

Full Paper

Towards a pathology of social media

Christian Schieder*

Anja Lorenz†

The full transformational effects of Social Media have yet to be understood. Alongside its heavily discussed benefits, a number of potentially harmful effects have become apparent lately. Phenomena such as still increasing information overload, cyber-bullying, or loss of identity have been described in recent research literature from various domains. By means of a literature review our paper aims at reviewing, cataloguing and classifying these psychological and social disorders that have been reported to be related to Social Media engagement. We distinguish between active participation in and mere exposure to Social Media. Using a psychopathological classification scheme, we structure the identified symptoms and syndromes, providing a common language and taxonomy with which the identified disorders can be described and classified accurately. Thus, we are laying out a foundation necessary for the research into and the understanding of the aetiology and eventually the means for the prevention of the negative effects of Social Media usage within individuals in information societies.

1 Introduction

Following a study by the German publicly-owned media institutions [vEF11], more than 50 million people in Germany are using the Internet. A significant growth of web usage had been observed especially with seniors and women. Within little

*Chair of Business Information Systems, University of Technology Chemnitz, Germany, christian.schieder@wirtschaft.tu-chemnitz.de

†Chair of Business Information Systems, University of Technology Chemnitz, Germany, anja.lorenz@wirtschaft.tu-chemnitz.de

more than a decade (in 1997, only 6.7% of the German population was using the Internet) a new technology has been able to permeate the population regardless of social background, gender and age. First signs of the next wave of Internet adoption are visible on the horizon. This time, the Internet usage behaviour patterns will be affected in a fundamental manner. So far traditional media have tried to make the web a part of the mass media ecosystem – the media *for* the masses. With the advent of blogs, wikis and social networks as platforms now a fundamental shift happens towards a society where media are utilised *by* the masses to create and propagate their own contents. Apart from the apparent benefits of the usage of Social Media in many areas of everyday [BAK⁺11], the question concerning its downsides has become urging with several recent (social) media-related research findings.

To sustain the future development of Social Media and its enabling technologies, the awareness of risks, side effects and possible drawbacks is a necessity. For the communication on and about these aspects we need a common language, i. e. taxonomy of potential and realized *pathologies* (pathological phenomena). Therefore, our contribution aims not only at raising the awareness of the problem areas related to Social Media usage, but at creating a basis for a psychopathology of (social) media-related disorders in Web 2.0. The well-established language of psychopathology seems to provide an appropriate starting point for this endeavour.

The remainder of the paper is structured as follows: in [section 2](#) we introduce the foundations of the phenomena of social media usage and the medical terminology we are to adopt to describe them. The outline of our approach and the methodology of the literature review are part of [section 3](#). [section 4](#) presents the findings of the literature review providing examples of symptoms and syndromes described in the literature as well as their taxonomic classification according to the adopted classification scheme. [section 5](#) discusses our findings and describes implications and challenges for further research.

2 Foundations

2.1 Ubiquity of Social Media

With the idea of Web 2.0 in the early 21st century [O'R07] and Social Media as an implementation of this ideas, a wide range of users have been enabled to produce, share and exchange self-created content [KH10]. And so they did. As a result a key challenge in the context of Social Media is the harrowing amount of information produced: In May 2009, 35 hours of video were stored on YouTube every minute [Wal10], in March 2011, Twitter reported 200 million tweets per day [Twi11]. But enabling everybody to participate in creating and spreading information is both a blessing and a curse. For individuals seeking information the obstacles for retrieving the sought piece of knowledge no longer lies in the acquisition, but within

the filtering of information [Sav07]. Earlier established and to some extent reliable authorities for quality control are absent in the World Wide Web, cf. [GT09].

Even articles mainly focussing on the opportunities of Social Media, e. g. [KH10], point out advices and guidelines for the „right“ usage of Social Media. Apart from a mere inefficient usage of a tool further challenges and potential threats exist. The „dark side“ of Social Media, that can be found in the extensive propagation of ethically questionable opinions [Lis11], cyber bullying [LN11] or information vandalism [Kop11] have made headlines recently and increasingly. Burnout due to information overload [EM04] [LP10] or so-called „Facebook depressions“ [OCP11] [Wri10] are disease patterns that can be tracked back to Social Media usage.

To structure and classify these scattered bricks of knowledge on pathological phenomena in the context of social media a classification scheme needs to be established to map and possibly connect those findings into the big picture. For this purpose we introduce the basic elements of the disciplines (psycho)pathology.

2.2 Pathology, psychopathology and social conditions

The research of the origin, the aetiology, the process and the consequences of pathological or abnormal phenomena are the fields of investigation of *pathology* [Pay10]. Abnormal or disease-related modifications of processes and states within the body are called *pathologies*. Whereas pathology is primarily concerned with physical aspects of illness and disease, investigations into mental disorders are subject to the field of *psychopathology*. The understanding of symptoms, their causes (aetiology) and their formation (pathogenesis) is the basis for the development of behavioural therapies and preventive programs.

Psychopathology has created a sophisticated classification scheme and a language to capture and describe abnormal (pathological) psychological phenomena and human behaviour. Such a differentiated language is still missing for the description of pathologies that arise from the usage of new media [BR08]. Researchers discovering symptoms or syndromes typically describe their findings as singular or particular phenomena, c.f. section 4. Following the established systematics of psychopathology might therefore lead towards the classification of (social) media-related psychopathologies and the systematic documentation of symptoms, diseases, underlying causes and their aetiology.

As a basis for the diagnosis of a disorder, symptoms have to be identified correctly. For clinical diagnosis and monitoring the psychopathological findings, we use the AMDP system [Arb07]. The AMDP is an internationally recognised scheme for structuring psychopathological disorder symptoms. It covers the psychological findings (psychological symptoms), the somatic findings (physiological symptoms) and the anamnesis (recollection). Potential psychological findings include: disturbances in consciousness, disorientation, attention and memory problems, formal thought disorders, anxiety and anankastic personality disorders, delusions, hallucinations,

self-disturbances, disturbances of affect, motivational and psychomotor disorders, circadian anomalies, other disorders. We will employ these categories later on in the paper to classify media-related psychopathologies described in Social Media literature.

Hirschheim and Klein [HK94] state that „the psychopathology of human cognition is usually reinforced by certain external social conditions“. Thus, when investigating into media-related pathologies, the influence of societal factors is an important aspect that has to be regarded carefully. A major external distortion for example lies in the influence of power and ideology induced by authority. Through authority mental stress is induced onto individuals which leads to bias in information processing, limiting analysis „in such a way that prevailing assumptions and constraints are not subjected to informed critical arguments“ [HK94]. Therefore when we look into Web 2.0 pathologies, we will need to include societal factors to understand the relationship between psychopathological behaviour and social conditions as one reinforces the other. Accordingly, we will present societal distortions related to Social Media as they have been published in literature in [subsection 4.3](#).

3 Approach and methodology

Subject	Journals / Conferences
Biology & Medicine	Artificial Life, Arthroscopy: The Journal of Arthroscopic and Related Surgery, Pediatrics, Trends in Biotechnology
Information Systems & Computer Science	First Monday, Interactions, International Journal of Public Information Systems, Journal of Information Science, Conference Proceedings: AMCIS, ICIS, SenseCam
General Management	Business Horizons, Harvard Business Review, Journal of Public Policy & Marketing
Media Studies	Medienheft, Russian Journal of Communication
Other	The European Physical Journal B
Psychology	American Journal of Media Psychology, Computers in Human Behavior
Sociology & Political Science	Journal of Information Technology & Politics, The Information Society

Tabelle 1: Investigated subjects and publication channels

The main focus of our paper lies in a comprehensive, interdisciplinary collection and classification of media-related pathologies. We base our analysis on literature from the fields of Biology & Medicine, Information Systems & Computer Science, General Management, Media Studies, Psychology, and Sociology & Political Science. [Table 1](#) lists the subjects and respective journals and conferences where at least one relevant publication could be identified. We refer to the approach by Webster and Watson for conducting literature reviews in order to identify the relevant literature reporting media-related pathologies from the named research fields [[WW02](#)].

We conducted our literature review using keyword search in various publication aggregators (Science Direct, Google Scholar, EBSCOhost, Mendeley), searching papers related to the topics of „Information Overload“, „Web 2.0“, „Social Media“, „distractibility“, „procrastination“, „loss of identity“, and „amateurism“. The collection was supplemented by the study of quoted works. Out of the first results, we concentrated on journal papers and continued our research taking a closer look at the journals and subjects, in which these relevant papers were published. At the journal websites, we started a further keyword search on the issues published since 2005 (with regard to the publication date of Tim O’Reilly’s blog post that introduced the concept of Web 2.0 [[O’R05](#)]).

From this set of articles we extracted the symptoms, the aetiology, and the pathogenesis described. Disorders resulting from the exposure of individuals to Social Media (cf. [subsection 4.2](#)), were categorized based on the AMDP system [[Arb07](#)]. Articles describing problems arising from the exposure of society were classified by categories of systemic social research according to Parsons classic notion of the symbolic media that regulate systemic processes in social systems [[Par68](#)] [[Par91](#)]: societal system (influences), cultural system (value-commitments), economic system (money-related), and political system (political power). We derive our categories of societal distortions (cf. [subsection 4.3](#)) from this classification scheme. The results and details of this approach are described in the following sections.

4 Social Media-related restraints, disorders and distortions

4.1 Restraints of general participation

Before we can describe the identified disorders caused by active or passive participation in Social Media, we need to consider errors and restraints separately. These factors impose an a priori influence or even restriction to the access and use of Social Media. As such the *participation* in the world of media itself, i. e. the *reception* and *processing* of information may already be affected negatively (see [Table 2](#)).

Individual predispositions by the *users* themselves (intrapersonal restraints) shape the usage of Social Media. Physical impairments, such as visual ones [[DTG⁺06](#)]

Type of restraint	Receptive restraints	Cognitive restraints
Intrapersonal	Physical impairment	Cognitive impairment
Extrapersonal	Infrastructure, censorship	Propaganda, ideology

Tabelle 2: Categories of media-related restraints to participation

or damage to the sense of hearing as well as cognitive limitations, such as alexia or dyslexia [GR11], attention deficit hyperactivity disorder (ADHD) or autism, can impede the reception or cognition of information right from the start [Ker08]. These restraints are not only affecting the participation of Social Media, but also traditional media and everyday life. Nevertheless, content delivery via internet demands special solutions for Social Media, e. g. Qwitter, a Twitter client developed specifically for blind persons¹.

Likewise, access to media can also be disturbed by the users' local and societal environment (extrapersonal restraints), for example by a lack of infrastructure. Next to the individual technical equipment, the availability of a broadband Internet connection is crucial for the efficient use of Social Media. Within the European Union, the access to the Internet via broadband connections varies from 61% of the households in densely populated areas to only 46% in sparsely populated ones [FO10]. In addition, environmental distortions may affect content reception. Political propaganda or commercial influences take effect on the individuals' conclusions and actions [MS08].

4.2 Personal disorders influenced by Social Media

Excluding the above mentioned general restraints from our considerations we can proceed to concentrate on the effects of unhindered participation, the *exposure* to the ubiquitous information streams. Table 3 lists the various forms of potential disorders as described in literature according to the AMDP-scheme (groups of symptoms). Exemplary manifestations of these groups, e.g. concise symptoms, are extracted from the literature sources as cited in the „Reference“ column. Generally speaking, a large portion of the found personal disorders can be characterized to arise from the glut of information and information channels, cf. [BR08] and [Reu96].

Observed pathological phenomena that can be classified as attention and memory problems are increased distractibility: *Hallowell* [Hal05] recognised a growing number of ADT patients (attention deficit trait) within the last 10 years. Also *Waite et al.* [WLB09] found out that „greater IM use and multitasking behaviour“ correlates to „more distractibility for academic reading“. Using push mechanisms for information delivery (RSS feeds, e-mail notifications), which aim at helping users stay current

¹See <http://qwitter-client.net/> [19/08/2011]

Group of symptoms	Symptoms/examples	Reference
Attention and memory problems	Increased distractibility, esp. by proactive information services	[BR08] [Hal05] [KK10] [MA10] [Sma10] [WLB09]
Formal thought disorder	Delayed decisions	[ADP09] [DG09]
Anxiety and anankastic personality disorder	Information anxiety, infobesity	[BR08] [Mor03] [Reu96]
Self-disturbances	Loss of identity	[BR08], [O'H10]
Motivational and psychomotor disorders	Procrastination, demotivation	[BR09] [TWF08]

Tabelle 3: Categories of media-related personal disorders by participation

by informing them actively about new content through pop-ups have been found to influence the development of these personal disorders [MA10] [Sma10]. A series of impacts on university students are described by Kirschner & Karpinski [KK10]. They observed a lower mean grade point average (GPA) and weekly studying time among students using Facebook in comparison to non-users, whereas their total online time is equal. They were able to conclude that time spend on social network use displaced online activities for studying or personal qualification.

Another group of symptoms comes along with the awareness of the large amount of information distributed in the web. The permanent uncertainty of possibly not knowing all the bits of information relevant to a problem can lead to „delayed decisions“ [DG09], whereas Anderson & De Palma [ADP09] found out, that the amount of registered information is stagnating or even falling after passing the critical „information overload hump“. The associated inability to cope with the increasing range of information [BR08] [Reu96] causes „information anxiety“ or the opposite phenomenon of „infobesity“, where the search for information becomes an addiction. Morris [Mor03] compares the consummation of information with food, where also obesity evolved with modern agriculture as a contrasting problem to starvation. Eventually, a „loss of identity“ has been reported in relation to social networks [BR08]. This phenomenon concerns both, the risk to lose the relation to one’s own identity, as well as to the real identities of other users [O’H10]. Finally, the availability of a huge amount of alternative information sources encourages procrastination and leads to demotivation towards actual tasks [BR09]. Also correlations between Problematic Internet Usage (PIU) and procrastination could be observed [TWF08].

Group of symptoms	Symptoms/examples	Reference
Societal disorders	Hate and like community, cyber-bullying	[BGRM11] [Phi11] [SS10] [Tok10]
Cultural disorders	Amateurism of art and culture	[Kee08] [Lin11] [MA10]
Economic disorders	Dynamics in employee communities	[KH10]
Political disorders	Emotionalized election campaigns	[Nie09] [Tre08] [ZJSB09]

Table 4: Categories of media-related social disorders by participation

4.3 Social distortions influenced by Social Media

Examining the social level (see Table 4) a steady increase in individualization, polarization, and emotionalization can be concluded for all areas of the social research agenda: Society, culture, economy and political power [Par68] [Par91]. The manifestation of these effects is thereby subject to the type of participation: whereas individual disorders (cf. subsection 4.2) may be induced to a person only if they participate actively in Social Media, the following effects to the society may occur even if individual members of society merely participate in a passive manner or not at all.

In social networks, expressions of opinion often occur in their extreme forms: Hate [SS10] and like [BGRM11] communities, i.e. opponents or fan groups, are a prevalent phenomenon and are reinforced by the option to act anonymously. Tokunaga [Tok10] observes that this anonymity not only strengthened, but also incites students to cyber-bullying which would not participate in traditional bullying. And Phippen [Phi11] even observed, that not only students were engaged in cyber-bullying against teachers, but also parents were involved in 26% of these actions.

Polarization has also effects on areas such as politics by inducing pressure to come to instantaneous decisions, that formally needed more extended processes of information retrieval and consultation [Nie09]. This pressure can speed up decisions, but also crop the time for gathering and verifying relevant information thus affecting negatively the outcome of the decision-making processes, cf. [Tre08].

5 Discussion and implications

Based on the literature presented above, we discuss the findings and some implications for Social Media research in this section. Our objective with this paper was to identify potential problem areas and provide an initial overview of pathological

media-related phenomena in academic literature proposing a means for their classification. We recognised that pathogenic phenomena can be conceptualised into psychopathological and socio-pathological classification schemes. The analysis shows that pathological phenomena in all psychologically relevant categories have been described in conjunction with Social Media. The findings show, that these psychopathologies can (at least partially) be attributed to the exposure to or the participation in Social Media. Additionally a number of effects have been identified, where Social Media use induces transformational shifts to societies, some of which having unintended and undesirable side effects. The analysis further shows that a holistic assessment of the risks involved in the Social Web revolution is clearly a task as complex as it is necessary.

In the field of IS research, a majority of papers emphasizes the benefits of Social Media. Investigations on pathologies that results from its usage are scarce and can be found primarily in disciplines not focusing on the technology itself. This finding indicates a prevailing belief in the potentials of a technology disregarding its risks. Nevertheless the increasing discussion in popular scientific publications indicate that these problems become more and more significant, demand attention and seek for solutions. A second reason for the lack of comprehensive research might result from the necessary interdisciplinarity of the needed research approach. Psychopathological research clearly supports a multidimensional view of media-related pathological phenomena.

In general, the collection and classification of Social Media-related pathologies can be a starting point for future research into a deeper understanding of the transformational force of Social Media and especially its potentially negative side effects. So far, we lay our focus separately on each of the levels of consideration: participatory restraints, personal disorders and social distortions. Naturally, the interdependencies and relationships between these levels yield an interesting and demanding area for future research. In our inevitably more and more technologically augmented social reality we are deemed to find approaches to overcome the causes of potential and actual pathologies as described in literature. As such, the knowledge on causes and predisposing factors of pathologies are a prerequisite to improve the design of future information systems to answer this urging question: How can individuals and societies cope with the landslide transformation of our personal and social environment induced by Social Media?

Literaturverzeichnis

- [ADP09] S. P. Anderson and A. De Palma. Competition for attention in the information (overload) age. Technical Report 33, Centre for Economic Policy Research (CEPR), 2009. URL <http://ideas.repec.org/p/cpr/ceprdp/7286.html>.

- [Arb07] Arbeitsgemeinschaft für Methodik und Dokumentation in der Psychiatrie, editor. *Das AMDP-System: Manual zur Dokumentation psychiatrischer Befunde*. Hogrefe, Göttingen, Bern, Wien, Toronto, Seattle, Oxford, Prag, 8 edition, 2007.
- [BAK⁺11] Ilona Buchem, Ralf Appelt, Sascha Kaiser, Sandra Schön, and Martin Ebner. Blogging und microblogging – anwendungsmöglichkeiten im bildungskontext. In Sandra Schön and Martin Ebner, editors, *Lehrbuch für Lernen und Lehren mit Technologien (L3T)*. epubli, Berlin, February 1, 2011. URL <http://l3t.tugraz.at/index.php/LehrbuchEbner10/article/view/63>.
- [BGRM11] Johan Bollen, Bruno Gonçalves, Guangchen Ruan, and Huina Mao. Happiness is assortative in online social networks. *Artificial Life*, 17(3):237–251, January 2011. URL http://dx.doi.org/10.1162/artl_a_00034.
- [BR08] David Bawden and Lyn Robinson. The dark side of information: overload, anxiety and other paradoxes and pathologies. *Journal of Information Science*, 35(2):180–191, November 2008. ISSN 1741-6485. URL <http://jis.sagepub.com/cgi/doi/10.1177/0165551508095781>.
- [BR09] E. Benito-Ruiz. Infocination 2.0. *Handbook of Research on Web*, 2:60–79, 2009. URL <http://www.igi-global.com/viewtitlesample.aspx?id=21938>.
- [DG09] J. G. Davis and S. Ganeshan. Aversion to loss and information overload: An experimental investigation. In *ICIS 2009 Proceedings*, number 11, 2009. URL <http://aisel.aisnet.org/icis2009/11/>.
- [DTG⁺06] Soussan Djasasbi, Thomas Tullis, Matthew Girouard, Michael Hebner, Jason Krol, and Michael Terranova. Web accessibility for visually impaired users: Extending the technology acceptance model (tam). In *AMCIS 2006 Proceedings*, 2006. URL <http://aisel.aisnet.org/amcis2006/367>.
- [EM04] Martin Eppler and Jeanne Mengis. The concept of information overload: A review of literature from organization science, accounting, marketing, MIS, and related disciplines. *The Information Society*, 20(5):325–344, November 2004. URL <http://dx.doi.org/10.1080/01972240490507974>.
- [FO10] Berthold Feldmann and Aa Önnarfors, editors. *Eurostat regional yearbook 2010*. eurostat, Luxembourg, 2010. URL <http://dx.doi.org/10.2785/40203>.

- [GR11] A. Grotlüschen and W. Riekmann. leo. – level-one studie. literalität von erwachsenen auf den unteren kompetenzniveaus. Technical report, Fakultät für Erziehungswissenschaft, Psychologie und Bewegungswissenschaft, Universität Hamburg, Hamburg, 2011. URL <http://blogs.epb.uni-hamburg.de/leo/?p=7>.
- [GT09] Birgit Gaiser and Anne Thillosen. Hochschullehre 2.0 zwischen wunsch und wirklichkeit. In Nicolas Apostolopoulos, Harriet Hoffmann, Veronika Mansmann, and Andreas Schwill, editors, *E-Learning 2009: Lernen im digitalen Zeitalter*, Medien in der Wissenschaft, pages 185–196. Waxmann, Münster, September 2009. URL <http://www.pedocs.de/volltexte/2011/3131/>.
- [Hal05] Edward M. Hallowell. Overloaded circuits: Why smart people underperform. *Harvard Business Review*, 83(1):54–62, 2005.
- [HK94] Rudy Hirschheim and Heinz K. Klein. Realizing emancipatory principles in information systems development: The case for ethics. *MIS Quarterly*, 18(1):83–109, March 1994. URL <http://dx.doi.org/10.2307/249611>.
- [Kee08] Andrew Keen. *Die Stunde der Stümper. Wie wir im Internet unsere Kultur zerstören*. Hanser, München, September 2008.
- [Ker08] Walter Kern. Web 2.0 – end of accessibility? analysis of most common problems with web 2.0 based applications regarding web accessibility. *International Journal of Public Information Systems*, 4(2):131–154, 2008. URL <http://epub.uni-regensburg.de/15772/>.
- [KH10] Andreas M. Kaplan and Michael Haenlein. Users of the world, unite! the challenges and opportunities of social media. *Business Horizons*, 53(1):59–68, January 2010. URL <http://dx.doi.org/10.1016/j.bushor.2009.09.003>.
- [KK10] Paul A. Kirschner and Aryn C. Karpinski. Facebook® and academic performance. *Computers in Human Behavior*, 26(6):1237–1245, November 2010. URL <http://dx.doi.org/10.1016/j.chb.2010.03.024>.
- [Kop11] Andreas Kopietz. Wikipedia: Wie ich stalins badezimmer erschuf, March 2011. URL <http://www.berlinonline.de/berliner-zeitung/berlin/337069/337070.php>.
- [Lin11] Anthony Lincoln. Fyi: Tmi: Toward a holistic social theory of information overload. *First Monday*, 16(3), 2011. URL <http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/viewArticle/3051>.

- [Lis11] Konrad Lischka. Kommentare zur japan-katastrophe: Im netz der igno-
ranten. SPIEGEL ONLINE – Netzwelt, March 2011. URL <http://www.spiegel.de/netzwelt/web/0,1518,751611,00.html>.
- [LN11] Frauke Lübke-Narberhaus. Mobbing im internet: „die täter kommen ins kinderzimmer“. SPIEGEL ONLINE – SchulSPIEGEL, March 2011. URL <http://www.spiegel.de/schulspiegel/leben/0,1518,752738,00.html>.
- [LP10] J. H. Lubowitz and G. G. Poehling. Information overload: Technology, the internet, and arthroscopy. *Arthroscopy: The Journal of Arthroscopic and Related Surgery*, 26(9):1141–1143, September 2010. URL <http://dx.doi.org/10.1016/j.arthro.2010.07.003>.
- [MA10] T. Merz-Abt. Medienwelt von morgen – herausforderung für heute. *Medienheft*, (September), 2010. URL http://www.medienheft.ch/uploads/media/2010_MerzThomas_01.pdf.
- [Mor03] James H. Morris. Tales of technology: Consider a cure for pernicious infobesity. *Pittsburgh Post-Gazette*2, 2003. URL <http://www.post-gazette.com/pg/03089/169397-28.stm>.
- [MS08] Kelly D. Martin and N. Craig Smith. Commercializing social interaction: The ethics of stealth marketing. *Journal of Public Policy & Marketing*, 27(1):45–56, May 2008. URL <http://dx.doi.org/10.1509/jppm.27.1.45>.
- [Nie09] Rasmus K. Nielsen. The labors of internet-assisted activism: Overcommunication, miscommunication, and communicative overload. *Journal of Information Technology & Politics*, 6(3-4):267–280, July 2009. URL <http://dx.doi.org/10.1080/19331680903048840>.
- [OCP11] Gwenn S. O’Keeffe and Kathleen Clarke-Pearson. The impact of social media on children, adolescents, and families. *Pediatrics*, 127(4):800–804, March 2011. URL <http://pediatrics.aappublications.org/cgi/content/abstract/127/4/800>.
- [O’H10] K. O’Hara. Narcissus to a man: Lifelogging, technology and the normativity of truth. In Emma Berry, Daragh Byrne, Aiden R. Doherty, Cathal Gurrin, and Alan F. Smeaton, editors, *Second Annual SenseCam Symposium*. Dublin, 2010. URL <http://eprints.ecs.soton.ac.uk/21904/>.
- [O’R05] Tim O’Reilly. What is web 2.0. design patterns and business models for the next generation of software, September 2005. URL <http://www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html>.

- [O'R07] Tim O'Reilly. What is web 2.0? design patterns and business models for the next generation of software. *Communications & Strategies*, 1st quarter(65):17-37, 2007. URL http://www.idate.org/en/Digiworld-store/Collection/Communications-Strategies_18/No-65-Web-2-0-the-Internet-as-a-digital-common_434.html.
- [Par68] Talcott Parsons. On the concept of value-commitments. *Sociological Inquiry*, 38(2):135-160, 1968. URL <http://onlinelibrary.wiley.com/doi/10.1111/j.1475-682X.1968.tb00679.x/abstract>.
- [Par91] Talcott Parsons. *The Social System*. Routledge, London, 2 edition, 1991. URL <http://books.google.de/books?id=t2vkbZy1kdQC>.
- [Pay10] Theo R. Payk. *Psychopathologie*. Springer-Lehrbuch. Springer, Berlin, Heidelberg, 3 edition, 2010. URL <http://dx.doi.org/10.1007/978-3-642-12395-5>.
- [Phi11] Andy Phippen. The online abuse of professionals – research report from the uk safer internet centre. Research report, UK Safer Internet Centre, Plymouth, UK, 2011. URL <http://www.swgfl.org.uk/Staying-Safe/Content/News-Articles/The-Online-Abuse-of-Professionals>.
- [Reu96] Reuters Business Information Benchmark Research, editor. *Dying for information?: an investigation into the effects of information overload in the UK and worldwide*. Reuters, London, 1996. URL <http://old.cni.org/regconfs/1997/ukoln-content/repor~13.html>.
- [Sav07] R. Savolainen. Filtering and withdrawing: strategies for coping with information overload in everyday contexts. *Journal of Information Science*, 33(5):611-621, April 2007. URL <http://dx.doi.org/10.1177/0165551506077418>.
- [Sma10] P. Smart. Cognition and the web. In Trung D. Huynh, Paul Smart, Dave Braines, and Katia Sycara, editors, *Network-Enabled Cognition: The Contribution of Social and Technological Networks to Human Cognition*. Lulu Press, Raleigh, 2010. URL <http://eprints.ecs.soton.ac.uk/21824/>.
- [SS10] P. Sobkowicz and A. Sobkowicz. Dynamics of hate based internet user networks. *The European Physical Journal B*, 73(4):633-643, February 2010. URL <http://dx.doi.org/10.1140/epjb/e2010-00039-0>.
- [Tok10] Robert S. Tokunaga. Following you home from school: A critical review and synthesis of research on cyberbullying victimization. *Computers in Human Behavior*, 26(3):277-287, May 2010. URL <http://dx.doi.org/10.1016/j.chb.2009.11.014>.

- [Tre08] Anthony Trewavas. The cult of the amateur in agriculture threatens food security. *Trends in Biotechnology*, 26(9):475–478, September 2008. URL <http://dx.doi.org/10.1016/j.tibtech.2008.06.002>.
- [TWF08] A. Thatcher, G. Wretschko, and P. Fridjhon. Online flow experiences, problematic internet use and internet procrastination. *Computers in Human Behavior*, 24(5):2236–2254, 2008. URL <http://linkinghub.elsevier.com/retrieve/pii/S0747563207001628>.
- [Twi11] Twitter. 200 million tweets per day. twitter blog, June 30, 2011. URL <http://blog.twitter.com/2011/06/200-million-tweets-per-day.html>.
- [vEF11] Birgit van Eimeren and Beate Frees. Ergebnisse der ard/zdf-onlinestudie 2011: Drei von vier deutschen im netz – ein ende des digitalen grabens in sicht? *Media Perspektiven*, 7-8:334–349, July 2011. URL <http://www.ard-zdf-onlinestudie.de/index.php?id=326>.
- [Wal10] Hunter Walk. Great scott! over 35 hours of video uploaded every minute to youtube. Broadcasting Ourselves ;): The official YouTube Blog, October 2010. URL <http://youtube-global.blogspot.com/2010/11/great-scott-over-35-hours-of-video.html>.
- [WLB09] Bradley M. Waite, Laura E. Levine, and Laura L. Bowman. Instant messaging, multitasking and media use of college youth: Connections to impulsiveness and distractibility. *American Journal of Media Psychology*, 2(3/4):126–146, 2009. URL <http://www.marquettejournals.org/accessthejournals/amerjourofmediapsych.html>.
- [Wri10] Alex Wright. Stepping out of the shallows. *Interactions*, 17(4):49–51, July 2010. URL <http://dx.doi.org/10.1145/1806491.1806503>.
- [WW02] J. Webster and R. T. Watson. Analyzing the past to prepare for the future: Writing a literature review. *MIS Quarterly*, 26(2):xiii–xxiii, 2002. URL <http://www.authoraid.info/resource-library/preparing-review-articles/analyzing-the-past-to-prepare-for-the-future-writing-a-literature-review>.
- [ZJSB09] W. Zhang, T. J. Johnson, T. Seltzer, and S. L. Bichard. The revolution will be networked: The influence of social networking sites on political attitudes and behavior. *Social Science Computer Review*, 28(1):75–92, June 2009. URL <http://dx.doi.org/10.1177/0894439309335162>.