

2.5 BIG DATA

WHAT IS "BIG DATA"?

"Big data" is an even newer concept, trend, development, hype and ideology than "social media". According to Mayer-Schönberger and Cukier (2013), big data "refers to things one can do at a large scale that cannot be done at a smaller one, to extract new insights or create new forms of value" (6), "an important step in humankind's quest to quantify and understand the world", the "preponderance of things that could never be measured, stored, analyzed, and shared before is becoming datafied" (17–18). We would now be able to "manage far larger quantities of data than before, and the data [...] need not be placed in tidy rows or classic database tables" (6). For Manyika et al. (2011) big data "refers to datasets whose size is beyond the ability of typical database software tools to capture, store, manage, and analyze" (1). Big data refers to

the major expansion in the contemporary era of the quantities of digital data that are generated as the products of users' transactions with and content generation via digital media technologies, as well as digital surveillance technologies such as CCTV cameras, RFID chips, traffic monitors and sensors monitoring the natural environment. (Lupton 2015, 94)

Big data "refers to the movement to analyze the increasingly vast amounts of information stored in multiple locations, but mainly online and primarily in the cloud" (Mosco 2014, 177). We can as a general definition say that big data are the vast amount of data generated by large-scale computing operations in order to analyse and predict the development of certain aspects of society or nature.

A related term is cloud computing. Whereas big data refers to large amounts of digital objects stored in computers, cloud computing refers to the way computing resources are used for storing big data. It is about devices for and the very processes of the storage, processing and distribution of data (Mosco 2014, 17), which often involves shared access to data among a certain group. It is also associated with the storage of vast amounts of data in data centres.

Uncritical accounts of big data explain its importance purely technologically as the effect of Moore's law that says computers' storage space and processing power doubles every 18 months. The rise of computing capacity would therefore result in an exponential growth of data storage. "Things really are speeding up. The amount of stored information grows four times faster than the world economy, while the processing power of computers grows nine times faster" (Mayer-Schönberger and Cukier 2013, 8)

NEOLIBERAL BIG DATA IDEOLOGY: NON-ECONOMIC ASPECTS SUCH AS PRIVACY, DEMOCRACY, WAR/PEACE, OR (IN)EQUALITY ARE MISSING

The big data ideology presents the massification of available, collected, stored and analysed data as a huge opportunity for the economy and society and tends to disregard negative aspects. One example is an economic reductionism that frames big data in terms of gross domestic product (GDP) and productivity growth:

Our research finds that data can create significant value for the world economy, enhancing the productivity and competitiveness of companies and the public sector and creating substantial economic surplus for consumers. [...] we are on the cusp of a tremendous wave of innovation, productivity, and growth, as well as new modes of competition and value capture – all driven by big data as consumers, companies, and economic sectors exploit its potential. (Manyika et al. 2011, 1–2)

An associated ideology is that big data is in a positivist manner first presented as a major change of society and as radically new and transformative, and second results in claims that big data only benefits society:

"Big data marks the beginning of a major transformation [...] Things really are speeding up. The amount of stored information grows four times faster than the world economy, while the processing power of computers grows nine times faster" (Mayer-Schönberger and Cukier 2013, 7–9). The "world of big data is poised to shake up everything from businesses and the sciences to healthcare, government, education, economics, the humanities, and every other aspect of society" (11). "The benefits to society will be myriad, as big data becomes part of the solution to pressing global problems like addressing climate change, eradicating disease, and fostering good governance and economic development" (17). Some non-economic issues are addressed here, but overall such approaches argue for a technological fix to economic, social, political and cultural problems. They are techno-deterministic.

BIG DATA'S POLITICAL ECONOMY

Critical political economy analyses the interconnection of economic and political dimensions of communications and digital media and discusses them in respect to history, society as totality, moral questions and ethical-political implications.

Big data stand in a broader societal – economic, political and ideological – context: 9/11 has advanced a culture of control, surveillance, fear-mongering, scapegoating and suspicion, competition and individualization, in which law-and-order politics and surveillance are seen as fixes to the complex societal problem of terrorism. This culture and ideology of surveillance and control has resulted in the emergence of a specific organizational form of the military-industrial-corporate complex, namely the surveillance-industrial Internet complex, in which secret services, communications corporations and private security companies collaborate in order to conduct large-scale surveillance of citizens' communications. Edward Snowden has revealed the existence of this complex that uses technologies and programmes such as Prism and XKeyScore.

Neoliberalism is on the one hand a market-fundamentalist ideology, but on the other hand also a form of governance that regulates the economy by strengthening the power of capital and weakening the power of labour. It advances the commodification and privatization of almost everything, the weakening of the idea of public services and the common good. The extension and intensification of advertising and consumer culture into the realm of online data is an expression of large-scale capitalist privatization and commodification under neoliberal condition. Facebook and Google collect and store vast amounts of data. They capture and hold all the information they can get about their users, because they are interested in

commodifying it so that monetary profits can be derived. Facebook and Google are not communications companies. They do not sell access to communications, they sell big data for advertising purposes. They are the world's largest advertising agencies that operate as big data collection and commodification machines.

The collection, storage, control and analysis of "big data" stands in the context of the surveillance-industrial-complex and neoliberalism. Big data is a method for the economic and political control and targeting of individuals. They are targeted as consumers and as potential terrorists and criminals. Mark Andrejevic (2013) argues that big data stands in the context of big data surveillance of citizens, consumers and workers. Big data is the "paradox of 'total documentation'", in which the population as a whole is the target that is subjected to "population-level data capture" (35). Big data seen from a political-economic perspective of analysis means "data collection without limits" (36). For Vincent Mosco (2014, 10), big data and cloud computing are an expression of the combination of "surveillance capitalism" and the "surveillance state" in what he terms the military information complex (9).

BIG DATA'S DANGERS, PROBLEMS AND IMPLICATIONS IN A CAPITALIST WORLD

"While the technological sphere of social media is new, so is the global phenomenon of Big Data worship, the ethical question about 'accessing', privatizing, and commodifying the commons has been a time-honored concern that goes all the way back to the beginning of the capitalist world-system" (Qiu 2015, 1091). There are manifold dangers and implications that big data poses in a capitalist world.

CONSUMER CULTURE

The world is turned into a huge shopping mall. Humans are confronted with ads almost everywhere, capitalist logic colonizes the social, public and private world.

INSTRUMENTAL REASON

Algorithms' instrumental reason tries to calculate, plan and control human needs. David Chandler (2015) argues in this context that big data promises a posthuman world, in which not humans, but "'data' do the work" (848). The consequence would be an instrumental and administrative understanding of politics that "reduces governance to an ongoing and technical process of adaptation, accepting the world as it is" (835). It would advance a model of the governance of the self (838). We can add that individuals' and communities' self-help via big data suggests the neoliberal outsourcing of responsibility from the state to individuals and communities and is therefore a discourse that neoliberal governments, parties and politics uncritically embrace. Ideological parallels are the neoliberal philosophy that you should "do what you love" and the concept of a big society in which individuals form co-operatives, self-help groups, grassroots initiatives and other voluntary civil society projects that replace the welfare state. The problem is that such outsourcing of responsibility can create and enforce the attitude and impression that individuals and communities are responsible for social problems and their solutions, which distracts attention from actually existing power structures. There is no doubt that a state that enhances and supports participation and

grassroots initiatives is a much-needed development. Under neoliberal governmentality, the tendency is, however, that such initiatives are seen not as complements to, but as substitutes for the welfare state.

In big data analytics, the "human comes into the picture relatively late in the process (if at all)" (Chandler 2015, 837). Algorithms play a central role. Big data analysis and research tends to be inductive, atheoretical, it works "'down' to the contextualisation of the individual case, thereby promising personalised or individualised health care, political campaigning or product purchasing information. Big Data 'drills' or 'mines' down from the mass of data to the individual case" (846).

In big data analytics, instrumental reason takes on such a form that algorithms become "actors" that make choices and define needs on behalf of humans and make assumptions about human thought and behaviour based on algorithmic logic. The problem is that algorithms and computers, unlike humans, do not have affects, ethics and morals and only act based on the purely instrumental linear logic "IF condition C THEN take action A". Given that humans are complex societal beings, such linear instrumental reasoning is error-prone and creates false positives. In economic and political life, algorithmic logic can have severe consequences such as humans being considered as criminals or terrorists although they are innocent, or being discriminated against by banks, corporations or public services. Algorithms tend to erect a new God's eye view that automates human decision-making and action and thereby creates totalitarian potentials. Given the impacts of big data, research urgently faces "the task of revitalising a critical approach" (Chandler 2015, 851).

INEQUALITY

The increased commodification coming along with big data means social inequality. There are new forms of discrimination that involve rational discrimination and cumulative disadvantage resulting from data recorded in databases that algorithms infer from predictions and that are error-prone (Gandy 2009). The Internet becomes a class-realm of exploitation. There is a "big data divide" (Andrejevic 2014) that concerns the ownership and control of data and poses advantages for the powerful and disadvantages for the less powerful.

SURVEILLANCE SOCIETY'S FASCIST POTENTIALS

Categorical suspicion turns the presumption of innocence into a fascist presumption of guilt so that one is "innocent until proven guilty" and a "terrorist until proven innocent". Terrorists are not so silly as to communicate their plans online, so the whole logic of big data surveillance is mistaken because there is no technological fix to political and socio-economic problems. Law and order politics fosters fascist potentials in society. Big data surveillance has intensified in times of capitalist crisis. Times of crisis are times of ideological scapegoating in order to distract attention from causes of social problems. Contemporary scapegoats include Romanian and Bulgarian workers, the European Union, benefits recipients, the unemployed, the poor, black youth, international students, immigrants, Muslims and Jews. Such ideologies deflect attention from social problems, inequality, precarious labour, unemployment, that is from the problems of capitalism. Crises are "ideologically constructed by the dominant ideologies to win consent" (Hall et al. 1978, 220-221). Surveillance society is associated with moral panics that are "the key ideological forms in which a historical crisis is 'experienced and fought out'" (221).

ENVIRONMENTAL PROBLEMS

Big data results in an exacerbation of environmental problems (Mosco 2014, 127–137, 2016, 520) because of the consumption of the large amounts of energy needed for keeping data centres and cloud storage going and the increase of digital media technology use with short life-time that is as e-waste dumped into developing countries. In 2012, data centres used electricity that equals the output of 30 nuclear power plants.¹ Data centres tend to use diesel generators as back-up power supply systems (Mosco 2014, 133, 2016, 520). They produce pollutants that are released into the air and the soil.

INCREASE OF UNEMPLOYMENT AND PRECARIOUS LABOUR

Big data and cloud computing can threaten jobs by outsourcing data storage and software provision and maintenance from companies' in-house IT departments to IT services (Mosco 2014, 155–174, 2016, 522–524). It can also result in the dismissal of knowledge workers if companies assume that big data analytics can provide better knowledge than these employees' expertise and skills. When corporations trust algorithms more than humans, this can have major consequences for employees. Because big data's digital positivism is prone to producing "big errors" (Mosco 2014, 199), substituting knowledge workers by algorithms also increases the risk of increasing economic vulnerability. Given the predominantly unregulated nature of digital labour, crowdsourcing labour to the cloud via platforms such as Amazon Mechanical Turk tends to create precarious, insecure labour that puts pressure on other jobs.

BIG DATA AND ACADEMIA: SOCIAL MEDIA RESEARCH AS
BIG DATA ANALYTICS AND COMPUTATIONAL SOCIAL SCIENCE

The rise of big data and social media has also transformed academia. In the social sciences, it has resulted in what Deborah Lupton (2015) terms digital sociology. Digital sociology involves: a) professional digital practice, in which social scientists use "digital tools as part of sociological practice – to build networks, construct an online profile, publicise and share research and instruct students" (15); b) analyses of digital technology uses; c) digital data analysis. In the context of the latter it has also become fashionable to speak of digital methods (Rogers 2013). The fourth aspect of digital sociology is d) critical digital sociology, by which Lupton (2015, 16) understands the "reflexive analysis of digital technologies informed by social and cultural theory".

There are many forms of social and cultural theory and in a way all forms of social analysis are a reflexion on and of society. For me, critical digital sociology is a particular reflexion of and on digital technologies' role in society, namely one that is informed by critical and Marxist theory that tries to understand capitalism and domination as well as their possible alternatives. There is indeed a contradiction between critical sociology as digital sociology's fourth realm and big data analytics that is part of Lupton's third realm of digital sociology.

An important trend in Internet research is big data analytics that has a focus on collecting large amounts of data from social media platforms and analysing it in a predominantly quantitative manner. The new media research guru Lev Manovich has argued that Internet Studies should therefore be turned into the large-scale computational analysis of online data, an

1 www.nytimes.com/2012/09/23/technology/data-centers-waste-vast-amounts-of-energy-belying-industry-image.html (accessed on 27 September 2016).

approach that he terms Cultural Analytics (Manovich 2009) and Software Studies.² The obsession with quantification, computationalism and big data has also manifested itself as a preoccupation with attempts to develop new digital methods both in the humanities and social sciences: "Digital Humanities" often understands itself as humanities computing (Terras et al. 2013). The Collaborative Online Social Media Observatory (COSMOS) understands "social media research" explicitly as big data analytics, namely the analysis of "aggregate information in 'big social data' repositories, such as collective sentiment scores for sub-groups of twitter users".³

BIG DATA ANALYTICS' PROBLEMS

The trouble with many of these approaches is that they often do not connect statistical and computational research results to a broader analysis of human meanings, interpretations, experiences, attitudes, moral values, ethical dilemmas, uses, contradictions and macro-sociological implications of social media. There is a danger that a de-emphasis of philosophy, theory, critique and qualitative analysis advances administrative research (Lazarsfeld 1941/2004) that is predominantly concerned with how to make technologies and administration more efficient and effective. Paraphrasing Jürgen Habermas (1971), we can say that there is a danger that digital positivism advances an "absolutism of pure [digital, quantitative] methodology" (5), forgets about academia's educational role, falls short of fully understanding "the meaning of knowledge" (69) in the information society at large and is an "immunization of the [Internet] sciences against philosophy" (67). A further danger is that computational social science acts as an imperialism of computer science that aims to transform the social sciences into computer science. Once social science students spend time learning programming, there will not be enough time left for engaging thoroughly with critical social theory, philosophy, and qualitative methods.

Vincent Mosco (2014, 2016) describes the belief in big data analytics' radically transformative power as digital positivism and cloud sublime. Big data is "a myth, a sublime story about conjuring wisdom not from the flawed intelligence of humans, with all of our well-known limitations, but from the pure data stored in the cloud" (Mosco 2014, 193). The "hot new profession of data scientist knows only quantitative approaches" (Mosco 2014, 197).

This is inherently flawed because subjective states such as happiness, depression, or satisfaction mean different things to different people [...] It is uncertain which is worse: that big data treats problems through oversimplification or that it ignores those that require a careful treatment of subjectivity, including lengthy observation, depth interviews, and an appreciation for the social production of meaning. (Mosco 2014, 198)

"It also devalues research grounded in historical, theoretical and disciplinary understandings of a field" (Mosco 2016, 524) and "tends to neglect context and history" (Mosco 2014, 201). Digital positivism can have serious negative impacts on humans and society because big data "can contain and mask big errors with big consequences" (Mosco 2014, 205).

Pure quantitative analyses of big data collected from social media are often relatively meaningless. They show what dominant topics and actors there are and often draw nice and

2 <http://lab.softwarestudies.com>.

3 www.cs.cf.ac.uk/cosmos/ethics-resource-guide/.

colourful pictures such as network graphs, but lack an understanding of why users act in specific way, how ideologies are expressed and challenged, what meanings they give to data, what ethical implications developments in the world of data have for society and humans, what alternatives to associated problems exist and so on. I am not arguing against social media and online-data based research methods, but only caution that social media and big data do not outdate established social research methods such as interviews, surveys, focus groups, content analysis and critical discourse analysis. All of these methods are needed for understanding the role of digital media in the information society. However, it also makes sense to combine these methods with the collection of online data and critical, interpretative, creative, artistic, and theory-led online research methods and approaches. As well as conducting qualitative social research with social media users in order to learn about their experiences, interpretations and perspectives, it makes sense to also engage in collecting and analysing samples of data from social media platforms with the help of tools and services such as DiscoverText, HootSuite, DiscoverText, NodeXL, Gephi, NCapture/NVivo and Twitter Archiving Google Spreadsheet (TAGS). Instead of large-scale quantitative analysis of these data, critical digital sociology is well advised to utilize smaller samples and to analyse them with the help of qualitative analysis methods (critical visual analysis, ideology critique, critical discourse analysis, qualitative text/content analysis, etc.) and to critically interpret them with the help of social philosophy. We need a paradigm shift from big data analytics to critical social media research methods. Social media can also be used for engaging users in creating texts, images and videos as part of the research process. Thereby new potentials for creative, engaging and participatory research have emerged.

Social media content is a form of text that can be analysed in various ways. The usual way is to analyse big data corpuses in a predominantly quantitative way. At the same time, critical discourse analysis and ideology critique as research method has only been applied in a limited manner to social media data. Majid KhosraviNik (2013, 292) argues that "critical discourse analysis appears to have shied away from new media research in the bulk of its research". Critical discourse analysis has not just been weak on studying social media data, but is also a rather dogmatic and orthodox approach dominated by certain key figures not allowing much methodological flexibility in what is considered as being discourse analysis and what is excluded from it. Discourse is in general a rather strange, postmodern concept distant from the Marxist category of ideology that is much better suited for a critical theory of society. It is therefore better to speak of ideology critique instead of critical discourse analysis. Social media such as Twitter are still relatively new, which is one of the reasons why research about ideologies on social media has remained thus far limited. The mainstream in social media research is quantitative big data analysis, an approach that is very different from ideology critique that wants to understand the structure, context and implications of ideologies. The dominant paradigm of social media positivism has also posed limits for critical research. Developing critical social media research methods is an interesting aspect of critical digital and social media theory.

CRITICAL SOCIAL MEDIA RESEARCH AND RESEARCH ETHICS

Some scholars studying Internet ethics have argued that a lot of users do not read the terms of service. Some of them may therefore not be aware of the potential data use and may assume that their postings disappear in the mass of social media data, or find it offensive if their

public social media content is quoted in an academic work without informed consent. The removal that the removal of identifiers is no guarantee of anonymity because of the possibility to search in repositories and meta-data and that large data archives can contain postings of private messages (Zimmer 2010a, 2010b; Zimmer and Proferes 2014). Differences between platform contexts have to be taken into account. Much of what happens on Facebook has for example a much more private feel than communication on Twitter.

SOCIAL MEDIA RESEARCH ETHICS: THE DILEMMA OF PRIVACY PROTECTION VS. CENSORSHIP OF CRITICAL RESEARCH

This debate shows that Internet research faces the problem that from an ethical perspective it should not harm users by its analyses, but Internet research ethics taken to an extreme can make the development of new research methods impossible and harm academic knowledge production, and in the case of critical studies also the possibilities for the critique of society. One should probably draw a distinction between the privacy implications of companies, the police and secret services conducting social media data analysis for commercial or national security interests and non-profit, non-commercial academic research. Commercial data analysis instrumentalizes and commodifies data. The police and secret services' analyses are often based on the problematic assumption that crime and terrorism can be predicted from online data, which can easily result in false positives. Privacy's context matters in social media analysis (Nissenbaum 2010). For social media research, we can, as the discussion shows, not assume that Twitter data analysis can never cause harm and that therefore anything goes. At the same time, privacy fundamentalism risks discarding social media analysis. A realistic approach is needed.

When large data archives with tens or hundreds of thousands of items are published as open data, then the problem arises that sensitive data may be included and linked to personal identifiers. A good practice is to read the data in these archives item by item and to anonymize the IDs and content of those that contain sensitive data. In citing social media data in publications, some scholars and institutions, such as the Collaborative Online Social Media Observatory,⁴ have taken the approach to only quote data from public institutions and to not quote individual users, except if they provide informed consent. Often such approaches mean that content data is displayed in the form of word clouds or only based on aggregate statistical information, which poses problems for critical analyses that analyse language use online in the context of society. The Centre for the Analysis of Social Media at Demos regularly conducts studies of online politics and takes a somewhat different approach. It argues that it is good to present data in aggregated form and that it needs to be carefully considered if Twitter quotations can cause "harm or distress to the originator" (Bartlett et al. 2014, 37). If "invasive personal information" (ibid.) is revealed in tweets, then it does not use these postings. In some cases, it also "cloaks" the text so that originators cannot be identified (ibid.). In general, it argues that Twitter data "is in the public domain and can therefore be treated as carrying implicit informed consent" (Bartlett and Miller 2013, 60).

It is not an option for an ideology critique of Twitter data to only present results in aggregated form or as word clouds because this does not allow for understanding in detail how ideology works and is challenged. To obtain informed consent, for example,

⁴ www.cs.cf.ac.uk/cosmos/cosmos-ethics-statement/ (accessed on 2 June 2015).

for quoting racist, nationalist, fascist, fundamentalist, Nazist or right-wing extremist content may often result in rejection of informed consent and can endanger researchers. It is therefore easier for ideology critique to argue that Twitter data is public data. The danger of overdoing Internet research ethics is that it results in a de facto censorship and ethical prohibition of the critical investigation of ideologies. One can argue that Twitter's privacy policy already is a form of informed consent. Privacy scholars do, however, tend to see such policies as insufficient because it is not self-evident that everyone reads them in detail. The point of ideology critique is to study ideologies not in a personalized manner, but as structures in society. The actual user names of those expressing or challenging an ideology are therefore not relevant, except if these are people working for public institutions, such as politicians.

In the case of everyday users, Internet researchers should not mention user names, but rather employ pseudonyms so that they make no direct identification. Even if data is anonymized, user profiles can often be identified via searches (Zimmer 2010). It is infeasible to conduct no critical analyses at all of online data. Any such considerations have the problematic potential to forestall critique. To reformulate the content of postings results in inauthenticity and can be interpreted as fabricating data. Absolute privacy would either require not doing online critical research or fabricating data. The most feasible solution for this dilemma is in my view that everyday users' profile names are not mentioned, which means that one does not personally identify them in the paper or report one writes.

CRITICAL INTERNET RESEARCH ETHICS: REALISM

The British Psychological Society argues that online observation should only take place when and where users "reasonably expect to be observed by strangers" (BPS 2009, 13). It is often feasible to think about whether users in particular social media contexts expect to be observed by strangers or not. It is, for example, reasonable to assume that users who use specific hashtags (e.g. political hashtags) and direct their messages at the public for discussion therefore also reasonably expect to be observed by strangers such as journalists and researchers. Not revealing the profile names of everyday users, but instead using pseudonyms, seems in this context to therefore be a sufficient measure. The British Sociological Association argues in its ethical guidelines that informed consent and the blurring boundaries between the private and the public pose challenges in Internet research, and that researchers should inform themselves about "ongoing debates on the ethics of Internet research" (BSA 2002, §41). Reflecting on Internet research ethics highly matters whenever we analyse online data.

Internet research ethics should not be taken to an extreme on social media in general and Twitter in particular. It must see that there is a big interest among academics to conduct qualitative analyses of social media data; that simply ascertaining privacy violations does not help, is not a way forward and unnecessarily pits Internet researchers against Internet ethicists. The point is that a constructive and realist dialogue is needed about such questions. It is feasible to assume that most political online communication on Twitter has the attention to attract a large public because politics is a social, collective and public phenomenon. Just like the private is political, most politics is public and intended for public debate, commenting and analysis.

2.6 CONCLUSION

Analysing continuities and discontinuities of the web requires social theory foundations. The WWW is not social in a simple sense, but to certain degrees on certain levels of analysis that are grounded in sociological conceptions of sociality. If one compares WWW use in the late 1990s to the end of the first decade of the second millennium, one finds that the use patterns of the WWW are shaped by continuities and discontinuities. Information is continuously present, communication has been transformed, web technologies of co-operation have become more frequently used and important, but are certainly not dominant. The web is neither purely old nor purely new; it is a complex techno-social system embedded into power structures of capitalism that has to change to a certain extent at certain levels in order to enable the continuity of Internet-based capital accumulation.

This chapter dealt with the question: What is social media? Its main results are as follows:

- Dealing with the question "What is social media?" requires an understanding of what the social is all about. It is, in this respect, helpful to look at social theory for engaging with concepts of sociality in society. Relevant concepts of sociality include social facts (Émile Durkheim), social relations/social action (Max Weber), co-operative labour (Karl Marx) and community (Ferdinand Tönnies).
- Claims about the novelty and opportunities of "web 2.0" and "social media" like blogs, social networking sites, wikis, microblogs or content-sharing sites originated in the context of the dot-com crisis of the Internet economy and the resulting search for new business models and narratives that convince investors and users to support new platforms. The ideology of novelty intends to attract investors and users.
- Most social media technologies originated before 2005, when Tim O'Reilly established the concept of web 2.0. Wikis, blogs, social networking sites, microblogs and content-sharing sites have, however, become really popular since the middle of the first decade of the second millennium. It is both unlikely that in the years 2000–2010 the WWW has not changed at all and unlikely that it has radically changed. The capitalist Internet economy needs to change and innovate in order to guarantee the continuity of capital accumulation.
- The two concepts of participation and power have been used for characterizing social media (participatory culture, power and counter-power of mass self-communication). Class is another concept that is particularly suited. Great care should be taken to avoid techno-deterministic thinking, techno-centrism, techno-optimism, techno-pessimism and naturalization of domination in conceptualizing qualities of social media. Engaging with social theory, the history of concepts and the philosophical groundings of the Internet can provide help for developing concepts that describe structure, agency and dynamics of social media.
- Media are techno-social systems in which technological structures interact with social relations and human activities in complex ways. Power structures shape the media and the social relations of the media. When analysing social media, one should be clear about and should explicate the level of analysis.