from the outside, but this is taken up and grows through the networking aspect. This also explains why it is called *social.* It is a network of people, which is technologically enhanced. It only works if people actually connect to each other via the technology, providing information about themselves or at least, giving something they produced. It is also about exchange. It is exactly this giving and taking. It is a reciprocal relationship between network nodes.

The hype around SNS has been triggered by their exponential growth. As soon as there is such a growth, it seems that there is a new social phenomenon. Although Hartmann is critical of hypes, she believes that something interesting is happening here that goes beyond the hype. Social networking has existed for a long time, but even internet-related social networking has been around for as long as the Web. In the mid 90s, there was a lot of social networking going on and already there was hype around the internet. But what seems to have changed is the way that information about people is given away. There is a lot, on all the different SNS - from Facebook to all the others - that is about saying who I am, what I do, what I listen to, what I read, who I relate to, who my friends are, etc. All this is supposedly about the real person. This is the most interesting phenomenon, why would there suddenly be this need to communicate about myself, as the supposedly real, in contrast to what was there in the beginning of the web, where it was more about the other me, the one I can develop in the real world. This was more about anonymity and pseudonymity. This playful aspect of not being who I usually am, has suddenly turned into I want to show you how I really am. What does this say about how times are changing, about self-perception and perception of what is important in terms of social networking in the wider sense, not just the technical sense? Why this is happening is difficult to say, like all social phenomena. There is a shift here which makes it an interesting phenomenon. The simplest answer could be that the technological possibilities are there for this kind of social networking to happen and therefore it is taking place and at a fairly astonishing growth rate.

Asked about the future of SNS, Hartmann does not think SNS will disappear, although she is doubtful that their growth in numbers and importance will continue at such an exponential rate. Even if the numbers grow, it does not necessarily mean their importance will grow too. They will probably retreat, like most of these things, into something that becomes more normal and less hyped. Something that people use, but with less interest. One thing that always gets forgotten in research on this is that it is easy to look at the numbers of how many have subscribed, but how many actually use it is a different thing. Hartmann has subscribed to many of them, but she does not use all of them. Being a member and actually using a site are two very different things. Many people will subscribe, partly because everyone else has done so and it might also be another thing that you could put on your business card. Like you have your email address, and before you had a web address - this could be replaced by a Facebook address or something else. It might become a thing that one has to have and therefore everyone does have one but it will move into the background. What is interesting is what will replace SNS? In Germany, people are talking about Twitter. It is not an SNS in the same sense as Facebook and other sites. It is not a traditional blog either, but it is another means of social networking. We will keep seeing new small applications, with slightly different emphases, coming up. So the phenomenon as such will remain, but not necessarily the sites that we know now. It is difficult to say how the phenomenon will change, in terms of whether there will suddenly be a new kind of application that could put a new emphasis on what social networking might be.

In terms of her own personal usage of SNS, Hartmann says there are different SNS that are important in each context. She has accounts with Facebook, LinkedIn and also Xing. The latter is a German site, which is also international, but it is used primarily in Germany. The one thing she dreams is that she would be able to refer to them, but also to link them altogether, so as not to have to set up a new account each time and also to link the networks which tend to be very different. She uses them, but

she also has a bad conscience about them. If you are meant to present yourself on these accounts in a great way, she thinks she does not use them well. She has put basic information on them and that is about it. She does not actively engage in looking for people. Though she did that in the beginning, she then decided not to make having as many contacts as possible as part of her identity.

An interesting observation from the report is that there are seemingly very localised ideas of social networking in Europe, which seems to contradict the initial claim that you connect with everyone and anyone, anywhere. As so much research keeps pointing out, there is a confirmation of existing social networks, with a slight extension or maybe a reinforcement of weak ties. Other research also has shown that, in so many ways, people tend to use these technologies not necessarily to go and meet new people, but rather to just enhance or broaden their existing networks. It is another communication tool to add to an existing range of tools for existing social networks.

To return to the idea of the geographic, in Europe there are many different sites that are important, which is one thing. In terms of the way they are being used, Hartmann looks at her students and friends. It seems to be a life-phase-related phenomenon. It would be interesting to see whether it changes from a more youth-related phenomenon to something more widespread. Also SNS may be more relevant to certain professional areas than they are to others. So the question would be whether that would become more widespread in terms of the general user. It would be interesting to research the specificities geographical areas and other social groups in terms of what SNS they use.

Asked why it seems that most development of SNS happens in the US, Hartmann believes that apart from Silicon Valley being an attractive field for development in general, there is simply more money. Another contributing factor is the general attitude in the US towards any kind of technological development and about trying to be a bit more innovative. Development is now happening in Europe as well, but it has been slower. The idea of investing in new technologies which are still being developed or investing in ideas that might not become much in terms of technologies is not so widespread in Europe. European firms tend to take fewer risks in Europe.

SNS are more of an extension of the existing offline life. There are many communication channels and this is just another one. It might also add new elements and new forms of communications that were not otherwise possible. While it is an extension of the existing networks or reinforcement of these networks, it does still add some dimensions, in terms of what kind of information I give away. The other thing is the weak ties - not ties with my core social network but with those other people I have known in the past or I met somewhere briefly. These people can be added on SNS to my network. New personal contacts are added much less frequently, though SNS seem to work better with new professional contacts. One can get jobs, via new professional contacts on SNS – or, at least, this is true for some professions. The one development that is not changing in this aspect is where SNS converge with other media. I am mostly thinking about mobile media, where Internet SNS have been developed to interact with your mobile phone. For example, you can be notified when you meet someone from a particular network, somewhere in the street. You have the option to arrange a physical contact, through your mobile phone, to someone who in principle is connected with you through a SNS. Your mobile can alert you not only when this person is physically close by to you, but also when someone who is signed up to that site has their mobile phone on. This is meant to initiate new contacts. This takes the basic idea further and will change the emphasis from your existing network to maybe encounters of a different kind. With these add-ons and the move away from the core initial developments, it might change the whole nature of the networking.

In terms of the social implications of SNS, there is an emphasis on networking and on the social aspect, but as banal as this might sound, this is an important point and quite a good one. These applications do not change things radically but they can help to make certain things more transparent: for example, the idea of being networked. However, the idea that the more contacts you have, the better you look could be negative. There is social pressure involved in this. But more positively, if you take these developments on board, they let you question how important networking is, what social networking means. They make a lot of people think who their networks are and how they relate to them. Social networking with or without technology is an important phenomenon. This seems like a return to what kept popping up in Web2.0, the whole idea of communities and all these things. We seem to be coming back to fairly core human needs. In this sense, these technologies are an expression of this need but they also might be helpful in showing it. At the same time, there is a danger, both in terms of social pressure and about what one should show about one's identity. The

move from Web1 to Web2.0 in some sense encompasses the idea that you are suddenly giving away more about yourself. A lot of data is given away. How can you, as the user, still decide what is shown, to whom and in which context? This is very blurry still. The reasons why young people give information about themselves are not surprising because they relate to a lot of ideas around youth culture. This is partly because youth is a phase of finding one's identity anyway, and that can take the form of playing around with certain ways of showing oneself. Also, despite showing a lot about the real "you" on the web-related sites, you can play around in ways you would not necessarily have in the world out there. Also the networking aspect is important - it seems to be a lot of fun.

The idea of the public-private needs to be redefined. The traditional terms do not apply anymore. Any kind of virtual life is difficult to define in terms of whether it is public or private. It does not apply to space anymore in the sense we used to think. The whole question of what is public is definitely up for grabs. It has changed, but we have not found definitions yet. In many ways, younger people might be growing up with ideas on this that are very different.

Asked what role the European Institutions should play and if/how they should intervene in the development of SNS, Hartmann believes that they should intervene to protect people's rights. The European Commission should monitor uses and abuses, especially because the current trend is for SNS to be run as commercial enterprises, even if the content of these sites is user-generated. A lot of problematic issues have arisen around the basic ways users' data is used or abused, because there is always the question of revenue. This is perhaps the more traditional aspect of how the Commission and governments can be involved. In terms of other aspects, it could be useful for the European Commission to use these technologies to enhance its own image. Maybe there is chance to be playful with these technologies and for the Commission to change its image in approaching young people. However, it could also project a lack of trust, if suddenly the Commission appears on Facebook. In some sense, it can be nice if the EU looks at the rights, but also does research to just monitor what is going on and also think what the potential consequences might be. It is difficult to say that it is just about applications, we have to think about issues of privacy in the wider sense of the word. This is just one example of where the Commission can come to play.

Interview with Daniel Kaplan
Director, Fing (The Next Generation Internet Foundation), Paris

SNS are centered on person-to-person communication, networking and self-evaluation, and presentation. Big features are contact lists and profiles and what you can do with them. Maybe what differentiates them after that is how you can mobilise them, how you can organize that and what sort of features you can add that will leverage these two basic features.

Kaplan uses SNS, but not intensively. Mainly he uses Facebook and LinkedIn and there have been occasions where he managed to meet people or do things with people as a result. He finds that the promotion of meetings or events on Facebook is efficient for his organisation. It is an additional way of contacting groups of people and using *bio-marketing*, on top of newsletters, contact lists and databases.

In terms of the use of SNS for enterprise, there are a number of trials with all kinds of social tools within companies and their environments. It is difficult to figure out exactly what the scope is. Perhaps it brings value in terms of saving time. Companies tend to organize around projects and teams that create, evolve, dissolve etc. Using SNS as tools can be very beneficial, especially internally, as they allow groups to evolve organically. Also, SNS can be used to look for competencies that exist in an organization, in a way that formal organization charts cannot. This has been tried by more organized and planned systems, like knowledge management or competence management. It has never been very successful. In a way, relying on people to actually find the right people who could help them seems to be more efficient. Companies do not appear as companies in most open SNS - in fact, it is not easy for them to do so. Some companies place individual employees on these sites and they act as nodes in the network. This is probably also a good way of doing things. In a way, it is not organized. But most employees are on Facebook and use it to federate their own personal networks. This extends throughout the organization without any formal planning.

Social networking as such will stay. The internet is very much about people networking with other people, rather than information and knowledge. The driver is people-to-people communication. The ideal future for SNS would be for them to disappear, and the Internet itself to become the social networking place. However, if networking has to be within a site, it tends to be a small enclosure within the bigger realm of the internet. For example, this is why you see now all this movement, which is clumsy but important, about portability, compatibility and interoperability with profiles and SNS. It would probably be better covered by standards and by interconnecting the tools with which people manage their own relationships and address books in a much more open and peer-to-peer way. Kaplan says he does not know how feasible this is. But it could be the most relevant way of looking at it. SNS have formalized the fact that you can do much more than we used to do with our contact lists and with communication tools. Also, SNS could gradually open up standards and disappear as an enclosure. Of course, SNS do not want to do this. Whether that would really happen or not is anybody's guess. The practice is here to stay: get effective in a number of places. However, Kaplan says he may not be the best user as he is trying to reduce the number of solicitations, rather than increase them. But people who are more in need to do that could really use it. For instance, APEG is a public organization in France that works on middle executive employment. It does employment boards, trains people to get employment, and matches supply and demand. It has recently signed a deal with LinkedIn, so when you are registered there, you automatically have a LinkedIn profile. You can link with other people looking for a job, or if you are interested in a particular company, you can find out whether there are people from that company on the same network and get information. Many interesting things are being tried, which could bring value. One of the things Kaplan is working on at the moment, in his project on identity: what a resume will be in 20 years time. It will clearly be something very different from now. At the moment, when you want to hire someone at a certain level, the first thing you do, after looking at his/her resume, is probably to *google* that person and also progressively use your networks. For instance, you look to see if that person is a certain number of degrees of separation from you and if someone can endorse or comment on that person. This will definitely be part of what a CV is. If you know that this is going to happen and people are becoming aware of this, then you will work on how you exist in those networks and the image this projects.

There are three business models for SNS. For certain levels of functionality, people will be asked to pay. The percentage of people who do this is extremely small. But Kaplan understands that it is still enough to generate revenue. In the second model, corporations will integrate these kinds of tools, to create staff networks. But the main part of the business model is exploitation resale, the added-value exploitation of personal data, the mapping of the links of people. It will be used especially for advertising purposes, but also for hiring and contracting of people. There is an element of matching supply and demand, in which advertising plays a big part. But there are other elements, such as employment, contracting and sub-contracting. This is easier to sell to users than to targeted advertisers.

Asked about the level of exposure of young people on SNS, Kaplan explains that according to a survey by Pew Internet there are indications that it is not only young people. The percentage of teenagers who put some restrictions on access to their profiles on MySpace was significantly higher than the percentage of young adults (25 – 30 something) that put restrictions on their profiles on Facebook. The second aspect is that we are currently on a trend. People are using visibility to enhance their contacts lists, in order to augment their possibilities for actions to figuring out opportunities, for play, etc. The thirst for contact and relationships is very strong. As soon as it became easy, not just to publish information about yourself, (which has been possible for a long time on personal homepages), but actually to use this as a tool for links, conversations, friendships, corporations, even very basic ones, it caught on like wild fire. It includes blogging, because blogging is not just about publishing, it is also about RSS, comments, and blog lists. Every significant blog is part of a human network. This is as important as writing things about yourself. So, in exchange for self disclosure, you expect to be more present in the world. Apparently, this is actually what you get.

In terms of whether the notions of private and public are changing, Kaplan explains that this is a trend. There are a number of ways this trend can be interpreted. First of all, it is not just about people. It is the way corporations organize work, mobility and mobile communication, flexible timing and flexible work and various ways of surveillance. There is a general blurring of those barriers. At the same time, the same barriers are moving or repressing themselves. What is private might be something else. It may be your fantasy, ways in which you will appear within those networks or other kind of networks - what we may call synthetic identities. People have a very intense and tangible existence on networks

that has nothing to do with their civil identity. That is a way of being public, yet very private. People are presenting something that nobody can connect to - another facet of their identity. People have not become paranoid. One of the definitions of paranoia is that you do not know what the difference between your inside and outside is. People know fairly well, they are moving the borders, they are testing them, multiplying them. You can also do a lot by blurring things and make yourself not as legible as you think. It may end up being more efficient that fixed barriers. It may also have to do with the fact that people are fairly convinced that whatever they try to hide cannot be hidden anyway, so why not just play with it, instead of resisting it.

People are not trying to separate their online and offline worlds. There will probably be less and less separation, because social networking tools are extending towards mobile and even interacting with GPS, etc. There are a lot of things which clearly relate to your physical life. It is an extension, it is a tool, but it is also something that extends into the realms of imagination or fantasy. You can also exist on a number of networks with personalities you have invented, or partially invented, for yourself. There are a number of people who have hobbies or sexual habits that they do not want to extend. We interviewed someone who is famous but also into SM - he will obviously not relate that to other facets of his personality. In that area, it is a very famous figure and very connected to other people. It is his life as well, which shows that you can really segment. It is probably rather easy, if you set your mind to it.

As for economic implications, Kaplan refers to some work they are doing on music. The value is moving from the supply to the people who are mediators towards the demand - basically, from producers to MySpace. There are changes in the value chain. They are people who are rather close to the demand, rather close to the individual, who can mediate to other individuals, and have a lot of power over the market. This is interesting but can also be worrying, even though there are a few success stories of unknown musicians who have emerged because of MySpace. The truth is MySpace does not care at all what kind of music is produced or whether this success has any artistic value. Or even it does not care at all in taking any amount of risk in producing this. It can also make some areas of risky production extremely dominant. That could be an implication. In the realm of music creation, we ended up a little worried. We might end up lamenting the loss of the major firms, much as we hate them now.

The closer you get to what is intimate to people: the way they set their identities, their fantasies, the way they relate to other people, the closer you get to things that are deeply cultural. There is no reason why Japanese people should use technology as French people or as Americans. The more intimate the relation with technology gets, the more it interacts with deeply embedded cultural values.

The social implications of SNS relate to things which are not entirely new. There have been a number of surveys which ask: do online relationships kill offline relationships and estrange people from the rest of the world? The people who had the highest number of online relationships were also the ones that had the biggest number of offline relationships, and the reverse too. So it was positive feedback in both senses. You can see that on all social tools. There are some really strong network personal nodes, with really strategies for visibility, for extracting value out of their network and growing them and turning them into tools for self-development and self-assertion. It's a skill, you can acquire it or not. Probably these tools will create another kind of social difference or could compound existing differences, as much as the others.

Asked whether the European Union should intervene in the development of the SNS culture, Kaplan believes that it would be better if they look at the market longer, rather than intervene too quickly. This is a very immature market. It used to be about MySpace, and now it is about Facebook. It used to be about Friendster, it is no longer. The market is going to change a lot. Besides observation, the thing the EU could focus on would be R&D. The EU could promote and help the efforts towards portability, interoperability and openness of SNS. It is too early to force things, but the EU could help these things emerge and consider that this is a legitimate R&D effort. The other more general thing is that a lot of the policy-making about usage of the internet is based on the premise that the internet is about transaction, information and knowledge. Though this is true, it is not the driver. The driver is person-to-person communication. Getting more insights into this, into what the drivers are, into what pushes people to do things or not do things would probably be a way for any policy maker to actually focus on and understand the important things rather than the things that are not as important.

Kaplan claims that one of the reasons why America remains a hub when it comes to development of emerging technologies, such as SNS, is historic. The value of these networks rests on the network effect itself. If you're big, you have more value than if you are small. There are a number of professional social networks in France that are doing reasonably well, but their overall value compared to LinkedIn and its millions of contacts, are hard to establish. His understanding is that SNS in Asia are very much national. So of course, you can do a number of things and the language factor is also important. It may also have to do with the way Americans manage and value contacts. For instance, the number of contacts in relation to the depth of the relationship. This is, of course, a cultural generalization, but in a way it exists. In America, people are ready to voice an idea, even if it's not completely formed. In France, it is more difficult to do that, so publication remains more important.

Interview with Martin Fransman
Professor, University of Edinburgh, UK

For Fransman, social interaction is what makes a social networking site. Social in the sense that people are interacting. Also, the interactivity which is being enhanced now by Web2, was not there as much previously.

He does not use social networking actively. Fransman tends to go to these sites more to see what they are all about. YouTube is the application that he has used most because he can watch interesting lectures (given at Google). But most of the stuff on YouTube is, according to him, very boring. He goes to SNS to educate himself but at the end of the day, it is email and mobile phones that he uses. And also newspapers, especially the financial papers which he reads regularly. But these are not SNS because there is no social interactivity. They are more about information gathering. Email is different, of course. But that is one-to-one communication.

When asked whether SNS are here to stay, Fransman believes that the Internet provides a radically new infrastructure. He compared it to the railway network that was developed in the late 1800s, and to the later development of electricity. It is this kind of infrastructure development that fundamentally changes the context, within which we live, globally. Railways and electricity affect most people in the world, even though they have not reached all parts of India or China yet. The Internet is a similar development. New possibilities occur with any radical innovation and the Internet is no exception. Things change, some become fashionable, some disappear and some last. Interactivity on SNS may decrease when the novelty wears off, but the point is that the Internet allows a kind of social interactivity and social aggregation. Aggregation is very important. These are fundamentally new capabilities. These would not disappear, though they may be used in different ways.

In terms of how Europeans are adopting SNS, Fransman believes there are differences in national systems. National systems of innovation work in different ways, mainly because institutions tend to differ from country to country, from region to region. Therefore, there are national differences. In some cases, there are infrastructural differences. For example, if we look at the US, these differences are essentially in ICT. The U.S. has a much more computer-driven ICT system. That is not surprising: the PC, the microprocessor, the Internet - all of these - evolved in the US. In Europe and Japan, however, the mobile phone has a relatively more important place. Relatively, because in both there is a mix. Of course now with broadband mobile, these are all converging. For example, in Tokyo, people spend much more time on public transport and on their mobile phones than people do in New York or London. In Japan, mobile phones are much more important and a lot more happens on them.

Development is happening in Europe. But these things evolved first in the US and the reason for this is, in itself, very interesting. Essentially, two groups of events came together. One was on the computer side that began with IBM and mainframe computers. Then the microprocessor changed all that and made PCs possible. That meant that Windows, Microsoft and Intel took over. On the other hand, there was the networking innovation from the Internet, first of all telecommunications and then via sharing of computer time, which led to the DARPA project. All of that came together in the US and, in turn, created a set of institutions, a set of competencies and capabilities, which gave trust. As

soon as the Internet started developing, so did major Internet companies. In his book,[92] Fransman looks at the origins of all these companies, Google, eBay, Yahoo, Amazon. All of them emerged in about 94-95 - just when the Internet started spreading. It was an American thing. You see that now even in mobile, because of the American 'challengers' in the field of mobile - Qualcomm is one example in CDMA, but the others are WiFi and WiMax. These are Internet-based technologies. Of course, these things diffuse globally. We all have the Internet because it is useful for all of us. We have the telecoms infrastructure that enables broadband. So these innovations, even though they began in the US, diffuse very quickly, globally. We (Europeans) do catch up. The US has also caught up in mobile though they were behind for a long time. These innovations have diffused globally, but we still find that history matters. The US still dominates computer-based technologies. That may change with 4G, but until now, Europe has had a relatively strong hand in mobile and Japan as well. Japan is a slightly different story. The mobile story is interesting because mobile was based on cellular communications. The concept of cellular began in Bell Laboratories in the US where the concept was invented. But it was really first applied in Europe and Japan. In Europe, it was applied in the Scandinavian countries, under something called the Nordic mobile telecoms system - NMT. This system emerged because the Nordic countries wanted someway of communicating and roaming across countries, so they developed a common set of standards and NMT provided a set of mobile standards. Then when the second generation of digital mobile came with GSM, GSM used the standards developed by NMT. That is the origin of Nokia and Erikson. Nokia is the great example of European success in the ICT sector.

When asked why some European developers of SNS tend to move to the states, Fransman thinks that in the US, especially in Silicon Valley, the institutions facilitate this kind of new entrepreneurial activity. In particular, venture capital plays a major role. Venture capital works very differently in the US to the way it works in Europe. In the US, very often venture capital providers are themselves entrepreneurs, who have made a lot of money and are looking for opportunities to invest (they are sometimes called angel investors). What they provide to a new start-up enterprise is not only capital but also contacts and connections which are really important. However, in Europe, most venture capitalists come out of banks or financial institutions. They focus on the capital function, and not on the contacts and connections. Secondly, there are so many complementary activities available in a place like Silicon Valley. It would be interesting to document the reasons for the mobility of the companies that emerged in Europe but then moved to the US. It would be interesting to identify why these innovation starts ups have not found fertile soil in which to grow in Europe and have gone to the US.

Interview with Claude Mangion
Professor, University of Malta, Malta

Before Facebook, most of the other SNS were passive and static. Facebook is the first application which allows updates and communication with friends or rather, with people you know, who are listed. You are also more aware of what is happening around you, as it has more immediacy. When it comes to usage of SNS, Mangion uses Facebook and Hi5 because most of the others are very boring. He also mentions a SNS from Iran, which he uses for political reasons and two American sites which seem to be for very lonely people: NetFriendship, and Tagged. However, Facebook seems to have set the standard.

Mangion believes SNS will get more powerful in the future. Many people seem to think that the internet will isolate people. Their argument is that face-to-face interaction is richer or more real than virtual interaction. However, virtual interaction is pleasurable and rewarding in different ways. As most people seem to like talking to other people and technologies are becoming more creative and more *leisurable*, SNS will become stronger. Current SNS are more on a personal level, whilst in the future there will be space for something which is more socially oriented. Perhaps there will be SNS with socially-oriented goals. In Facebook, for instance, there are already actions for Darfur or Cancer, but they are more things you apply to join than social action.

[92] Fransman, M. (2007). The New Ecosystem: Implications for Europe.

In the world we live in, we should not separate education from economics or politics. They all feed into each other. Even though most of these sites run on an economic basis, if academia and education can benefit from them then that is good. As an example, Mangion refers to an academic event he organizes every 15 days outside his university. He uses Facebook to create the event, and the feedback facility and discussion are important. It requires very low-investment of time and no investment of money to promote an event.

Asked whether the online world is influencing the offline world, Mangion questions whether it is necessary to think so exclusively in terms of online and offline worlds? What happens is that the online filters into real life: it is a form of continuation. Taking Derrida's idea of continuation, it is not clear where the online/offline begins and ends.

In terms of social implications of SNS, Mangion refers to an incident in Denmark, in which a Facebook user experienced a form of harassment. This was the first time he had heard that Facebook was used in anti-social way, in the form of persecution. Like other Internet sites, you get the same variety of users as you get in the real world, not only good people. SNS can be used for negative ends. They can be used to promote negative values. The positive part is that they have the potential for bringing people together.

His views on issues of identity echo the ideas of Judith Butler. There is no essential self in us. The self is a *formative*, we are what we do: self in action. With SNS you can create and construct the self you want. This is not negative, unless you manipulate others. It is a kind of idealization of how you wish to be, or how you imagine the self you want to be. Perhaps, from a psychoanalytic point of view, that could be unhealthy and dysfunctional. Nietzsche says that the self is not something inside but something higher and above us, it is outside of us. Perhaps SNS gives us the possibility of an idealization of ourselves, something to aspire too. This could be the generous interpretation.

Warhol's quotation 'everybody will have 15 minutes of fame' reminds Mangion of how celebrity was manifested in the past. In the 19th century, celebrities were generals or soldiers who explored 'darkest Africa'. In the culture we live in, celebrities are sports people like footballers or celerity chefs. With SNS, we can make more than 15 minutes of fame. We can become famous celebrities in our virtual worlds. An example is the Latin American artist who starved a dog to death. Mangion got to know about this artist through the protests against him on Facebook. As a work of art, he tied a dog to a tree and he did not let anyone feed it until it died. Rather than famous, this person is infamous. Although, people did not see his action as art because it was exceptionally cruel, it seems he got the fame he was looking for. Many people got to know about this person through Facebook. The idea of being famous goes back to Western culture, specifically to the Greeks: the idea of being somebody and being remembered. The question for Achilles was whether he preferred to be famous and have a short life, or a long life and be nobody. Achilles opted to live a short life and is still famous. Fame is a way of being remembered. The desire to be known has been around for a long time. In the case of young people, the idea of fame is hyped up by new technology. Fame does not seem to have the same meaning as it did in the past -i.e. it was a way to transcend death. It is more about money and getting what you want that probably inspires young people today. In our culture, being known is hyped up. Being well known seems to be associated with certain amount of status, an edge over other people, more possibilities. SNS seem to promote this kind of celebrity, and they also provide the means to this end.

Interview with Wainer Lusoli
Senior Lecturer, University of Chester, UK

Social networking is a way of doing business on the internet. It can be embedded in a site, in a widget or in the head of a developer. So the question should be: what are the features of Web2.0? There are a few features which are shared and agreed, based on O'Reilly's famous principles of Web2.0, some of which O'Reilly got terribly wrong and some of which we still have to think about. Web2.0 has to do with convergence of different media, with *shareability* of different material, with linkability (meaning these places, spaces, sites should provide a way for users to connect) and finally, data portability (users should be fully in charge of their contents, their relations and their contributions).

Lusoli uses Facebook, MySpace, LinkedIn, Last.fm, del.ic.ious and he also tried Second Life, Bebo and Orkut but he did not like the last two. Asked what function these sites play in his life, Lusoli stressed that they do not do anything, but rather he does things with them and, recently, he got fed up with them. He now does more things with professional enhancing tools. These sites were useful in creating and managing communities, as well as sustaining relationships. First, they were for leisure and now they are for work.

In terms of the future of SNS, Lusoli envisages an information space which has ambient intelligence embedded in social computing and the coming together of the two systems and the two logics. So, effectively, it will be aMI frameworks made social via the mobile phone - for instance, via blogging. This is called macro blogging.

Asked about the economic impacts of SNS, Lusoli cites the example of eBay, which is based on the definition of Web2.0. If you move from Web2.0 to social networking, it is a specific social instance of Web2.0. Can you make money out of it? Is there a business model, outside the advertising-targeted one? He does not think so. You will not be able to sell anything through or via them. SNS will remain attention catchers. So you catch people there and you have a potential audience, but these audiences seem to be quite resistant to the idea of being sold something. As a matter of fact, SNS are all losing money. Lusoli believes that the problem is with the algorithm and the ethos of the place. eBay is making money. Amazon.com, which is based on Web2.0 algorithms, is making money. Recommendation economies can produce systems that make money, but not when social networking is involved.

Asked why the development of SNS seems to be taking place mostly in the US, Lusoli thinks it is because in the States they do stuff, and in Europe we think about stuff. It goes back a few steps. It has to do with the new media R&D culture in the States, venture capitalist ideology, industrial conglomerates, centres of excellence and software districts. On the other hand, there is quite a large and thriving software industry in Germany, for instance. They have a number of patents for software vis-a-vis other European countries. So Germany should be where these ideas can emerge. But this is complicated matter.

There are plenty of papers that demonstrate that SNS are an extension of the offline world, how the virtual and the real mix, how performance and activism have been taken online. Virtualisation of activities already existed. If anything, there is too much research and too much evidence. We need to look at it the other way round, the link between the virtual and the real. Do things that happen solely online, at some point have an offline impact? It has been fully demonstrated that people take their hobbies and the things they do from *real* life to the *digital* life. We need more evidence of externalisation effects of these SNS.

We need to ask whether they will they allow us to do things differently offline. We need to go to the cognitive and look at the way these places change the way people think about problems and solutions. Now when Lusoli is bored in real life, he finds himself thinking about Republica.com and typing keywords in Google to find solutions. It is a different way of escaping boredom. When he was a kid, he had different ways of escaping reality. Now when he escapes reality, he uses virtual methods. Maybe other people process information in a different way, but cognitively SNS change the way we perceive reality. Any effects or impacts should be sought through doing this kind of work, and not directly in terms of what people do - not the social capital way. All these ways of measuring whether SNS are making an impact miss the point. The point is more subtle. It lies in the subliminal, in the cognitive processes, in the way we think about reality as an extended virtuality, which is the other way round. We are looking in the wrong place when, as sociologists, we try to measure *effects.*

We need to gauge, rather than measure, ways of doing things, meta-frames of reference. We have to look at what drives people to do things. These new environments have a powerful cognitive effect on patterns of behaviour and on patterns of thinking that we need to map and translate into practical activities. There is a whole political economy of behaviour we are not looking at, in relation to SNS.

There are various media theories that illuminate how SNS should be perceived, for instance, domestication theory. The further you get away from the mechanistic hypodermic needle models to explain how the internet works, the better. The more embedded the explanation, the better. Theories that look at everyday life, the fabric of everyday, the cognitive processes underpinning these

processes of domesticated technology and the different layers of technology. However, it is not about either the ethnography of everyday life or cyberspace life. We should look at the point of convergence, which is where things happen.

Something we should be looking at is identity capital. Young people are investing in identity capital in SNS and they expect something in return from their investment. These young people are lucky, they were born when these technologies are spreading and they grew up with other ways of knowing friends. There is no difference between young people and older people. The case here is older people using data sites. There is a growing number of SNS for older people. In relation to this, research shows that that older people do not seem to be doing thing differently to younger people, in terms of privacy concerns or the information they share. Dating is dating, at 18 or 75. We should stop looking at young people as a naive generation and see them instead as people with needs to be entertained and educated. They have desires and they fulfil these with SNS.

Young people have no problem with getting drunk in public. They want to have fun by different means and they do not think of the consequences. But it is the nature of young people not to think of consequences.

SNS are not particularly reconfiguring society. People do not think of these things as something that has a relation between public and private. We should make them aware that SNS can affect the way their data is used or misused by government, corporations and fellow citizens. They have the cognitive capacity to know and to care. To make people aware is important and they should know that SNS have consequences.

Asked whether SNS have a role for enterprises, Lusoli explains that one in five employers in UK forbids access to these tools. One the other hand, there are big corporations that encourage their employees to use them. For instance, IBM has inbuilt SNS for their employees. Research demonstrates that employees do use them and they can increase productivity, depending on the type of job you have.

In terms of whether the Commission should intervene, Lusoli believes that if we believe that Web2.0 allows collective intelligence, then we need to think about all the consequences of this enhanced or enabled social intelligence when we talk policy. The big question is should the European Commission do anything, or should it not do anything? So, is doing nothing an option? It might be better, as it is an easily recommendable option for the time being. These markets are profitable and they are based in the US. If anything, the Commission should try to foster a culture of software development. It should look more at the next big enterprise, the next big kind of thing. Tim Berners Lee is British, European, he is spearheading the semantic web. Policy should be aimed at this kind of innovation and then, the consequences of this innovation, you have to assess on a case by case basis. Policy should not be formulated until these consequences are clear.

Interview with Nicholas Garnham
Professor, University of Westminster, UK

Garnham understands social computing as networked/interactive computing. It is not a breakthrough that will change the world.

Technological developments are difficult to predict. As a result of the availability of cheaper bandwidths and cheaper processing parts, it might be said that there will be more networking. It is difficult to say much more than that.

Garnham does not use any SNS and is not interested in them. He does not see the point of SNS.

SNS are here to stay, in the sense that they will continue to exist. The current interest and usage is likely to decline once the novelty wears off. People will find that they do not get much satisfaction from them because they are a game. These sites exist and some people will use them for some time, but then people become habituated to them. This has happened with other such developments - even things like television or videogames. When they are introduced in the market, people use them

because they feel they are doing something new. After a while, however, these activities fit into the general range of activities that people are involved in. There will also be a few addicts who spend a lot of time on SNS, but this will not be a transforming activity.

In general, there are no great transforming technologies. Instead, there are evolutionary developments, which may add a bit of functionality. People find new things to do with them. However, they do not herald a technically-driven move into a new world. For instance, the process of digitization, or the introduction of packet switching, clearly made a big difference and enabled certain things to happen economically, which could not have happened before. They were still long evolutionary developments rather than big overnight impacts.

There are some things that can be done online or offline and which the user chooses to do according to convenience and functionality. For instance, it would make sense that software that we have on our computers should be provided online. In theory, it makes sense, but in practice it has not really happened. The interesting question is why it hasn't happened – and, of course, there are good economic reasons.

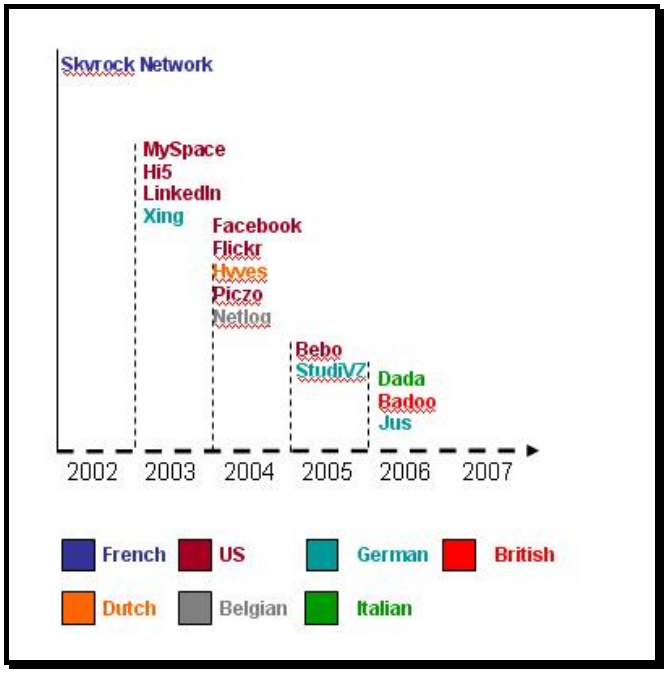
The question of how we regard the public and the private, or the question of how we conceive of ourselves in a public or private sense is always changing, and it has done so historically. In a new situation, with forms of social computing, we do not know quite where we would want to put the boundaries. Human beings learn after a time how to deal with this. There are always problems in a transition, but once people get habituated to something, different people will have different views of what they want to keep private and public. It is astonishing how mobile phone users can have the most private conversations sitting next to you on a bus, as it is as though once they are on the phone, the rest of the world does not exist. People will get used to it and stop doing it. Or maybe they just no longer care. This is an evolutionary process. Human beings will learn how to deal with these situations and how they wish to handle the distinction between public and public.

It is fair to say, or at least it has been so for a long time, the older generations have always found the behaviour of the young very strange, partly because young people are more experimental with their identities. Some will exhibit more - what you might call exhibitionist behaviour. This is not a new phenomenon. Teenagers can talk endlessly on the phone about nothing. After a certain time, they stop doing it. It is a growing-up phenomenon. It is about young people testing who they are and where the boundary of the external social space lies. This is not a new phenomenon, it has always happened. It is happening now with SNS. People used to hang out on the street corner. They used to drink or take drugs. There are all sorts of behaviours which young people indulge in with this process of growing up and they are now doing the same thing with SNS. It is not dangerous, it is just inevitable. It will have bad effects on some people and not on others. Just like having sex, drinking or taking drugs, or whatever. It is a part of a general process. He does not think it is dangerous, and even if it was dangerous and undesirable, there is nothing you can do about it. It is better not to worry about it.

From an economic perspective, SNS are advertising-driven. They can be used for business. They can be used as a form of public relations or creating word-of-mouth publicity, which again is not a new phenomenon. Any place, where a lot of people go to communicate or go to look at content can be used. There is nothing special about SNS. They can give access to a particular niche audience but no more than that. Of course, there are uses that can be made of them. They can presumably be used in the setting up of specialists groups, for team building, for stuff to communicate with one another, as for internal or external communication.

The fact that most of the development of these sites is happening outside Europe does not matter. We should not concentrate on this, as it is an old fashioned view of how the economy or indeed, of how these sort of communications work. These developments are a global phenomenon. We cannot artificially create alternative hubs.

Appendix 2: Timeline of SNS[93]



[93] For more details about the origin of SNS and their usage, please see: Pascu, C. (2008) An empirical analysis of the creation, use and adoption of social computing applications. Report from Exploratory Research on Social Computing (ERoSC), IPTS, European Commission, in press.

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Abstract

While social networking is a phenomenon which has existed since the beginning of societies, online Social Networking Sites (SNS) are a recent trend. In less than five years, sites like Facebook and MySpace, have shifted from a niche online activity to a phenomenon in which tens of millions of internet users are engaged. Discussion on the emergence of a new social phenomenon has permeated both industry and academia. However, there has been little research on the socio-economic impact of these sites in the European context.

This study presents results of a case study on SNS, as part of an exploratory research project. It argues that though SNS can appear to be similar, many of them are, in fact, quite different in terms of purpose and use. In general, these sites have led to new ways of managing and maintaining social networks, whereby personal profiles and social networks are being visualised and disclosed to others and the boundaries between the virtual and the real are disappearing. As a result, both opportunities and concerns arise. Policymakers should be aware of these and researchers should further investigate their implications.

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