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The digitization of science. Remarks on the alteration of academic practice

Leif Kramp

Abstract

Digitization changes academic practice fundamentally: With the proliferation of the Internet, the exhaustive expansion of broadband networks and the implementation of efficient transmission, storage and analysis technologies, research and development, teaching and studying have already undergone a profound transformation process. Empirical research can be conducted more effectively and efficiently than ever: using digital technology, complex study designs can be implemented quickly and collaboratively. The analysis of 'big data', visualization techniques, globally coordinated research projects: Here, digitization undoubtedly enriches academic practice. Also in the field of teaching and learning, digitization offers assistance, e.g. in the form of e-learning features, and enables the implementation of new forms of communication. On the other hand, E-Publishing has already changed the perception of science and the way scholars communicate among each other and the public. The following remarks focus on some profound alterations in academic practice that can be attributed to the impact of digitization, and have consequences – among others – for the career opportunities of young scholars, but also downsides that threaten academic integrity.

Keywords: digitization, mediatization, transformation, data security, science communication, plagiarism

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1. Levels of alteration

The primary task of science can be described as to create, to examine and disseminate knowledge through theoretical and empirical research as well as critical academic discourse. Science is responsible for societal progress, especially in education, via its research insights and its scientific-technological innovations. Thereby, science is indeed an independent socio-cultural field and a functional system that is indispensable for modern society. However, it will also always be an integral part of society, and is therefore subject to specific imperatives, which can be both of regulatory origin, such as with regard to science policy, but also, for example, of a technological nature.

Nowadays, digital technologies are crucial for generating and communicating knowledge and scientific insights, not because technology has changed science per se, but because the actors involved – the researchers and teachers themselves – transform their field of action by the use of digital technologies which they use intentionally or unintentionally for their academic practices. Here, science takes over a significant interface function both as an observer, commentator and an authority that offers orientation and fulfills the role of an innovation driver. Science does not only use digital technologies, but also developed them (further). Not only Earth and Space can be measured and understood more comprehensively with innovative technologies, even man with his body and acting becomes more and more a quantifiable individual. When research is done for example in medicine, production technology or computer science with the help of digital technologies, these research endeavours in turn provide important insights for the further development and fine-tuning of processes and technologies. Science in universities and industry is a key driving force for technological progress, whether in the development of digital storage standards (from the MP3 audio file format and the GeoPDF format that is used in cartography and geodesy to Web Archive Format WARC), or with face recognition or data security, to name just a few of countless examples. Not coincidentally, the Internet itself derived from a scientific networking project – the ARPA-NET.

Even in the social sciences and humanities, the digital is rated high as a subject matter and research tool. In the Digital Humanities for example, innovative mapping technology helps to apprehend how Homer had rembered his famous and extensive catalogue of ships for his mammoth work “Iliad” through a mental itinerary. Moreover, civil engineering and architectural researchers together with historians reconstruct historical cities in the form of digital city models that promise new insights into the urban life of preceding centuries. In its digitized form, the cultural fundus becomes usable and analysable with automated procedures in all its complexity. This offers new research potentials. Even those who nowadays want to explore the transformation of social relations cannot ignore the digital as it is common by now to

interact socially through social network services (e.g. Facebook, Google+), short message services (e.g. Whatsapp, Twitter), but also on dating portals, online forums and through other digital forms of communitization (cf. van Dijk, 2006; Hepp/Berg/Roitsch, 2014).

Schäfer (2014) speaks not of the digitization, but of a mediatization of science, which is not confined to the field of media and communication studies, but changes communication in all disciplinary fields and niches of academic practice. Nevertheless, especially digital technologies have triggered the diagnosed mediatization boost significantly; so, in many ways, mediatization goes along with digitization: Interpersonal communication in science is increasingly mediatized, for example through Internet-based videotelephony and virtual conferencing (e.g. Skype, Google Hangouts, Adobe Connect), but also interactive communication between humans and machines is more widespread through the use of computers for data collection and analysis. Finally, scientists address the public directly and therefore become actors in the mass communication of scientific knowledge more and more often by publishing their articles in electronic journals or on their own website, by writing research blogs or by posting on Twitter or Facebook. Subsequently, academic practices change at different levels:

The *review of the current state of research* is less time consuming when scientific publications are available and searchable in full-text due to digital databases.

Research methods in the laboratory, the observatory or the field change as digital measuring instruments can record more exact, broader and higher volumes of data than before.

New *research questions* can be gone into, as more and more data are digitized (also retrospectively) and therefore come into question for a digitally automated statistical analysis.

Academic project management develops differently when scholars can communicate digitally independent of space and time strains and work together on digital documents.

The *production and publication of academic texts* is accelerated because the digital infrastructure of the Internet allows a self-determined publication at any time.

Since both science and other societal fields such as business, politics, but also religion and the everyday lifeworlds of the population are under the lasting influence of digitization and mediatization, similarities and overlaps can be observed in certain areas of action and phenomena. This includes the requirement to handle complex data, whether it is empirical research data, statistics, public administration, business figures or, more generally, the perceived oversupply of (unverified) information through the Internet. Dealing with ‘big data’ (cf. Mayer-Schönberger/Cukier, 2013) engages a number of academic disciplines,

including some where previously procedures of statistical analysis only played a minor role. One of the major challenges is trying to fit the inevitable appreciation of such procedures in the respective research logic.

2. Ambivalent data security

Science needs sources. Science reviews, analyzes, summarizes, whether based on self-collected or secondary data, documents, images, sound or video recordings. Without sources science would be nothing more than reasoning. The physical condition of sources in science befits a key role: If they exist on a material medium, e.g. on paper or on magnetic tape, they have a limited availability and are exposed to decay. Digital information technology provides a glimmer of hope for a solution in the fight against deterioration. So, the 'Digital Age' is also a 'Digitization Age' where retro-digitization of cultural heritage is high on the agenda (cf. Bachi et al., 2014). Preservation organisations assume the future of archiving in the digital encoding of material storage, i.e. binary strings without physical reference. The risk of obsolescence seems far less threatening when relying on high-performance digital technology compared to analog and physical preservation technologies instruments. More urgent is the issue of reliable long-term preservation, which culminates in the debate on the pros and cons of the digitization of analogously stored heritage since the advent of computerized information processing. What could be priorily experienced as a conglomerate of different cultural techniques with all their senses, is now a mere code consisting of two digits: the zero and one – the digital copy only as a temporary glow of transistors on a screen: the *"flat, cold, glassy glare of a computer screen"* (O'Sullivan, 2005: 70).

In addition, there is a plethora of ethical problems connected to digitization when it comes to safeguarding the textual integrity of the data. Even if a deletion of digitized content is not readily possible, it can be manipulated imperceptibly through its underlying alphanumeric code. Not only the conversion of data structures can automatically lead to a distortion of the original content by a repeated migration of digital data. It also increases the risk of criminal interference. A digitally stored document, if not write-protected, can be changed arbitrarily without the changes being replicable: no etchings, cuts or glue marks or other indications of editing can be found in a skillfully manipulated electronic document. The identification of digital traces is a research field of its own: IT forensics are specialized in detecting cases of manipulation to back up, analyze and work up data. However, even scholars who know how to deal with analog sources professionally do not necessarily have the required technical expertise and experience in handling digital sources (cf. for research on digital traces: van Baar/van Beek/van Eijk, 2014).

In this respect, the inexperience in handling digital sources is a dangerous void in academic training, not only with regard to the verifiability of digital and digitized resources, but also with regard to the threat of data loss. Protecting one's own research data is in most cases not subject of professional standards at universities. Whether electronic data can be legible after ten years or later depends not only on file formats, but also on the integrity of the storage and the awareness of constant migration of the data to new storage media. Hence, reliable measures for long-term archiving are regarded as one of the most important measures not only for digital public administration, but also for the science sector (cf. APARSEN, 2015). Especially for protecting personal research data, the scientific community needs easy-to-use certified standards for digital preservation. Ultimately, access often goes above security, as in everyday work digitally stored sources seem to be potentially more comfortably accessible than analog sources; but often digital storage lacks data security, involving risks of manipulation and data loss. This applies to most of the research disciplines that work without direct working relations to computer science or information and technology studies.

3. Sharing is caring

The ubiquitous demand for interdisciplinarity has gained steam through the current transformation processes (cf. Laužikas, 2009; Scanlon, 2011). The transfer of knowledge across disciplinary boundaries meets the strong expectations of the knowledge society: reliable knowledge production and the availability of knowledge as well as connections and cross-references in an increasingly connected life. When interdisciplinarity means a demanded escape from narrow specialist perspectives, while respecting subject-specific skills and expertise, the main objective is to reach a more synergetic clarification of border issues and hybrid problems (cf. Katz/Martin, 1997). This claim is more than ever justified before the background of digitization as it offers an optimized working and communication framework, precisely because it needs a high degree of communication. The research cultures of the historically evolved specialized disciplines have to continue to conciliate their theoretical schools of thought, traditional definitions and methodological specifics with adjacent or wholly foreign research traditions productively (cf. Corley/Boardman/Bozeman, 2006).

The growing demands in terms of interdisciplinary cooperation, the development of international research networks, and a more complicated multi-unit project management require an integrative oriented knowledge management which helps to optimize communicative, cognitive, institutional and organizational aspects of collaboration between the participating researchers (cf. Vasileiadou, 2012). This can be achieved by exploiting the advantages

of online communication and digital organisational tools. This involves inter alia overcoming communication problems, avoiding friction losses, reducing duplication, sharing research data to develop methods of analysis and evaluation instruments collaboratively to organize meetings to coordinate public relations, etc. The digital infrastructure ergo favors the infrastructure requirements for multi-site collaborative research.

Overcoming spatially segregated science areas with digital information and communication technologies to the benefit of a transnationalization of research cultures (cf. Olson/Zimmerman/Bos, 2008) has, however, also increased the pressure to communicate and publish in the English language. Anyone acting solely in their own language area (non-English), threatens to be – under certain circumstances – disconnected from relevant research discourses. Those who overcome the language barrier have the opportunity to make contacts via the Internet in no time through the direct addressability of academic colleagues in their own field of research and to engage in conversation. Formerly, this required a considerable effort and was mostly only feasible, for example, at international conferences. The transnationalization of science, which was impelled by digitization, has at least the potential to make the academic exchange of opinions, ideas, data and knowledge overall more open and heterarchical – and thus strengthen young researchers. The popular phrase "Sharing is Caring" in this context is a signal sense of responsibility for the promotion of young researchers: Overt hierarchical structures in academia fade into the background to the benefit of a thematic and concept-centered exchange. So, research topics, research interests, and the originality of research achievements come to the fore as well as the talents of young researchers that can be assessed more fairly (cf. Arora, 2013; Esposito, 2013). This is primarily an opportunity for next generations of researchers who get the chance to present their research more efficiently and to draw attention to it.

4. Communicate or perish

Communication barriers between science and the general public crumble, too. The overall benefit of science becomes tangible when research findings, be they theoretical knowledge or conclusions from empirical data, are distributed, appropriated and applied in different ways and in a variety of contexts in order to reach for an improvement of conditions or procedures. As much as university research is increasingly dependent on external funding, the demands on the social relevance and transparency of research – ascribed by different social groups – increases, as well as the demand that science should contribute to finding solutions for specific issues. In particular, applied research and in many parts contract research is subordinated directly under this purpose. Even

in basic research, an increased demand for explanations and development can be determined in relation to digitization. However, it remains basically controversial whether science as a functional system should respond to claims of usefulness for concrete social problems or not. After all, science cannot only solve problems; it also creates new ones with its findings.

Against the background of general participation efforts pursued in the context of digitization and mediatization processes, it seems natural that deliberative aspirations for the inclusion of citizens in social negotiation and decision-making emerge. This involves all social fields and functional systems equally. As they are less technical obstacles in the communication between experts and citizens in politics or journalism: the dialogue between academics and the general public is now at best a matter of education levels, mediation and appropriation skills, and the willingness of all parties concerned to engage with each other. Such an infrastructure creates opportunities for participation, inclusion and transfer which were hardly feasible before.

Derived from the ironic motto 'Publish or Perish', which describes the pressure to publish in the scientific community to gain relevance for individual research, academic practice under the impact of digitization follows rather a mandate of 'Communicate or Perish', utilizing the broad variety of new phenomena of academic communication, be it the sharing of empirical data, open publication, educational practices or engaging in social debates through the mass-media or directly with citizens on a personal blog or via social media: *"it's also about being open and opening up the world of knowledge and understanding, for as many people as possible."* (cf. Scanlon, 2014: 19)

For scholars, active participation and organization of social debates on the criteria and insights of scientific work are as important as the capability to tie in with academic discussions, if science is to be understood as a "public science" (Könneker/Lugger, 2013). In this respect, digitization has encouraged a trend that complements the "scientific ethos" (Spinner, 1985) with differentiated requirements for a cooperative attitude to their own communication skills. A conception of this kind of attitude has been introduced by a loose association of so-called "Hard blogging Scientists" (www.hardbloggingscientists.de) who encounterd the digital sphere as an opportunity to use it for critical exchange of thoughts, ideas and approaches (cf. Sterling, 2007) in order to respond to societal debates, to feed back their research with social realities, and to provide insights also to lay persons in an understandalbe manner. Besides, many scholars have internalized a similar spirit without necessarily following this specific initiative, and write blogs or communicate their thoughts and insights regularly to a broader public.

Currently, the new approachability of science rather finds its expression in the use of social media by scholars to communicate about their work. Globally, an increasing number of scientists communicate regularly via Twitter and

show especially how transnational and instantaneous academic discourses have become, also how radically the communicative conventions have altered at the interface between science and the general public with the potential to strengthen and expand the traditional educational mission of science: "Bildung durch Wissenschaft" [Education through Science] (cf. Groppe, 2013) not only means an excellent education behind university walls, but also describes expectations of science policy and media for the presentation of science to the general public (cf. Peters, 2013). In this way, the idea of the unapproachable, introverted intellectual converts into an image of a communicative thinker who does not conduct research disconnected from society, but stands for progress of knowledge in the service of and in dialogue with the public.

It is not only obvious and overdue from a normative perspective that the widest possible public ought to be allowed an insight into the results of research, but also into their motives, systems, methods and further backgrounds. In Germany, legal initiatives aim to increase the transparency of research projects financed by extramural funding sources by the timely availability of respective information – not especially limited to civil clauses and military research. According to these claims, universities should be obliged to publish data of third-party funded projects including the focus, duration, funding source and funding sum (cf. Naumann, 2013; Lehmann, 2015). This kind of full disclosure would have been quite unthinkable without the Internet.

It is becoming apparent that – connected to digitization – academic publishing will be turned upside down in the medium run: Not only that more scientific publications than ever are available digitally and online, whether in the form of books, journal articles, research reports, lecture manuscripts or drafts – and not to forget that also students can publish their Master and Bachelor theses and even their seminar papers easily online, whereas in the pre-digital era a publishing house would rarely have agreed to do the same. Additionally, access to the collected scientific knowledge that has been previously preserved on library shelves and in magazines is being digitized bit by bit and becomes searchable in full-text online. Here, traditional academic publishing houses are no longer the only driving force, even corporations like Google distinguish themselves as potent service providers of science, whether concerning the retro-digitization of library holdings or as a directory and (personalized) citation manager for scientific publications of all kinds (cf. critically on the role of Google: Jeanneney, 2006).

An actual break is marked by Open Access and Open Science Initiatives (cf. Cribb/Sari, 2010) that are encouraged by scientists themselves and aim to overcome existing obstacles like high costs for access to scientific publications, making them freely available online. As an alternative, in many disciplines new free accessible online journals (open access journals) were launched. Their biggest challenge was and is to ensure the prevalence of qual-

ity assurance procedures, most notably maintaining existing standards of scientific assessment, which remains a major reputational factor for journals and authors. It is a not unusal but legally controversial practice for authors to post articles of their own that are already accepted by prestigious scientific journals on their private or institutional websites in order to increase the visibility of their research through unhindered access. For this, however, they have to deal with an ambiguous legal status and copyright agreements that most publishers demand (cf. Laakso, 2014). The regulation of citation practices by corporate interests seems – in this respect – often antiquated while expectations grow to access cited texts immediately without any restrictions, as Patrick Dunleavy puts it:

"Referencing should instead be about directly connecting readers to the full text of your sources, ideally in a one-stop way. Using URL referencing of the kind I employ in this blog, or other innovative methods, readers should be able to go directly (in a single click and in real time) to the specific part of the full text of source that is being cited. In other words, modern referencing is not about pointing to some source details for books that cost a small fortune and are buried away in some library where the reader is not present; still less about pointing to source details for an article in a pay-wall journal to which readers do not have access. That is legacy referencing, designed solely to serve the interests of commercial publishers, and 90% irrelevant now to the scholarly enterprise. If that is the best that we can do in connecting readers to our source texts, then it will have to do. But let's face it, it's not much use in today's world." (Dunleavy, 2014)

The urge to make their own research widely accessible is a side effect of the changing criteria of scientific success through digitization. Online portals such as Academia, Kudos, Mendeley, or ResearchGate promise the necessary visibility of individual publication records and networking opportunities with the international research community, an important prerequisite to be read and get cited. For academic reputation management in the digital sphere, publications in leading scientific journals, so-called 'A-journals', continue to be a main criterion, but even more the way these articles can be accessed and taken up by other scholars. The individual figures in various citation indexes are not infrequently a decisive criterion in application processes. Not long ago, it was an extensive affair to determine the publication relevance of a researcher that could only be afforded by research institutions. Today, Google and Microsoft offer free instruments for researchers by means of which they can – with a few clicks – determine their personal impact factor based on citation indexes (cf. Butler, 2011).

5. Copy and paste

Teaching and learning are affected by digitization at least in a similar way as research and become a testing ground of new multimedia and interactive innovations: e-lectures, virtual guest lecturers, online learning platforms, mobile apps, intelligent tutoring software, and so on characterize the learning contexts of many students today. In everyday university life, time and space are no more categories that are mandatory prerequisites for successful learning. Although the problem of overcrowded classrooms is far from being a thing of the past, complementary e-learning offers an alternative to the overload problems in popular study programmes and more flexiblity for many students who strive for an arrangement of their studies, part-time job and family obligations.

Digitization is also responsible for a heated public debate on scientific reputation: In Germany, plagiarism scandals that involved federal ministers and other high-ranking politicians and were accompanied by intensive mass-media coverage in recent years show indeed that the copy-and-paste method is not an invention of the digital age. However, the exposure of prominent cases of plagiarism has also shown how effectively academic writings have become falsifiable by non-scientific actors with the help of digital technologies. At Internet portals such as "Vronigplag" or "Politplag", academics and laypeople collect fragments of publications that are suspected to have been copied from other works without regard to scientific citation standards (cf. Weber-Wulff, 2014). The quality management of doctoral supervision came under increased pressure to justify practices in light of this new corrective.

Whether academic practice needs an external "watchdog" (cf. Cooper, 2006) or "Plagiarism Hunters" (cf. Wasley, 2006) to monitor its integrity is ultimately a question that has arisen out of digitization: It provided tools and platforms with which potentially anyone is able to practice scientific critique collaboratively and publicity. In teaching, plagiarism software has been used for years to check student essays and exam writings because here the dark side of digitization manifests itself regularly: Seminar papers are sometimes akin to patchwork texts, compiled from a potpourri of online publications. Here it becomes clear that while it is easy to compile fragments of other texts, it is not less difficult to unmask the compilation as such. The supposed ease of digital knowledge aggregation lures, but it leads to the risk of sloppiness or fraud. Another serious issue is the constituent misconception that all essential knowledge is available online (and the library visit therefore pointless). This may not be a simple consequence of convenience, but possibly also an important side effect of a rapidly evolving digital culture of knowledge (cf. Rubin, 2007).

It remains a necessary and laborious cognitive process that digitization does not make thoroughness and reflectiveness in academic practice obsolete. Eventually, these examples also show mobilization potential that arises from

online interaction on academic matters. This should encourage to drive forth the discourse on scientific self-conception and its change under the influence of digitization – not exclusively in academic circles but in the midst of society.

References

Aparsen (2015) 'Alliance Permanent Access to the Records of Science in Europe Network'. Downloaded on 10 February 2015 from http://www.alliancepermanentaccess.org

Arora, S. (2013) 'Thoughts on Paper Publishing in the Digital Age'. Downloaded on 22 October 2013 from http://windowsontheory.org/2013/10/22/sanjeev-arora-thoughts-on-paper-publishing-in-the-digital-age

Bachi, V., Fresa, A., Pierotti, C., Prandoni, C. (2014) 'The Digitization Age: Mass Culture is Quality Culture. Challenges for Cultural Heritage and Society', pp. 786-801 in M. Ioannides, N. Magnenat-Thalmann, E. Fink, R. Žarni, A.-Y. Yen, E. Quak (Eds.) *Digital Heritage. Progress in Cultural Heritage: Documentation, Preservation, and Protection. 5th International Conference, EuroMed 2014, Limassol, Cyprus, November 3–8, 2014. Proceedings.* Cham, Heidelberg, New York, Dordrecht, London: Springer.

Butler, D. (2011): 'Computing giants launch free science metrics', Nature, 476, 18(2011). Downloaded on 5 November 2014 from http://www.nature.com/news/2011/110802/full/476018a.html

Cooper, S. D. (2006) *Watching the Watchdog. Bloggers as the Fifth Estate*. Spokane: Marquette.

Corley, E. A., Boardman, P. C., Bozeman, B. (2006) 'Design and the management of multi-institutional research collaborations: Theoretical implications from two case studies', *Research Policy*, 35(2006): 975–993.

Cribb, J., Sari, T. (2010) *Open Science. Sharing Knowledge in the Global Century*. Collingwood: Csiro.

Dunleavy, P. (2014) 'Academic citation practices need to be modernized. References should lead to full texts wherever possible'. Downloaded on 16 April 2015 from https://medium.com/advice-and-help-in-authoring-a-phd-or-non-fiction/academic-citation-practices-need-to-be-modernized-6eb2e4a44846

Esposito, A. (2013) 'Neither digital or open. Just researchers. Views on digital/open scholarship practices in an Italian university', *First Monday,* 18(1), http://firstmonday.org/ojs/index.php/fm/article/view/3881/3404

Groppe, C (2013) '"Bildung durch Wissenschaft": Aspekte und Funktionen eines traditionellen Deutungsmusters der deutschen Universität im historischen Wandel'(Education through Science': Aspects and functions of a traditional interpretation pattern of the German university in historical change), *Bildung und Erziehung*, 65(2): 169-182.

Hepp, A., Berg, M., Roitsch, C. (2014) 'Mediatized Worlds of Communitization: Young People as Localists, Multi-localists and Pluralists', pp. 174-204 in A. Hepp, F. Krotz (Eds.) *Mediatized Worlds. Culture and Society in a Media Age*. Basingstoke, New York: Palgrave MacMillan.

Jeanneney, J.-N. (2006) *Google and the Myth of Universal Knowledge: A View from Europe. With a Foreword by Ian E. Wilson*. Chicago: University of Chicago Press.

Katz, J. S., Martin, B. R. (1997) 'What is research collaboration?', *Research Policy*, 26: 1-18.

Könneker, C., Lugger, B. (2013) 'Public Science 2.0 – Back to the Future', *Science*, 342(6154): 49-50.

Laakso, M. (2014) 'Green open access policies of scholarly journal publishers: a study of what, when, and where self-archiving is allowed', *Scientometrics*, 99(2): 475-494.

Laužikas, R. (2009) 'Digitization as Science', *Archeologia e Calcolatori*, 20: 247-259.

Lehmann, A. (2015) 'Wenn VW die Studie bezahlt' (When VW pays for the survey). Downloaded on 13 February 2015 from http://www.taz.de/!154641

Mayer-Schönberger, V., Cukier, K. (2013) *Big Data. A Revolution that will transform how we live, work, and think*. New York: Houghton Mifflin Harcourt.

Naumann, N. (2013) 'German universities contributing to US war effort'. Downloaded on 26 November 2013 from http://www.dw.de/german-universities-contributing-to-us-war-effort/a-17254184

Olson, G. M., Zimmerman, A., Bos, N. (Eds.) (2008) *Scientific Collaboration on the Internet*. Cambridge (MA), London: MIT Press.

O'Sullivan, C. (2005) 'Diaries, On-Line Diaries, and the Future Loss to Archives; or, Blogs and the Blogging Bloggers Who Blog Them', *The American Archivist*, 68(1): 53-73.

Peters, H. P. (2013) 'Gap between science and media revisited: Scientists as public communicators', *PNAS Proceedings of the National Academy of Sciences of the United States of America*, 110(3): 14102-14109.

Rubin, N. (2007) 'Everything old can be new again'. Downloaded on 14 May 2007 from http://www.current.org/dtv/dtv0708preservation.shtml

Scanlon, E. (2011) 'Digital futures. Changes in scholarship, open educational resources and the inevitability of interdisciplinarity', *Arts and Humanities in Higher Education*, 11(1-2): 177-184.

Scanlon, E. (2014) 'Scholarship in the digital age: Open educational resources, publication and public engagement', *British Journal of Educational Technology*, 45(1): 12-23.

Schäfer, M. S. (2014) 'The media in the labs, and the labs in the media: what we know about the mediatization of science' pp. 571-591 in K. Lundby (Ed.) *Mediatization of Communication*. Berlin, New York: Walter de Gruyter.

Spinner, H. F. (1985) *Das "wissenschaftliche Ethos" als Sonderethik des Wissens (The "Scientific Ethos" as special ethos of knowledge)*. Tübingen: Mohr.

Sterling, B. (2007): 'Hard bloggin' scientist'. Downloaded on 15 January 2015 from http://www.wired.com/2007/06/hard_bloggin_sc

van Baar, R., van Beek, H., van Eijk, E. (2014) 'Digital Forensics as a Service: A game changer', *Digital Investigation*, 11(1): 54-62.

van Dijk, J. (2006) *The Network Society. Social Aspects of New Media. Second Edition.* London, Thousand Oaks, New Delhi: Sage.

Vasileiadou, E. (2012) 'Research teams as complex systems: implications for knowledge management', *Knowledge Management Research and Practice*, 10: 118- 127.

Wasley, P. (2006) 'The Plagiarism Hunter', *The Chronicle of Higher Education*, 52(49): A8-A11.

Weber-Wulff, D. (2014) *False Feathers: A Perspectice on Academic Plagiarism.* Heidelberg, New York, Dordrecht, London: Springer.

Biography

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