Social Networking Sites and Complex Technology Assessment

Christian Fuchs, Unified Theory of Information Research Group (UTI), Austria

ABSTRACT

Social networking sites (SNS) are integrated world wide web-based information, communication and community platforms that allow the creation of personal profiles, the upload and sharing of multimedia data, networking with other users with the help of "friends lists", communication by tools such as e-mail, guest books, or forums. SNS combine a number of Internet technologies on one platform and are among the most popular Internet and web applications. Young people especially use them, which is why it is important to assess the implications of SNS usage by young people for society. In this paper, foundations of complex and dialectical SNS technology assessment are elaborated by introducing three different approaches of technology assessment: 1) technological determinism; 2) the social construction of technology; and 3) complex dialectical technology assessment. It is argued that technology assessment should be conceived as complex and dialectical and that it should try to identify contradictions of technology and society. An empirical study of SNS usage is presented as an example of complex, dialectical technology assessment.

Keywords: Critical Information Systems Research, Critical Studies of Media and Information, Critical Theory, Dialectics, Social Networking Sites, Technology Assessment

INTRODUCTION

Technology assessment employs social theory, social research, and ethics for assessing the impacts that specific technologies have on society. The purpose of this paper is to distinguish various causal logics of technology assessment, to introduce the approach of complex dialectical technology assessment and to apply this approach to the realm of social networking sites.

Social networking sites (SNS) are integrated world wide web-based information, communication, and community platforms that allow the creation of personal profiles, the upload and sharing of multimedia data, networking with other users with the help of "friends lists", communication by tools such as e-mail, guest books, or forums. SNS combine a number of Internet technologies on one platform. In the list of the 100 most accessed web platforms, one finds the following SNS: Facebook (#2), Myspace (#12), VKontakte (#35), LinkedIn (#37), Orkut (#49), hi5 (#52), Kaixin001 (#54), Orkut.com (#63), Orkut India (#74), LiveJournal (#80), Mixi (#86), Renren (#92), Odoklassniki (#95)[1]. These data

show that SNS are among the most popular web applications. It is therefore important to assess how the usage of SNS changes society. Technology assessment should be addressed by SNS research. However, depending on which approach of technology assessment one chooses, there will be a different assessment. It is therefore crucial to be aware of the different forms of technology assessment when assessing the impacts of SNS. The purpose of this paper is to contribute to grounding foundations of technology assessment in respect to SNS and young people.

Most SNS are commercial and profit-oriented. For accumulating capital, they use targeted advertising. They sell the users, their usage behaviour, and information about their uploaded data as a commodity to advertising clients that target users with individualized advertising messages that reflect the users' behaviour and interests. Capital accumulation on SNS is based on permanent surveillance of personal data and personal user behaviour. SNS are not only capital accumulation machines, but also surveillance machines (Fuchs, 2009b). They are based on the principle of the prosumer/produsage commodity (Fuchs, 2008, 2009b, 2010a, 2010b, 2010c) – users generate, upload and share content and personal information that is commodified by targeted advertising: advertising clients pay for getting access to this information in order to be enabled to target users with personalized advertising. The users and their data become commodified. For doing so, legal frameworks are needed that are formulated in the terms of use and privacy policies of SNS.

For example Facebook, the leading SNS, guarantees the legal use of targeted advertising on the site with the help of the following passage in the privacy policy:

4. How We Use Your Information [...] to serve personalized advertising to you. We don't share your information with advertisers without your consent. (An example of consent would be if you asked us to provide your shipping address to an advertiser to receive a free sample.) We allow advertisers to choose the characteristics of users who will see their advertisements and we may use any of the non-personally identifiable attributes we have collected (including information you may have decided not to show to other users, such as your birth year or other sensitive personal information or preferences) to select the appropriate audience for those advertisements. For example, we might use your interest in soccer to show you ads for soccer equipment, but we do not tell the soccer equipment company who you are. (Facebook Privacy Policy, version from December 9th, 2009; accessed on December 16th, 2009).

This example shows that surveillance on SNS is a particularly important topic. I will show in section 3, how users assess surveillance on SNS.

2% of the US Facebook users are aged 3-12, 20% 13-17, and 45% 18-34. 1% of MySpace users are aged 3-12, 14% 13-17, and 58% 18-34[2]. This means that 67% of the US Facebook users and 73% of the MySpace users are less than 35 years old, although only 47.6% of the total US population can be found in the same age range[3]. Young people are the main user group of SNS. It is therefore especially interesting to study their usage behaviour and attitudes towards SNS as well as the implications for society. Young people are new media "innovators" and "early adopters", who are "active information seekers about new ideas", have "a high degree of mass media exposure", and are "the first to adopt a new idea" (Rogers, 1995, p. 22). Studying the use of new media by young people can therefore give an early picture of potential larger future trends.

The research presented in this paper is situated within the research field of young people new media studies. Loader (2007) argues that young people are not politically disaffected, but rather politically displaced by traditional forms of politics and traditional politicians. "Parliamentary and congressional forums, voting booths and the restrictions of social class-based party allegiance contrast strongly with the self-expression induced communication spaces of MySpace, MSN, Flickr and mobile texting

as potential means to enable young people's political efficacy" (Loader, 2007, p. 2). But new media in contemporary society not only bear positive potentials for young people, they are also embedded into structures of domination. Montgomery (2000, p. 62) argues in this context that a dialectical approach is needed in young people media research that sees that and how the digital media environment "holds both promise and peril for youth".

Buckingham (2006) challenges Tapscott's (1998) techno-optimistic notion of the digital generation (Tapscott speaks of the "N-Geners" as all those born since 1977) that has been produced by the Internet. He classifies Tapscott's approach as "a form of technological determinism" (Buckingham, 2006, p. 9) and argues that one must contextualize opportunities and risks of Internet usage by young people by taking into account political economy, everyday realities, and socio-culture. Tapscott would not take into account "the possibility that technology might be used to exploit young people economically […] or indeed that the market might not provide equally for all" (Buckingham, 2006, p. 10).

In many publications about new media use by young people, aspects of capitalism and political economy as context variables are missing. So for example Sonia Livingstone (2002) discusses lifestyle, leisure, the home, the family, and literacy as context variables, but largely ignores capitalism as fundamental context variable of young people's use of new media. There is only a short mentioning of consumerism (Livingstone, 2002, pp. 111-113), but not a separate chapter about the critique of the political economy of young people's new media usage in her book *Young people and new media*. Livingstone calls for the combination of "child-centred and media-centred approaches" (Livingstone, 2002, p. 17), but ignores the dimension of a critical political economy-centred approach. In contrast, Montgomery (2000) has stressed that the problems that the capitalist political economy is creating for youth media usage should be fundamental aspects of research: "Many commercial teen sites are little more than survey-research enterprises disguised as

content, which in turn sell the collected data to third parties. Sophisticated profiling software is employed frequently, tracking every move on-line not just on individual Web sites, but on every site visited" (Montgomery, 2000, p. 65). The goal would be to foster "education, community-building, civic participation, and collaboration among youth" (Montgomery, 2000, p. 66). This would require advancing non-commercial civic media. This can be seen as an example of a critical approach to media research on young people that criticizes traditional approaches "for being instrumentalist and for serving, often unwittingly, the interest of dominant groups" (Cecez-Kecmanovic, 2005, p. 22). The traditional approaches to media studies can be seen as "defending the status quo and ultimately reinforcing power structures" (Cecez-Kecmanovic, 2005, p. 22). The basic assumption of the approach employed in this paper is that a critical theory and critical studies approach is needed for analyzing SNS usage by young people.

To develop a critical approach to the assessment of the implications of SNS usage by young people for society I first examine three different logics of technology assessment, in section 2. The approach of complex, dialectical technology assessment is introduced. This approach is applied to SNS (section 3). An empirical study of SNS usage is then presented as an example of complex, dialectical technology assessment. First in section 4, the empirical methodology is explained detailing a survey about SNS usage by students. Most students fall in the group that contains people that are aged 18-34 years. This group is also the largest user group on SNS. Therefore studying SNS usage and attitudes towards SNS by students gives important insights about young people's use of technologies. The survey contained quantitative and qualitative questions and aimed at assessing the role of surveillance in the usage of SNS by students and the main perceived advantages and disadvantages. Some of the results of this survey are presented in section 5 (for the full research report see Fuchs, 2009b). In section 6, some conclusions are drawn.

THREE LOGICS OF TECHNOLOGY ASSESSMENT

In this section, I will discuss three causal logics of technology assessment: technological determinism, the social construction of technology, the dialectic of technology and society.

Technological determinism is a kind of explanation of the causal relationship of media/technology and society that assumes that a certain media or technology has exactly one specific effect on society and social systems. In case that this effect is assessed positively, we can speak of techno-optimism. In case that the effect is assessed negatively, we can speak of techno-pessimism. Techno-optimism and techno-pessimism are the normative dimensions of technological determinism.

The problem of techno-optimistic and techno-pessimistic accounts is that they are only interested in single aspects of technology and create the impression that there are only one-sided effects. They lack a sense for contradictions and the dialectics of technology and society and can therefore be described as technological deterministic forms of argumentation. Technological optimism and pessimism assume that "technology leads to a situation of inescapable necessity. […] To optimists, such a future is the outcome of many free choices and the realization of the dream of progress; to pessimists, it is a product of necessity's iron hand, and it points to a totalitarian nightmare" (Marx & Smith, 1994, p. xii). Rob Kling (1994) characterizes technological optimism as technological utopianism. These are "analyses in which the uses of specific technologies play a key role in shaping a benign social vision" (Kling, 1994, p. 151). Technological pessimism/anti-utopianism "examines how certain broad families of technology are key enablers of a harsher and more destructive social order" (Kling, 1994, p. 151). The main problem of these approaches for Kling is that they see certain effects of technologies as necessities and are based on linear logics, the absence of contingencies, and on causal simplification. Many scholars therefore consider technological

optimism and technological pessimism as forms of technological determinism. Technological determinism sees technology as developing independently from society, but as inducing certain societal effects with necessity (Cohen, 1978, p. 147; Kling, Rosenbaum, & Sawyer, 2005, pp. 13, 188; Lister et al., 2003, p. 391; Shade, 2003). Technological determinism assumes that "technologies change, either because of scientific advance or following a logic of their own; and [that] they then have effects on society" (MacKenzie & Wajcman, 1999a, p. 3). It is based on "a simple cause-and-effect-sequence" (MacKenzie & Wajcman, 1999b, p. xiv). "Such determinism treats technology as both panacea and scapegoat" (Shade, 2003, p. 433).

Technological determinism is a fetishism of technology (Robins & Webster, 1999), "the idea that technology develops as the sole result of an internal dynamic, and then, unmediated by any other influence moulds society to fit its pattern" (Winner, 1980, 1999, p. 29). Technological determinism is "typified by sentences in which 'technology,' or a surrogate like 'the machine,' is made the subject of an active predicate: 'The automobile created suburbia.' […] 'The robots put the riveters out of work'" (Marx & Smith, 1994, p. xi). These arguments are frequently accompanied by the assumption that technology drives history (Marx & Smith, 1994). Technological determinism can therefore also "be taken to mean that the laws of nature determining human history do so through technology" (Bimber, 1994, p. 87). Classical examples of technological determinism are the assumptions that modern technologies result in the forgetting of being (Seinsvegessenheit, Martin Heidegger), desensualization (Arnold Gehlen), inherent technological necessities and the end of politics (Helmut Schelsky), a dominative megamachine (Lewis Mumford), the decline of the Occident (Oswald Spengler), technological tyranny (Jacques Ellul), or to the emergence of a global village (Marshall McLuhan). Marien (2006) applies the distinction between techno-optimism and techno-pessimism to the information society discourse in order to

discern between information society enthusiasts and information society critics.

An alternative to technological determinism is the social construction of technology approach (SCOT): Pinch and Bijker (1987) argue that technologies are socially constructed, that their design is a manifestation of how groups interpret the social world, which problems they see, and which solutions to these problems they consider adequate. The SCOT approach suggests that technical things do not matter at all (Winner, 1999). There is a neglect of the ways that technologies shape society (MacKenzie & Wajcman, 1999a, pp. 22f). The SCOT approach reverses technological determinism: it is no longer technology that fully determines society, but society that fully determines technology. Both approaches are based on one-dimensional causality.

An alternative that avoids technological and social determinisms is to conceptualize the relationship of technology and society as dialectical: society conditions the invention, design, and engineering of technology and technology shapes society in complex ways. Technology is conditioned, not determined by society, and vice versa. This means that societal conditions, interests, and conflicts influence which technologies will emerge, but technology's effects are not predetermined because modern technologies are complex wholes of interacting parts that are to certain extents unpredictable (Perrow, 1999). Technology shapes society in complex ways, which means that frequently there are multiple effects that can stand in contradiction with each other. Because society and technology are a complex system, which means that they have many elements and many interactions between these elements, it is unlikely that the interaction of the two complex systems technology and society will have one-dimensional effects. Based on a structuration theory framework, one can argue that technology is medium (enabling and constraining) an outcome of society (Fuchs, 2008). Hughes (1994, p. 102) says that "social development shapes and is shaped by technology". Lievrouw and Livingstone argue that "new media technologies both shape, and are

shaped by, their social, economic and cultural contexts" (Lievrouw & Livingstone, 2002, p. 8). Hofkirchner (2007) terms such dialectical accounts of the relationship of technology and society mutual shaping approaches.

A critical theory of technology and society implies a particular mutual shaping approach that adds the idea that technological development interacts with societal contradictions. A critical theory of media and technology is based on dialectical reasoning (see Figure 1). This allows us to see the causal relationship of media/technology and society as multidimensional and complex: a specific media/technology has multiple, at least two, potential effects on society and social systems that can co-exist or stand in contradiction to each other. Which potentials are realized is based on how society, interests, power structures, and struggles shape the design and usage of technology in multiple ways that are also potentially contradictory. Andrew Feenberg says in this context:
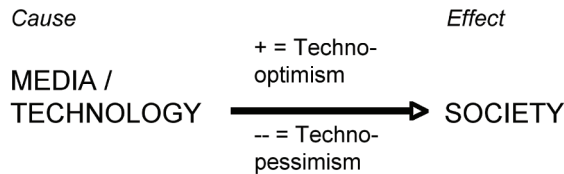
Critical theory argues that technology is not a thing in the ordinary sense of the term, but an 'ambivalent' process of development suspended between different possibilities. [...]. On this view, technology is not a destiny but a scene of struggle. It is a social battlefield, or perhaps a better metaphor would be a 'parliament of things' in which civilizational alternatives contend. [...] Critical theory holds that there can be at least two different modern civilizations based on different paths of technical development. [...] Technologies corresponding to different civilizations thus coexist uneasily within our society (Feenberg, 2002, p. 15).

The dialectical critical theory of technology is grounded in the works of Karl Marx, who said that technology has contradictory potentials and that under capitalism the negative ones predominate:
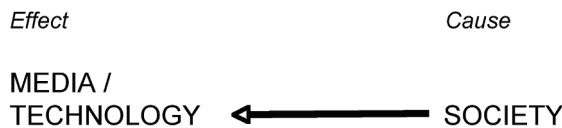
The contradictions and antagonisms inseparable from the capitalist application of machinery do not exist, they say, because they do not arise

Figure 1. Three causal logics of technology assessment: technological/media determinism, social construction of technology, and the dialectic of technology/media & society
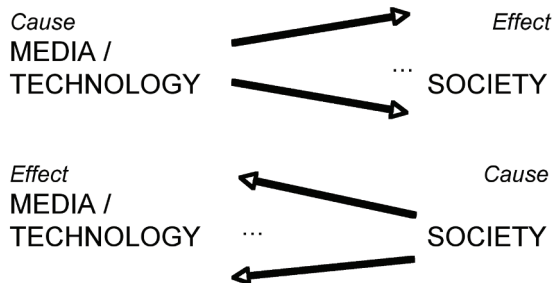
Technological/Media determinism:

Cause   *Effect*

                              + = Techno-
                              optimism

MEDIA /
TECHNOLOGY   ──────────────▶ SOCIETY

                              -- = Techno-
                              pessimism

Social construction of technology:

Effect   *Cause*

MEDIA /
TECHNOLOGY   ◀────────────── SOCIETY

Dialectic of technology/media & society:

Cause   *Effect*
MEDIA /   ─────────▶
TECHNOLOGY   ─────────   ... SOCIETY
                                  ▶

Effect   *Cause*
MEDIA /   ◀─────────
TECHNOLOGY   ...   SOCIETY
          ◀─────────

out of machinery as such, but out of its capitalist applications! Therefore, since machinery in itself shortens the hours of labour, but when employed by capital it lengthens them; since in itself lightens labour, but when employed by capital it heightens its intensity; since in itself it is a victory of man over the forces of nature but in the hands of capital it makes man the slave of those forces; since in itself it increases the wealth of the bourgeois economist simply states that the contemplation of machinery in itself demonstrates with exactitude that all these evident contradictions are a mere semblance, present in everyday reality, but not existing in themselves, and therefore having no theoretical existence either. Thus her manages to avoid racking his brains any more, and in addition implies that his opponent is guilty of the stupidity of contending, not against the capitalist application of machinery, but against machinery itself (Marx, 1867, pp. 568f).

Also Herbert Marcuse is a representative of a dialectical critical theory of technology that identifies contradictory potentials of technology: "Technics by itself can promote authoritarianism as well as liberty, scarcity as well as abundance, the extension as well as the abolition of toil" (Marcuse 1941, 1998, p. 41). A critical theory of technology is the foundation for critical information systems studies:

Critical IS research specifically opposes technological determinism and instrumental rationality underlying IS development and

seeks emancipation from unrecognized forms of domination and control enabled or supported by information systems. [...] Critical IS researchers produce knowledge with the aim of revealing and explaining how information systems are (mis)used to enhance control, domination and oppression, and thereby to inform and inspire transformative social practices that realize the liberating and emancipatory potential of information systems (Cecez-Kecmanovic, 2005, p. 19).

Critical Internet studies (CIs) can be seen as a subfield of Internet research (Fuchs, 2010c) and of critical information systems research. CIs analyzes how the Internet is embedded into capitalism and other forms of domination and how the Internet is used as tool of domination and resistance against domination. It makes uses of approaches such as Marxist media studies, Frankfurt school critical theory, critical political economy of the media and communication, or critical cultural studies (Fuchs, 2010c). Mark Andrejevic (2009) and Paul A. Taylor (2009) have argued that critical theory and critical media theory should be applied to the realm of digital media. They have in this context coined the notions 'critical media studies 2.0' and 'critical theory 2.0'. Critical Internet studies are growing in size and importance. An indication is that more than 1000 people registered for the CIs conference "The Internet as Playground and Factory" (see: http://www.digitallabor.org) that took place at the New School in November 2009 (see the conference reports: Fuchs, 2009a; Golumbia, 2009; Scholz, 2009). Works in critical Internet studies include for example: the analysis of cyberspace based on Marxian social theory (Dyer-Witheford, 1999; Fuchs, 2008, 2010a, 2010b, 2010c; Hakken, 2003), the relationship of the Internet to capitalism (Beller, 2003; Dean, 2004, 2005; Fuchs, 2008, 2010a, 2010b, 2010c; Scholz, 2008; Terranova, 2004), Internet surveillance (Andrejevic, 2007), or critical Internet culture (Lovink, 2008). In contrast SNS research is dominated by uncritical affirmative studies, with only a few exceptions

of critical studies of SNS thus far (for example: Beer, 2008; Fuchs, 2009b).

Based on these theoretical foundations, in the following section I will give an example for technology assessment that is based on a complex, dialectical approach.

An Example for Complex, Dialectical Technology Assessment: Social Networking Sites

The difference between a deterministic and a dialectical analysis of the media can be shown with the help of an empirical survey study. Social networking sites (SNS) are web-based platforms that integrate different media, information and communication technologies, that allow at least the generation of profiles that display information that describes the users, the display of connections (connection list), the establishment of connections between users that are displayed on their connection lists, and the communication between users. SNS allow the establishment of new friendships, communities, and the maintenance of existing friendships. Examples are Facebook, MySpace, Xing, Friendster, studiVZ, LinkedIn, hi5, Orkut, Vkontakte, or Lokalisten.

We can distinguish three kinds of SNS research: (1) techno-pessimistic SNS research, (2) techno-optimistic SNS research, (3) critical/dialectical SNS research

Techno-pessimistic approaches conclude that SNS are dangerous and pose primarily threats for the users, especially for kids, adolescents, and more generally young people (for example: Acquisti & Gross, 2006; Dwyer, 2007; Dwyer, Hiltz, & Passerini, 2007; Gross, Acquisti, & Heinz, 2005). Acquisti and Gross (2006) and Gross, Acquisti, and Heinz (2005) argue that the SNS users in their studies showed a very low concern for privacy. Dwyer, Hiltz, and Passerini (2007) conducted a quantitative survey (N=117) of Facebook and MySpace users. They found that Facebook users were more likely to reveal identifying information and MySpace users more likely to reveal rela-

tionship status. Dwyer (2007) conducted interviews with SNS users and concluded: "While most social networking sites did offer privacy options, most participants did not make much of an effort to customize who could view their profile". Frederic Stutzman (2006) undertook a survey (N=200) of students who use Facebook. He found that a "large number of students share particularly personal information online".

One can also characterize this approach as victimization discourse. Such research concludes that SNS pose threats that make users potential victims of individual criminals, such as in the case of cyberstalking, sexual harassment, threats by mentally ill persons, data theft, data fraud, etc. Frequently these studies also advance the opinion that the problem is a lack of individual responsibility and knowledge and that as a consequence users put themselves at risk by putting too much private information online and not making use of privacy mechanisms, for example by making their profile visible for all other users.

One problem of the victimization discourse is that it implies young people are irresponsible, passive, ill informed; that older people are more responsible and that the young should take the values of older people as morally superior and as guidelines; and especially that there are technological fixes to societal problems. It advances the view that increasing privacy levels technologically will solve problems and ignores that this might create new problems because decreased visibility might result in less fun for the users, less contacts, and therefore less satisfaction, as well as in the deepening of information inequality. Another problem is that such approaches implicitly or explicitly conclude that communication technologies as such have negative effects. These are pessimistic assessments of technology that imply that there are inherent risks in technology. The causality underlying these arguments is one-dimensional: it is assumed that technology as cause has exactly one negative effect on society. But both technology and society are complex, dynamic systems (Fuchs, 2008). Such systems are to a certain extent unpredictable and their complexity makes it unlikely that they will have exactly one effect (Fuchs, 2008). It is much more likely that there will be multiple, at least two, contradictory effects (Fuchs, 2008). The techno-pessimistic victimization discourse is also individualistic and ideological. It focuses on the analysis of individual usage behaviour without seeing and analyzing how this use is conditioned by the societal context of information technologies, such as surveillance, the global war against terror, corporate interests, neoliberalism, and capitalist development.

Techno-pessimistic accounts are contradicted by other studies. So for example Jones, Millermaier, Goya-Martinez and Schuler (2008) conducted a content analysis of MySpace sites (N=1378) and concluded: "This study did not find any evidence of widespread disclosure of information that would be easily used for stalking or other forms of offline harassment". Ybarra and Mitchell (2008) conducted a survey of SNS users (N=1588) that showed that 4% of users reported an unwanted sexual solicitation. Alice Marwick (2008) therefore argues that politics and the media have created an overdrawn moral panic about online predators who want to sexually abuse kids with the help of MySpace. This panic, in her view, does not correspond to the reality of SNS. Such data allow us to conclude that the victimization discourse is a construction that serves ideological purposes. It distracts from more serious issues such as corporate interests and state surveillance.

Techno-optimistic SNS research sees SNS as autonomous spaces that empower young people and help them to construct their own autonomy that they need in order to become adults and to strengthen their personality (for example: Boyd, 2006, 2007, 2008). The techno-optimistic discourse is one of empowerment. It stresses the potential of technology for autonomy, personal development, freedom, the formation, maintenance, and deepening of communities, love, or friendships. This discourse assesses SNS fairly positively; it mainly sees advantages, and considers disadvantages as ideological constructs or as minor issues. Techno-optimistic accounts focus on positive effects of SNS.

Some examples of this discourse can be given. Boyd (2008) argues that teenagers are controlled in school by teachers and at home by parents and therefore seek autonomous spaces that they need for identity formation and their personal development. SNS would be such autonomous spaces. Ellison, Steinfield, and Lampe (2007) conducted empirical research on the quality of social connections in the social networking platform Facebook. Their method was a quantitative empirical online survey with a random sample of 800 Michigan State University undergraduate students, from which 286 completed the survey. The major result of the study was that "participants overwhelmingly used Facebook to keep in touch with old friends and to maintain or intensify relationships characterized by some form of offline connection such as dormitory proximity or a shared class". Valkenburg, Jochen, and Alexander (2006) have conducted a psychological survey of SNS users (N=881) and found that positive feedback on profiles enhances adolescents' self-esteem and wellbeing. Raacke and Bonds-Raacke (2008) conducted a study that showed that the majority of college students use SNS for making new friends, locating old friends, and staying in touch with existing friends.

Just like techno-pessimism, techno-optimism is a one-sided discourse that ignores the multiple, contradictory causality of complex systems (Fuchs, 2008). Just like that it is unlikely that SNS only put users at risk, it is one-dimensional to assume and unlikely that SNS only empower users. The empowerment discourse is also individualistic because it focuses research primarily on how individuals use SNS for making connections, maintaining or recovering friendships, falling in love, creating autonomous spaces, etc. It does not analyze how technology and technology use are framed by political issues and issues that concern the development of society, such as capitalist crises, profit interests, global war, the globalization of capitalism, or the rise of a surveillance society (Fuchs, 2008). The problem of techno-optimistic and techno-pessimistic accounts is that they are only interested in single aspects of SNS and create the impression that there are only one-sided effects of these platforms. They lack a sense for contradictions and dialectics.

Critical SNS studies are viable alternatives to techno-optimistic and techno-pessimistic SNS research. David Beer (2008, pp. 523f) says that most studies of SNS are

overlooking the software and concrete infrastructures, the capitalist organisations, the marketing and advertising rhetoric, the construction of these phenomena in various rhetorical agendas, the role of designers, metadata and algorithms, the role, access and conduct of third parties using SNS, amongst many other things. […] Capitalism is there, present, particularly in the history, but it is at risk of looming as a black box in understandings of SNS. […] This is what is missing, a more political agenda that is more open to the workings of capitalism.

One important aspect of critical studies is that they focus on the critique of society as totality. They frame research issues by the macro context of the development dynamics of society as a whole. Herbert Marcuse has argued in this respect that critical research analyzes and criticizes "the totality of the established world" (Marcuse, 1937, p. 134). "It is more due to the theory's claim to explain the totality of man and his world in terms of his social being" (Marcuse, 1937, p. 134f). SNS usage is conditioned by the capitalist economy, the political system, and dominant cultural value patterns and conflicts.

Methodology

The research team conducted an empirical survey study on the relationship of surveillance society and SNS usage by students in Salzburg (Fuchs, 2009b). The survey used a questionnaire that consisted of 35 single and multiple-choice questions, three open-ended questions, and five interval-scaled questions. The questionnaire was implemented as an electronic survey with the help of the online tool SurveyMonkey. Two open questions asked the respondents about the

main advantages and disadvantages of SNS. In a complex, dialectical research approach (complex technology assessment), we assume that there are not only advantages or disadvantages of these platforms, but that there are multiple effects that contradict each other.

The research was carried out from October to December 2008. The questionnaire was available for 50 days to students. The potential respondents were students in Salzburg, Austria. In order to reach them, the research team sent out invitations for participation with the help of the University of Salzburg's eLearning platform Blackboard, we asked local online platforms that are frequently used by students in Salzburg to post invitations on their platforms and to send out newsletters (http://www.unihelp.cc, http://www.salzburg24.at, http://www.where2be.at, http://www.salzblog.at). We also posted invitations to all discussion groups on studiVZ, Facebook, and MySpace that have to do with students' life in Salzburg. These were in total 53 groups. We distributed flyers and hung up posters at Salzburg's three universities: Paris Lodron University of Salzburg (Faculty of Humanities and Social Sciences, Faculty of Natural Sciences, Faculty of Law, Faculty of Theology), Mozarteum Salzburg: The University of Music, Theatre and Visual Arts, and the Paracelsus Medical University. An invitation to participate in the survey was sent as part of a newsletter to all students at the University of Salzburg on November 18, 2008. As an incentive for participation, we gave away three Amazon vouchers (60€, 25€, 25€) to randomly selected students who completed the survey.

The survey participants were asked to agree that their answers are stored in a database on the SurveyMonkey website, that this data is transferred to the researchers' computers, where it is analyzed, and to agree that the resulting data is published. SurveyMonkey automatically stores the IP addresses of the respondents. This can in principle create problems if the researchers have access to IP data from Internet service providers or pass on data to providers. The respondents were assured that their data ware solely to be used for conducting an academic study and would not be passed down to other parties or individuals. The IP addresses were deleted from the data set once the data collection was finished. After the data set was downloaded from SurveyMonkey, it was deleted from the online survey platform.

We received 557 qualitative answers to the question that addressed advantages and 542 relating to disadvantages. We identified 18 categories for the advantages and 16 categories for the disadvantages and analyzed the answers to the two open questions by content analysis (Krippendorff, 2004) so that each text was mapped with one or more categories. Our respondents tended to list more than one major advantage and disadvantage. Therefore each answer was mapped with more than one category in most cases.

The mean age of our respondents was 24.16 years, confirming that our study targeted young people's use of the Internet in general and SNS in particular. The mean number of semesters studied by the respondents was 6.4. The sample was dominated by undergraduate and graduate students, which accounted in total for more than 87% of all respondents.

Research Results

Figure 2 presents the major opportunities of SNS that our respondents mentioned. Figure 3 shows the major perceived disadvantages of SNS.

Here are some typical answers given by students when asked about the main advantages of SNS:

"Remaining in contact after a joint period of studying, collaboration, a journey or simply a period of more intensive contact has come to an end, e.g. after relocating etc. You also know years later how/where to find people" (respondent #47).

"You have all your friends in one spot, you do not permanently have to ask for mobile phone numbers" (#82).

"You can find old acquaintances and stay in touch with them. I have also already contacted students in order to co-operate with them in various seminars and internships" (#93).

"Such platforms make it easier to stay in contact also across larger distances – for example with former schoolmates" (#104).

"Connects people from all over the world and you find old and new friends" (#123).

"It is easy to establish contact with colleagues that you have thus far hardly known" (#199).

"To come in touch or stay in touch with people that have the same interests as you; you can build up a small network of friends and acquaintances; finding others and being found" (#267).

"Networking of students, exchange between like-minded people" (#377).

These examples show that students think that social relationship management is an important advantage of SNS. SNS are social spaces for maintaining and extending social networks.

Some typical answers given when asked about the main disadvantages were:

"Big Brother is watching you" (respondent #6),

"spying by employers" (#65),

"My data are sold for advertising. You become too "transparent" for strangers" (#93),

"Personal data are sold to different corporations" (#109),

"Data surveillance, the transparent human, strangers gain insights into privacy, selling of private data and browsing behaviour" (#224),

"To be "spied on" by a third party" (#409),

*"The surveillance society" (#454).*

These examples show that surveillance and surveillance for economic ends are big concerns of students who use SNS.

The data from our survey show that 59.1% consider maintaining existing contacts and 29.8% establishing new contacts as major advantage of social networking sites, whereas 55.7% say that surveillance as a result of data abuse, data forwarding, or a lack of data protection is a major threat of such platforms. Communication and the resulting reproduction and emergence of social relations are overwhelmingly considered as major advantage, potential surveillance overwhelmingly as major disadvantage. The impression of the majority of the respondents is that social networking sites enable communicative advantages that are coupled with the risk of surveillance and reduced privacy. How can we explain that they are willing to take the surveillance risk that they are knowledgeable and conscious about?

Communication and surveillance are antagonistic counterparts of the usage of commercial social networking platforms: our data show that students are heavily using social networking sites and are willing to take the risk of increased surveillance although they are very well aware of surveillance and privacy risks. The potential advantages seem to outstrip the potential disadvantages. It is not an option for them not to use social networking platforms because they consider the communicative and social opportunities associated with these technologies as very important. At the same time they are not stupid, uncritical, or unaware of potential dangers, but rather very conscious of the disadvantages and risks. They seem to fear that they miss social contacts or will be disadvantaged if they do not use platforms such as studiVZ, Facebook, MySpace. Not using these technologies or stopping using them is clearly not an option for most of them because it would result in disadvantages such as reduced social contacts and the feeling of not participating in something that has become important for the young generation.

The crucial aspect of the antagonism between communicative opportunities and

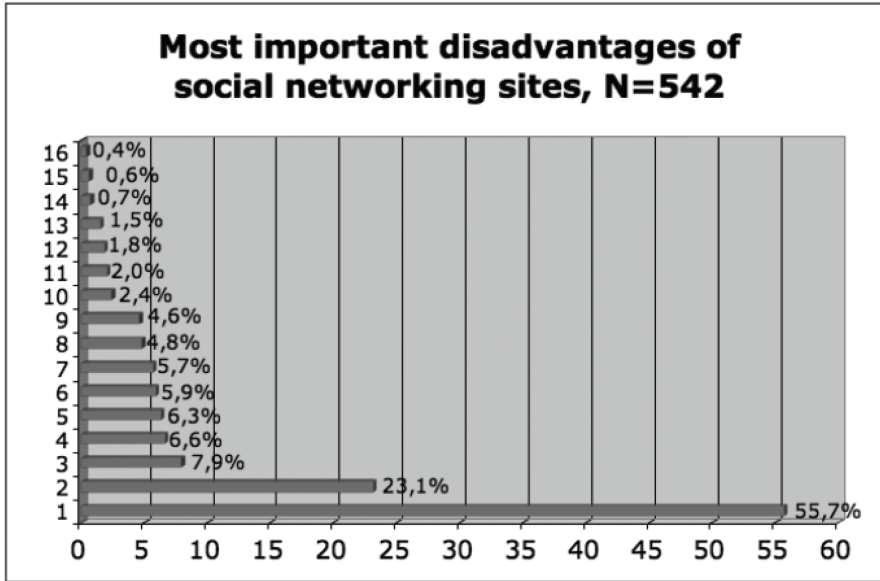*Figure 2. Major perceived opportunities of social networking sites (N=557)*

Most important advantages of social networking sites, N=557
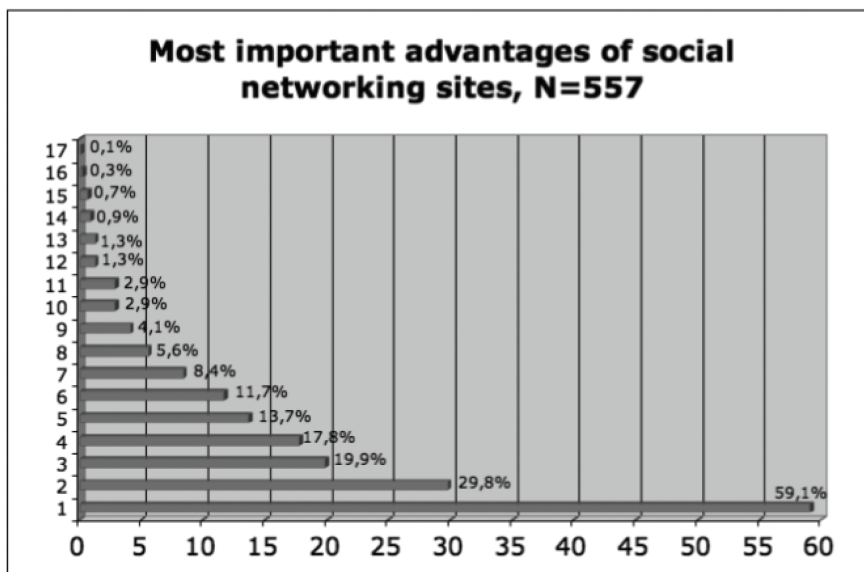
Major perceived opportunities of social networking sites

1: Maintaining existing contacts, friendships, family relations, etc
2: Establishing new contacts with unknown people or with people whom one hardly knows and can easier contact online
3: Finding and renewing old contacts
4: Communication in interest groups and hobby groups
5: Communication and contacts in general (no further specification)
6: International and global character of communication and contacts
7: Sharing and accessing photos, music, videos
8: Entertainment, fun, spare time, amusement
9: Source of information and news
10: Browsing other profiles, "spying" on others
11: Free communication that saves money
12: Reminder of birthdays
13: Business communication, finding jobs, self-presentation for potential employers
14: Being hip and trendy
15: Mobility, access from anywhere
16: Self-presentation to others (for non-business reasons)
17: Flirting, sex, love

the surveillance risk is that alternative social networking platforms that are non-commercial and non-profit and therefore do not have an interest in economic surveillance and that see privacy as a fundamental right that needs to be well-protected under all circumstances, are hardly available or hardly known. Commercial profit-oriented sites such as studiVZ, Facebook, or MySpace have reached a critical mass of users that is so large that these commercial providers have become cultural necessities for most young people. For non-commercial platforms, it is hard to compete with these economic corporations because the latter have huge stocks of financial means (enabled by venture capital or parent companies such as News Corporation or Holtzbrinck), personnel, and technological resource. Capitalist business

Figure 3. Major perceived risks of social networking sites (N=542)

Most important disadvantages of social networking sites, N=542

16	0,4%
15	0,6%
14	0,7%
13	1,5%
12	1,8%
11	2,0%
10	2,4%
9	4,6%
8	4,8%
7	5,7%
6	5,9%
5	6,3%
4	6,6%
3	7,9%
2	23,1%
1	55,7%

Major perceived risks of social networking sites

1: Data abuse or data forwarding or lack of data protection that lead to surveillance by state, companies, or individuals
2: Private affairs become public and result in a lack of privacy and privacy control
3: Personal profile data (images, etc) are accessed by employer or potential employers and result in job-related disadvantages (such as losing a job or not getting hired)
4: Receiving advertising or spam
5: Lack or loss of personal contacts, superficial communication and contacts, impoverishment of social relations
6: Stalking, harassment, becoming a crime victim
7: Commercial selling of personal data
8: Data and identity theft
9: I see no disadvantages
10: It is a waste of time
11: Virus, hacking and defacing of profiles, data integrity
12: Internet addiction, increase of stress and health damages
13: Unrealistic, exaggerated self-presentation, competition for best self-presentation
14: Disadvantages at university because professors can access profiles
15: Costs for usage can be introduced (or exist in the case of some platforms)
16: Friends can get a negative impression of me

interests and the unequal distribution of assets that is characteristic for the capitalist economy result in the domination of markets by a handful of powerful corporations that provide services and that make influence by non-commercial, non-profit operators difficult.

Given the fact that students are knowledgeable of the surveillance threat, it is obvious that they are willing to use alternative platforms instead of the major corporate ones, if such alternatives are available and it becomes known that they minimize the surveillance threat. In the opinions of our respondents it is not students who should be blamed for potential disadvantages that arise from their usage of social networking platforms that threaten privacy

and advance surveillance. It is the corporations that engage in surveillance and enable surveillance that are to be blamed. Corporate social networking platforms are, for example, not willing to abstain from surveillance for advertising because they have profit interests. The economic and political logic that shapes social networking corporations' platform strategies thus create antagonism between communicative opportunities and surveillance threats. A dialectical analysis of SNS shows that they neither advance only opportunities, nor only risks, but that SNS usage is framed by power structures of society and therefore by phenomena such as capitalism and surveillance. As a result, there are both actual advantages and disadvantages for the users. The advantages (communication, community) can only be achieved through the disadvantages (data surveillance, commercialization, commodification). This shows the antagonistic structure of communication technologies in capitalism and suggests the impossibility that capitalism poses advantages without disadvantages.

DISCUSSION

Summary of Research Results

Maintaining existing friendships, family contacts, etc. with the help of social networking sites is the most important advantage that the students in our survey mention. 59.1% of them consider it as a major advantage. 29.8% say that establishing new contacts is very important, 19.9% mention finding and renewing old contacts and friendships as major advantage. Maintaining existing contacts seems to be more important than establishing new contacts or renewing old contacts on social networking sites.

55.7% of the respondents say that political, economic, or personal surveillance as a result of data abuse, data forwarding, or a lack of data protection is a main threat of social networking sites. 23.1% say it is problematic that personal affairs that should be kept private and should

not be known by others tend to become public on social networking sites.

Although students are very well aware of the surveillance threat, they are willing to take this risk because they consider communicative opportunities as very important. That they expose themselves to this risk is caused by a lack of alternative platforms that have a strongly reduced surveillance risk and operate on a non-profit and non-commercial basis.

Implications of Research

The Internet is a dialectical space that contains both positive and negative potentials, potentials for dominative competition and for co-operation that contradict each other (for a detailed discussion of this hypothesis see Fuchs 2008). The Internet acts as critical medium that enables information, co-ordination, communication, and co-operation of protest movements (Fuchs, 2008), it has a potential to act as a critical alternative medium for progressive social movements, as examples such as Indymedia show. The Internet besides being a tool of domination also supports cyberprotest and cyberactivism (Calenda & Mosca, 2009; Fuchs, 2008; McCaughey & Ayers, 2003; van de Donk et al., 2004). The Internet is both a social medium and a space of accumulation. The first side of the dialectic, the corporate enclosure of the web 2.0 commons and the exploitation of the Internet prosumers, is a very strong, dominant and present form of extractive power, whereas the second side that may exert counter-power is not automatically given, but only a potential that is hard to realize, is facing precarious conditions of realization, and can only be realized in hard and enduring struggles.

The social networking site Facebook introduced a feature called Beacon in November 2007. The technology collects data about user activities on Facebook and on external sites (such as online purchases) and reports the results as stories on a newsfeed to the users' Facebook friends. Beacon collects usage data about users on other partner websites, even if the user is logged out from Facebook, and uses

this data for personalized and social advertising (targeting a group of friends) on Facebook. The partner sites include for example eBay, Live-Journal, New York Times, Sony, STA Travel, or TripAdvisor. Users can opt out from this service, but it is automatically activated and legalized by Facebook's privacy policy. Many users were concerned that Beacon violates their privacy. The civic action group MoveOn (http://www.moveon.org/) started a Facebook group and an online petition for protesting against Beacon. Many users joined the online protest, which put pressure on Facebook because the corporation became afraid that a large number of users would leave Facebook, which would mean less advertising revenue and therefore less profit. In December 2007, Facebook founder Mark Zuckerberg wrote an email to all users and apologized. A privacy setting that users can opt out of the usage of Beacon was introduced. However, it is an opt-out solution, not an opt-in solution, which means that potentially many users will not deactivate this advertising feature, although they might have privacy concerns.

In October 2009, student protests against the commodification and economization of higher education emerged at all Austrian universities. The students squatted in lecture halls and demanded more public funding for higher education and the introduction of democratic decision-making structures in the universities. The protests spread to other countries like Germany and Switzerland. The students made use of social media such as Facebook and Twitter for organizing and communicating their protests (see: http://www.unibrennt.at). They also used Internet live video streaming for transmitting the discussions from the squatted lecture halls to the public.

These two examples show that SNS and other social media can be used for cyberprotest.

It is not an option for students to stop using social networking sites because there is a surveillance threat. They want to enjoy the social and communicative advantages that these sites pose, but are at the same time concerned about data surveillance. Commercial profit-oriented SNS will not stop using targeted advertising and surveilling user data and behaviour because they have profit interests that can only be realized by commodifying users and user data. The only alternative that could enable surveillance-free SNS is to create non-commercial non-profit SNS. However, this might require a revolution on the Internet and to transform it from a predominantly corporate Internet into a predominantly commons-based Internet. Another step that might be taken is that critical citizens' groups try to watch how SNS engage in surveillance and to make the public aware of the threats posed by Internet corporations that engage in surveillance in order to accumulate capital.

Based on these findings, we recommend that critical citizens, critical citizens' initiatives, consumer groups, social movement groups, critical scholars, unions, data protection specialists/groups, consumer protection specialists/groups, critical politicians, critical political parties observe closely the relationship of surveillance and corporations and document instances where corporations and politicians take measures that threaten privacy or increase the surveillance of citizens. Such documentation is most effective if it is easily accessible to the public. The Internet provides means for documenting such behaviour. It can help to watch the watchers and to raise public awareness. In recent years, corporate watch organizations that run online watch platforms have emerged. Examples are:

CorpWatch Reporting (http://www.corpwatch.org),

Transnationale Ethical Rating (http://www.transnationale.org),

The Corporate Watch Project (http://www.corporatewatch.org),

Multinational Monitor (http://www.multinationalmonitor.org),

crocodyl: Collaborative research on corporations (http://www.crocodyl.org),

Endgame Database of Corporate Fines (http://www.endgame.org/corpfines.html),

Corporate Crime Reporter (http://www.corporatecrimereporter.com),

Corporate Europe Observatory (http://www.corporateeurope.org),

Corporate Critic Database (http://www.corporatecritic.org).

These examples show that there are potentials for building counter-hegemonic power that aims at raising critical awareness about certain political issues by watching and documenting what powerful actors, organizations, and institutions are planning and doing. In the case of the topic of surveillance, such citizen initiatives try to build counter-power and counter-hegemony by watching the watchers, surveilling the surveillers. There are certainly limitations to watchdog organizations and initiatives. They are generally civil society projects because it is unlikely that big corporations or governments support initiatives that tend to criticize corporations and governments with big amounts of money. Therefore such projects are frequently based on precarious, self-exploitative labour, and are confronted with a lack of resources such as money, activists, time, infrastructure, influence, etc. If political or economic institutions offer support, then there is a danger that they try to influence the activities of such projects, which can severely damage or limit the autonomy and critical facility of such projects. They seem to be trapped in an antagonism between resource precariousness and loss of autonomy that is caused by the fact that the control of resources is vital for having political influence in contemporary society and that resources in this very society are unequally distributed so that corporations and established political actors have much more power and influence than other actors. Given this situation, it would be a mistake not to try to organize citizens' initiatives, but one should bear in mind that due to the stratified character of capitalism it is more likely that such initiatives will fail and remain unimportant than that they will be successful in achieving their goals.

There are no easy solutions to the problem of civil rights limitations due to electronic surveillance. More surveillance does not solve problems such as terrorism, but rather brings about a climate of permanent suspicion where citizens are always automatically suspect of being criminals. It is short-sighted and a technological-deterministic attitude to think that more surveillance technology brings about more security and peace. Law and order politics are superficial measures that ignore the underlying socio-economic and political causes of societal problems. Corporations have an economic interest in surveillance. If they gather data on consumers/users, they can sell these data to advertising clients. As long as there is capitalism, there will be media corporations (such as studiVZ, Facebook, MySpace, and others) that sell their audience as commodity to advertising clients because they are necessarily driven by the logic of profitability. It is not an accident that corporations like studiVZ, Facebook, or MySpace have introduced advertising options such as personalized advertising that are based on the surveillance of profiles and usage behaviour. It is also not an accident that one has to opt out of such features, and not has to opt in.

Economic surveillance is profitable, therefore media corporations and other firms engage in it. It is unlikely that they will automatically limit these endeavours because their primary interest is and must be the accumulation of profits. Therefore opting out of existing advertising options is not a solution to the problem of economic and political surveillance. Even if users opt out, media corporations will continue to collect and assess certain data, to sell the users as audience commodity to advertising clients, and to give personal data to the police. Citizen action can limit surveillance actions of corporations, but it will not secure citizens from corporate and state surveillance because the underlying problems are dominant corporate interests and the existence of new imperialism (Harvey, 2003; Panitch & Leys, 2004; Wood, 2003). Surveillance on social networking sites should therefore be framed in the context of pressing political problems, such as global war and the unequal distribution of wealth and income. To try to advance critical awareness and to surveil corporate and political surveillers are important political moves for guaranteeing

civil rights, but they will ultimately fail if they do not recognize that electronic surveillance is not a technological issue that can be solved by technological means or by different individual behaviours, but only by bringing about changes of society.

Neo-Luddite solutions to electronic surveillance, i.e., to stop using the Internet or social networking sites, would not be a wise move because the data in our survey indicates that young people find making and maintaining contacts and friendships with the help of the Internet a tremendous opportunity that they consider very important. 59.1% see maintaining existing contacts and 29.8% establishing new contacts as major advantage of social networking sites. Neo-Luddism would create a group of critical Internet dropouts that would not only be disconnected from the Internet, but also disconnected from social opportunities that bring advantages. Neo-Luddism would therefore question electronic surveillance, but at the same time intensify the digital divide. It would bring disadvantages such as meeting less people and staying less in contact with family members, old friends, colleagues, etc.

One alternative is to create non-commercial, non-profit social networking platforms on the Internet. It is not impossible to create successful non-profit Internet platforms, as the example of Wikipedia, which is advertising-free, has free access, and is financed by donations, shows. But the difficulty is that social networking platforms have to store large amount of data, especially profile data that contain images, videos, etc, which requires tremendous server capacities. It is certainly easier and probably more efficient to organize such huge data storage endeavours in the form of profit-oriented businesses. But this orientation at the same time brings about the risk of extended and intensified electronic surveillance. We are not saying that non-commercial, non-profit platforms are devoid of this risk, but that there is a reduced likelihood that electronic surveillance for economic reasons will take place on

such platforms and an increased likelihood those platforms will try to protect their users from state surveillance. Within capitalism, it is certainly very difficult to try to organize such non-profit online alternatives because everything that is non-profit and non-commercial tends to be confronted by shortages of resources, which makes sustainable performance difficult. Trying to organize alternatives might be precarious, difficult, and confronted with a high probability of potential failure. But the same time it might be the only constructive alternative to corporate control and corporate concentration processes in the Internet economy that tend to reinforce processes of economic and political electronic surveillance.

ACKNOWLEDGMENT

REFERENCES

Acquisti, A., & Gross, R. (2006). Imagined communities: awareness, information sharing, and privacy on the Facebook. In P. Golle & G. Danezis (Eds.), *Proceedings of 6th workshop on privacy enhancing technologies* (pp. 36-58). Cambridge, UK: Robinson College.

Andrejevic, M. (2007). *iSpy: surveillance and power in the interactive era*. Lawrence, KS: University Press of Kansas.

Andrejevic, M. (2009). Critical media studies 2.0: an interactive upgrade. *Interactions: Studies in Communication and Culture*, *1*(1), 35–51. doi:10.1386/iscc.1.1.35_1

Beer, D. (2008). Social network(ing) sites. Revisiting the story so far: a response to Danah Boyd & Nicole Ellison. *Journal of Computer-Mediated Communication*, *13*(2), 516–529. doi:10.1111/j.1083-6101.2008.00408.x

Beller, J. (2003). The cinematic mode of production: towardsa a political economy of the postmodern. *Culture . Theory and Critique*, *44*(1), 91–106. doi:10.1080/1473578032000110486

Bimber, B. (1994). Three faces of technological determinism . In Smith, M. R., & Marx, L. (Eds.), *Does technology drive history? The dilemma of technological determinism* (pp. 79–100). Cambridge, MA: MIT Press.

Boyd, D. (2006). Friends, Friendsters, and MySpace top 8: writing community into being on social network sites. *First Monday*, *11*(12).

Boyd, D. (2007). *Viewing American class divisions through Facebook and MySpace*. Retrieved December 21, 2009, from http://www.danah.org/papers/essays/ClassDivisions.html

Boyd, D. (2008). Why youth (heart) social network sites: the role of networked publics in teenage social life . In Buckingham, D. (Ed.), *Youth, identity, and digital media* (pp. 119–142). Cambridge, MA: MIT Press.

Buckingham, D. (2006). Is there a digital generation? In Buckingham, D., & Willett, R. (Eds.), *Digital generations* (pp. 1–18). Mahwah, NJ: Lawrence Erlbaum.

Calenda, D., & Mosca, L. (Eds.). (2009). Special issue: changing politics through digital networks. *Information Communication and Society*, *12*(6), 767–953. doi:10.1080/13691180902801593

Cecez-Kevmanovic, D. (2005). Basic assumptions of the critical research perspectives in information systems. In Howcroft, D., & Trauth, E. M. (Eds.), *Handbook of critical information systems research* (pp. 19–46). Cheltenham, UK: Edward Elgar.

Cohen, G. A. (1978). *Karl Marx's theory of history: a defense*. Princeton, NJ: Princeton University Press.

Dean, J. (2004). The networked empire: communicative capitalism and the hope for politics . In Passavant, P. A., & Dean, J. (Eds.), *Empire's new clothes. Reading Hardt and Negri* (pp. 265–288). New York: Routledge.

Dean, J. (2005). Communicative capitalism: circulation and the foreclosure of politics. *Cultural Politics*, *1*(1), 51–74. doi:10.2752/174321905778054845

Dwyer, C. (2007). Digital relationships in the 'MySpace' generation: results from a qualitative study. In *Proceedings of the 40th Hawaii International Conference on System Sciences*, Los Alamitos, CA. Washington, DC: IEEE Press.

Dwyer, C., Hiltz, S. R., & Passerini, K. (2007). Trust and privacy concerns within social networking sites. A comparison of Facebook and MySpace. In *Proceedings of the 13th Americas Conference on Information Systems*. Redhook, NY: Curran.

Dyer-Witheford, N. (1999). *Cyber-Marx. Cycles and circuits of struggle in high-technology capitalism*. Urbana, IL: Universiy of Illinois Press.

Ellison, N., 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). doi:10.1111/j.1083-6101.2007.00367.x

Feenberg, A. (2002). *Transforming technology: a critical theory revisited*. Oxford, UK: Oxford University Press.

Fuchs, C. (2008). *Internet and society: social theory in the information age*. New York: Routledge.

Fuchs, C. (2009a). Conference report: The Internet as Playground and Factory. *tripleC, 7*(2), 399-400.

Fuchs, C. (2009b). *Social networking sites and the surveillance society. A critical case study of the usage of studiVZ, Facebook, and MySpace by students in Salzburg in the context of electronic surveillance*. Salzburg, Austria: Research Group UTI.

Fuchs, C. (2010a). (forthcoming). Class and knowledge labour in informational capitalism. *The Information Society*, *26*.

Fuchs, C. (2010b). Class, knowledge, and new media. *Media Culture & Society*, *32*(1), 1–10. doi:10.1177/0163443709350375

Fuchs, C. (2010c). *Foundations of critical media and information studies*. New York: Routledge.

Golumbia, D. (2009). Conference report: The Internet as Playground and Factory. *tripleC, 7*(2), 401-403.

Gross, R., Acquisti, A., & Heinz, H. J., III. (2005). Information revelation and privacy in online aocial networks. In *Proceedings of the 2005 ACM workshop on privacy in the electronic society* (pp. 71-80). New York: ACM Press.

Hakken, D. (2003). *The knowledge landscapes of cyberspace*. New York: Routledge.

Harvey, D. (2003). *The new imperialism*. Oxford, UK: Oxford University Press.

Hofkirchner, W. (2007). A critical social systems view of the Internet. *Philosophy of the Social Sciences*, *37*(4), 471–500. doi:10.1177/0048393107307664

Hughes, T. P. (1994). Technological momentum . In Smith, M. R., & Marx, L. (Eds.), *Does technology drive history? The dilemma of technological determinism* (pp. 101–113). Cambridge, MA: MIT Press.

(2007). Introduction: young people in the digital age: disaffected or displaced? InLoader, B. D. (Ed.), *Young citizens in the digital age* (pp. 1–17). New York: Routledge.

(1999a). Introductory essay: the social shaping of technology . InMacKenzie, D., & Wajcman, J. (Eds.), *The social shaping of technology* (pp. 3–27). Maidenhead, UK: Open University Press.

Jones, S., Millermaier, S., Goya-Martinez, M., & Schuler, J. (2008). Whose space is MySpace? A content analysis of MySpace profiles. *First Monday*, *13*(9).

Kling, R. (1994). Reading "All About" Computerization: How Genre Conventions Shape Non-Fiction Social Analysis. *The Information Society*, *10*(3), 147–172. doi:10.1080/01972243.1994.9960166

Kling, R., Rosenbaum, H., & Sawyer, S. (2005). *Understanding and communicating social informatics*. Medford, NJ: Information Today.

Krippendorff, K. (2004). *Content analysis* (2nd ed.). London: Sage.

Lievrouw, L., & Livingstone, S. (2002). Introduction: the social shaping and consequences of ICTs. In Lievrouw, L., & Livingstone, S. (Eds.), *The handbook of new media* (pp. 1–15). London: Sage.

Lister, M., Dovey, J., Giddings, S., Grant, I., & Kelly, K. (2003). *New media: a critical introduction*. New York: Routledge.

Livingstone, S. (2002). *Young people and new media*. London: Sage.

MacKenzie, D., & Wajcman, J. (Eds.). (1999b). Preface to the second edition. In *The social shaping of technology* (pp. xiv-xvii). Maidenhead, UK: Open University Press.

Marcuse, H. (1937). Philosophy and critical theory. In *Negations: essays in critical theory* (pp. 134-158). London: Free Association.

Marcuse, H. (1941/1998). Some social implications of modern technology. In *Collected papers of Herbert Marcuse, volume 1: Technology, war and fascism* (pp. 39-65). New York: Routledge.

Marwick, A. (2008). To catch a predator? The MySpace moral panic. *First Monday*, *13*(6).

Marx, K. (1867). *Capital* (*Vol. I*). London: Penguin.

Marx, L., & Smith, M. R. (Eds.). (1994). *Introduction. Does technology drive history? The dilemma of technological determinism* (pp. ix–xv). Cambridge, MA: MIT Press.

McCaughey, M., & Ayers, M. D. (Eds.). (2003). *Cyberactivism*. New York: Routledge.

Montgomery, K. (2000). Youth and digital media: a policy research agenda. *The Journal of Adolescent Health*, *27S*(2), 61–68. doi:10.1016/S1054-139X(00)00130-0

Panitch, L., & Leys, C. (Eds.). (2004). *Socialist Register 2004: The new imperial challenge*. New York: Monthly Review Press.

Perrow, C. (1999). *Normal accidents: living with high-risk technologies*. Princeton, NJ: Princeton University Press.

Pinch, T. J., & Bijker, W. E. (1987). The social construction of facts and artifacts: or how the sociology of science and the sociology of technology might benefit each other . In Bijker, W. E., Hughes, T. P., & Pinch, T. J. (Eds.), *The social construction of technological systems* (pp. 17–50). Cambridge, MA: MIT Press.

Raacke, J., & Bonds-Raacke, J. (2008). MySpace and Facebook: Applying the uses and gratifications theory to exploring friend-networking Sites. *Cyberpsychology & Behavior*, *11*(2), 169–174. doi:10.1089/cpb.2007.0056

Robins, K., & Webster, F. (1999). *Times of the technoculture*. New York: Routledge.

Rogers, E. (1995). *Diffusion of innovations*. New York: Free Press.

Scholz, T. (2008). Market ideology and the myths of web 2.0. *First Monday*, *13*(3).

Scholz, T. (2009). *Post-mortem conference mashup: The Internet as Playground and Factory*. Retrieved December 21, 2009, from http://molodiez.org/ipf_report_pdf12202009.doc

Shade, L. R. (2003). Technological determinism. In Jones, S. (Ed.), *Encyclopedia of new media* (pp. 433–434). Thousand Oaks, CA: Sage.

Stutzman, F. (2006). An evaluation of identity-sharing behavior in social network communities. *iDMAa Journal, 3*(1).

Tapscott, D. (1998). *Growing up digital*. New York: McGraw-Hil.

Taylor, P. A. (2009). Critical theory 2.0 and im/materiality: the bug in the machinic flows. *Interactions: Studies in Communication and Culture*, *1*(1), 93–110. doi:10.1386/iscc.1.1.93_1

Terranova, T. (2004). *Network culture*. London: Pluto.

Valkenburg, P. M., Peter, J., & Schouten, A. P. (2006). Friend networking sites and their relationship to adolescents' well-being and social self-esteem. *Cyberpsychology & Behavior*, *9*(5), 584–590. doi:10.1089/cpb.2006.9.584

van de Donk, W., Loader, B. D., Nixon, P., & Rucht, D. (Eds.). (2004). *Cyberprotest*. New York: Routledge.

Winner, L. (1980/1999). Do artifacts have politics? In MacKenzie, D., & Wajcman, J. (Eds.), *The social shaping of technology* (pp. 28–40). Maidenhead, UK: Open University Press.

Wood, E. M. (2003). *Empire of capital*. London: Verso.

Ybarra, M. L., & Mitchell, K. J. (2008). Distress, coping, and blogging: comparing new Myspace users by their intention to blog. *Pediatrics*, *121*(2), E350–E357.

ENDNOTES

[1]   Data source: alexa.com, top 500 sites, accessed on December 16th, 2009; measurement of traffic rank of websites: combination of average daily visitors and pageviews over the past 3 months.

[2]   Data source: quantcast.com, accessed on December 22nd, 2009

[3]   Data source: U.S Census Bureau, annual estimate of the resident population by five-year age groups, data for July 2008.

Christian Fuchs holds a venia docendi in the field ICTs and society. He is board member of the Unified Theory of Information Research Group. His fields of research and interest are: social theory, critical theory, media and society, information society studies. He is author of more than 120 academic publications, among them the monographs "Internet and Society: Social Theory in the Information Age" (New York: Routledge 2008) and "Foundations of Critical Media and Information Studies" (New York: Routledge 2010). He is co-ordinator of the research project "Social Networking Sites in the Surveillance Society" (funded by the Austrian Science Fund). Website: http://fuchs.uti.at