

## **Archives in the Digital Age: New Uses for an Old Science\***

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Using both the terms and the concepts 'archives' and 'archival science', we have to be aware of the archivists' Tower of Babel. In Dutch terminology 'archieff' encompasses what in other cultures are 'records' and 'archives', in German *Schriftgut* and *Archivgut*. Consequently, digital archives in The Netherlands include both records and archives digitally-born, and digitized reproductions of documents in archives.

The term 'archival science' is for most anglophone archivists so foreign, that it has no place in their glossaries. They will call it: archival theory or archives studies. Archival science, however, is a science in the German and Dutch sense of *Wissenschaft* or *wetenschap*. Anthony Giddens in his book *Sociology* defines a science as the "systematic methods of empirical investigation, the analysis of data, theoretical thinking and the logical assessment of arguments."<sup>1</sup>

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\*Adapted version of the keynote address at the 14th German-Dutch *Archiefsymposium*, Zwolle, The Netherlands, 16 November 2006.

<sup>1</sup>Anthony Giddens, *Sociology*, 3rd ed. (Polity Press, Cambridge 1997) 12.

Archivistics, as we understand it in The Netherlands, studies the characteristics of records in their social and cultural contexts and how they are created, used, selected and transferred through time. We strive at a better understanding of the way people in organizations create and maintain records – or: historicizing the research: how people created and maintained records in the past. This enables us improving the efficiency and effectiveness not only of current and future recordkeeping, but also of the use of archives as historical sources. The latter is the domain of my colleague at Leiden University professor Charles Jeurgens, the former is the focus of my research and teaching at the University of Amsterdam.

Archivistics as a discipline should be distinguished from archivistics as a profession. Theory informs the archivist's methodology and practice, but that practice is not driven by theory. But let me not overstate the difference between profession and discipline. *Archivistica applicata* and *archivistica pura* are not opposites, they follow naturally from one another. Both are connected by what Anne Gilliland has called the archival paradigm: "a set of assumptions, principles, and practices that are common to the archival community and are a model for its activities and outlook."<sup>2</sup> Archive professionals "are by nature pragmatic",<sup>3</sup> but nevertheless they have to reflect on new challenges and to find innovative solutions beside the beaten path. Then and there the practitioner will meet the theorist who has

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<sup>2</sup>Anne J. Gilliland-Swetland, *Enduring Paradigm, New Opportunities: The Value of the Archival Perspective in the Digital Environment* (Council on Library and Information Resources, Washington DC 2000) 7. Also available as <http://www.clir.org/pubs/reports/pub89/contents.html>.

<sup>3</sup>Sarah Tyacke, "Archives in a Wider World: The Culture and Politics of Archives", *Archivaria* 52 (2001) 1-25, here 13  
<http://journals.sfu.ca/archivar/index.php/archivaria/article/view/12812/14018>.

been wrestling with the archival paradigm, questioning the received assumptions, principles and practices. As an archival educator I have to emphasize the important place of theory in the professional education. Eliot Freidson (1923-2005), sociologist of the professions, proposed in 2001 an ideal-type of professionalism, one component of which is a formal training program. Segregated from the labor market, controlled by the occupation and associated with higher education providing opportunities for the development of new knowledge. He stresses that professional training –different from training of craftsmen and technicians- should emphasize theory and abstract concepts. This is justified, he writes, because

whatever practitioners must do at work may require extensive exercise of discretionary judgment rather than the choice and routine application of a limited number of mechanical techniques. Hence, it is more important to have a firm grounding in basic theory and concepts to guide discretionary judgment than to gain practice in what can only be a selection from among all the concrete practical and working knowledge that particular worksettings may require.<sup>4</sup>

Archival science, as any other science, examines received notions for their pertinence and relevance, it is continuously speculating, experimenting, inventing, changing, and improving.

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<sup>4</sup>Eliot Freidson, *Professionalism. The Third Logic* (Polity Press, Cambridge 2001) 95.

The digital age implies not only technological opportunities and challenges, but is foremost a social and cultural phenomenon.

In 1995 Nicholas Negroponte published his *Being Digital*. In this book Negroponte explores the digital age where the creation and communication of digital information have become more important than the production and distribution of physical information -or as Negroponte expresses it: from atoms to bits. Moreover Negroponte foresaw that intelligence will move from sender to receiver, from push to pull: bits are no longer pushed to the people, but people and machines themselves pull them. Information on request will rule digital life: we are going to ask what we want, explicitly and implicitly, the moment we want it and in the format we want it. This means that we won't all watch the eight o'clock news at that very moment, but that I, as an individual, will watch or read the news in the measure, the quantity and at the time I wish to do this: broad catching instead of broadcasting. Information is being strongly individualized with the aid of intelligent machines that understand people as an individual, not as part of the masses. The leading theme of the book *Being Digital* is the forecast that the physical interface will disappear. That is the old dream, already mentioned by Vannevar Bush (1945) and Joseph Licklider (1960) decades ago. The latter, one of the fathers of cyberspace, forecast information producing systems made by a link between the human brain and the computer.

Most of these forecasts have come true, as we now know, or will come true in the near future, at least in those parts of the world that have succeeded in making the change from an industrial society to an information society. Ambient intelligence or ubiquitous computing will replace the physical interface: the information and communication

technology will be integrated in objects and appliances and everything else by which man is surrounded.<sup>5</sup> Hidden in these objects are processors and sensors that are not only connected to networks, but that are also intelligent and can learn from the 'behaviour' of the object or environment in which they are imbedded.

The computer is becoming invisible. This is already the case in the car, the plane, the telephone, audio and video sets and in many machines in industry, agriculture, health care and service. There are, of course, negative consequences, such as the increasing surveillance and the invasion of privacy. People will no longer work with a computer or any other appliance: they will write, read papers and books, work, chat, play music and video without needing a special machine. Mobility and interactivity are the key words for the cultural practices that are being furthered by hidden technology. This, in all probability, will be the further development of the mobile phone and the PDA, that have become multimedia machines enabling new life styles - sometimes without that being the objective of the designers. Mobile, but on the way, individual, but almost continuously connected.

That is as if social and cultural practice are determined by technology. Sometimes this is the case, but more often new technology is being domesticated: the capacity of individuals, families, organizations to appropriate new technologies and to

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<sup>5</sup>Yves Punie, "The Future of Ambient Intelligence in Europe - The Need for More Everyday Life", in: Roger Silverstone (ed.), *Media, Technology and Everyday Life in Europe. From Information to Communication* (Ashgate, Aldershot 2005) 159-177.

integrate them into everyday life and work.<sup>6</sup> The success of SMS (Short Message Service) was not expected by the technology designers. Today's mobile phone – or rather the cultural practice of using a mobile phone for a diversity of purposes - has little to do with what a telephone used to be. We have seen this happening before in the history of media. Marconi's radio (wireless) was thought of simply as a substitute for wired telegraphy. Marconi had no vision of radio as a widespread medium. It took 20 to 25 years before the wireless became radio broadcasting.<sup>7</sup>

Technologies may remediate or even change social and cultural practices, they seldom cause replacing a practice totally. The gramophone did not lead to the disappearance of going to a concert hall, television did not cause people refraining from going to the movies – and there are many more examples. If we look to the technology alone, we miss sight of the cultural practice which is being facilitated by that technology. People do not want to wield a PC: they want to record their ideas 'somewhere', develop them by involving other people 'in communion', by communicating through space and time.

"The content of what has to be archived is changed by the technology".<sup>8</sup> Technology conditions not only the form or the

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<sup>6</sup>Lelia Green, *Technoculture. From alphabet to cybersex* (Allen & Unwin, Crows Nest 2002) 43-60.

<sup>7</sup>Asa Briggs and Peter Burke, *A Social History of the Media. From Gutenberg to the Internet* (Polity Press, Cambridge 2002) 152-163.

<sup>8</sup>Jacques Derrida, "Archive Fever. A Seminar..." In *Refiguring the Archive*, edited by Carolyn Hamilton (Kluwer Academic Publishers, Dordrecht/Boston/London 2002) 38-80, here 46 See also Derrida, Jacques. *Archive Fever*. Translated by Eric Prenowitz (University of Chicago Press, Chicago and London 1996) 17.

structure, but also the content of the writing. Of course, technology is not the only factor which determines form and content, because cognitive and cultural agencies also play an important role. I will give some examples.<sup>9</sup>

When one uses SMS on a mobile phone, form and content of the message will be different from a message sent by e-mail or a message conveyed in a handwritten letter: the difference is due to the technology in a complex interplay with social and cultural norms governing what *to SMS* and how *to SMS*. Young people tend to use "SMS language" not only for SMS but in e-mail and letters too. This, by the way, is an interesting form of *remediation* of a cultural practice, like the digital photoalbum on the web and the weblog.

Mutation "in technology changes not simply the archiving process, but what is archivable".<sup>10</sup> Until quite recently, Dutch people were instructed to deal in a letter to government with one subject only – the governmental filing system, with one file for each subject, could not cope with a citizen's letter about different matters. The technology of archiving conditions the citizen to deal with a particular topic in her letter, which in turn conditions archiving: when incoming letters deal with one subject matter only, they can be dealt with in a relatively simple work process, sustained by a relatively simple document management system. In the digital age, the affordances of

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<sup>9</sup>Eric Ketelaar, "Writing on Archiving Machines", in: Sonja Neef, José van Dijck, and Eric Ketelaar (eds.), *Sign here! Handwriting in the Age of New Media* (Amsterdam University Press, Amsterdam 2006) 183-195 <http://www.mybestdocs.com/ketelaar-e-writing-on-archiving-machines2006.pdf>.

<sup>10</sup>Derrida (2002), 46.

digital technologies allow – unlike paper-based technologies - storing and accessing large amounts of information, displaying multimedia documents, fast full-text searching, quick links to related materials and dynamically modifying or updating content.<sup>11</sup> And those affordances in turn stimulate people to create content differently and to use documents differently in different collaborative and distributed networks.

When one would ask an office worker, or an archivist or a researcher sitting behind a computer: “what are you doing?”, the answer will probably not be: “I am working on the computer”, but: I write a memo, or: I check my email, or: I am doing genealogy, or: I am researching the history of X. Technology is less visible, it has been domesticated, at home and in the work-place. This has been demonstrated in research by ENTEL, the European Media Technology and Everyday Life Network, funded through the 5th European Framework Programme. People are not talking about working with computers: “Instead, they tell about reading newspapers on the net, playing computer games, sending emails, chatting, and so on. Clearly, the computer has become a ‘natural’ part of everyday life.”<sup>12</sup>

A number of studies of the way people use automation in their work show that people are very creative, when left alone, in adapting the available technology to their own activities; failures occur when people are forced to work with systems and technologies that have

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<sup>11</sup>Abigail Sellen and Richard Harper, *The Myth of the Paperless Office* (MIT Press, Cambridge Mass. and London 2002); Geoffrey C. Bowker, *Memory Practices in the Sciences* (MIT Press, Cambridge Mass. and London 2005).

<sup>12</sup>Roger Silverstone and Knut H. Sørensen, “Towards the ‘Communication Society’”, in: Roger Silverstone (ed.), *Media, Technology and Everyday Life in Europe. From Information to Communication* (Ashgate, Aldershot 2005) 213-222, here 220.

not been designed with proper understanding of the way people act, react and interact.<sup>13</sup> This applies to recordmaking in the digital age too. The needs and expectations of document users (and record creators), and, most importantly, their personal information management behaviours are changing fast.<sup>14</sup> People expect the workplace to provide the same digital and mobile functionalities they use at home or in the street. Our prime minister and his cabinet colleagues all use a Blackberry PDA, even when they are sitting in parliament. What happens, may I ask, with the records created and received with these mobile, multimedia and networking technologies of the digital age? Can we use archival science to answer this question? "It is time," Helen Tibbo writes,

that the archives and records world recognizes these behavioural changes, studied them in a scientific fashion, and worked to build information management and archiving systems designed for success with digital records rather than perpetuating paper-based systems doomed for failure in the new environment. This is not to say that longstanding archival theory should be abandoned, but rather that archivists must examine their principles, practices, and rhetoric to discover what is viable, what must be adapted, and what must be created anew in the digital age.<sup>15</sup>

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<sup>13</sup>James R. Taylor, Carole Groleau, Lorna Heaton, Elizabeth Van Every, *The Computerization of Work. A Communication Perspective* (Sage Publications, Thousand Oaks 2001).

<sup>14</sup>Helen Tibbo, "Creating, managing, and archiving records: Changing roles and realities in the digital era", in: Niklaus Bütikofer, Hans Hofman, and Seamus Ross (eds.), *Managing and Archiving Records in the Digital Era. Changing Professional Orientations* (hier + jetzt, Verlag für Kultur und Geschichte, Baden 2006) 15-30, here 17.

<sup>15</sup>Tibbo, 17.

To conclude this first part of my paper. In the digital age computing will be embedded in potentially every object or device, and these will be connected and networked. People will increasingly be living and working in *ambient intelligence*. Communication processes are changing, from people talking to people, to people interacting with machines, to machines or devices or software agents talking to each other and to people.<sup>16</sup> Software assistants allow a high degree of personalization and customization. The mobile phone and the PDA are evolving into devices which capture, store, and transmit speech, music, video, photos and more, enabling cultural practices and lifestyles that are increasingly individual and mobile. And work is intertwined with these lifestyles.

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“Enduring Paradigm, New Opportunities: The Value of the Archival Perspective in the Digital Environment” is the report Anne Gilliland wrote in 2000 for the US Council on Library and Information Resources. Gilliland argues for the relevance and utility of the archival perspective in the digital environment.<sup>17</sup> So do I, as is clear from the title of my paper. However, the rapid changes in society, science and technology – even since 2000 – are challenging some of Gilliland’s arguments, especially when viewed less from within the profession – as Gilliland sometimes does – but more from a socio-cultural perspective on recordmaking and recordkeeping. In the second part of my paper, I will focus on archival principles and deal

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<sup>16</sup>Punie, 159.

<sup>17</sup>A decade earlier Charles Dollar did the same: Charles M. Dollar, *Archival Theory and Information Technologies. The Impact of Information Technologies on Archival principles and Methods* (University of Macerata, Macerata 1992).

only cursorily with the challenges to archival policies and practices which I discussed elsewhere.<sup>18</sup>

The archival perspective, according to Gilliland's report, is supported by essential principles such as:

- the sanctity of evidence;
- the life cycle of records;
- the organic nature of records;
- hierarchy in records and their descriptions; and finally
- *respect des fonds*, provenance, and original order.

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Evidence – Robert Kretzschmar recently called it “a confusing term in discussions in Germany”, adding “Many archivists therefore avoid it deliberately as a technical term”.<sup>19</sup> I will therefore refrain from the term, instead changing the perspective slightly by focusing on authenticity.

What interest has society in the authenticity of records and archives? That question is answered in the “Report on archives in the enlarged European Union”, published by the European Commission:

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<sup>18</sup>Eric Ketelaar, “Being Digital in People’s Archives”, *Archives and Manuscripts* 31 (2003) 8-22 <http://cf.hum.uva.nl/bai/home/eketelaar/BeingDigital.doc>. See also Niklaus Bütikofer, Hans Hofman, and Seamus Ross (eds.), *Managing and Archiving Records in the Digital Era. Changing Professional Orientations* (hier + jetzt, Verlag für Kultur und Geschichte, Baden, 2006).

<sup>19</sup>Robert Kretzschmar, “Archival Appraisal in Germany: A Decade of Theory, Strategies, and Practices”, *Archival Science* 5 (2004) 219-238, here 220-221.

Changing societal expectations of the roles of the archivist in the 21st century are activated by the increasing irrelevance of constraints of place, time, and medium in “the age of access”, made possible by modern information and communication technologies. These facts increase citizens’ expectations of free access to authentic information 24 hours a day, seven days a week, wherever they happen to be.<sup>20</sup>

And the report continues “The archivist has to know how to use modern technologies ... but, more importantly, he or she has to understand the strategic implications of modern technologies for the roles of the archivist and his or her relations with society in the 21st century.” That was basically the text which I had proposed for the report. I am glad, however, that in a later stage other experts improved the chapter on *Challenges for the archivist in the 21st century* by adding two essentials: the necessity “to continuously adapt these archivist roles accordingly to provide wide-ranging access to authentic information for the European citizen” and “The specific duty of the archivist is to provide the appropriate content and context so that citizens can be guaranteed that the information they receive is authentic.”<sup>21</sup>

Authenticity, according to the international standard ISO 15489, is dependent on control of the creation, receipt, transmission, maintenance and disposition of records. How do we, in the digital

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<sup>20</sup>*Report on archives in the enlarged European Union* (Luxembourg 2005) 132. Also available as

[http://ec.europa.eu/transparency/archival\\_policy/docs/arch/reportarchives.pdf](http://ec.europa.eu/transparency/archival_policy/docs/arch/reportarchives.pdf).

<sup>21</sup>*Report on archives*, 133-134.

age, create and transmit records through space-time, ensuring their authenticity and thereby their integrity and usability? <sup>22</sup>

When consulting a record its form, content and structure have to be similar to those at the time of receiving the record or at the time the record was made during a specific work process.

In paper records content, structure and form are physically present in the document and its physical arrangement. Digital records, however, don't have their content, structure and form in or on a physical medium, but in a digital representation, that serves as a generator for various ways in which the document is made visible. Digital documents are *potential* documents, coming into existence only by virtue of software that understands how to access and display them. Moreover, a digital document has another circumscription than a physical document; it may contain links to other documents, it is variable and changeable, fluid and unstable. An original does no longer exist because, intrinsically, each recording or representation (on a medium, a screen or as a print-out) is a representation or rather a reconstruction made by the operating system and the

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<sup>22</sup>In this paragraph I recapitulate my earlier papers: "The future contained in time past: archival science in the 21<sup>st</sup> century", *Journal of the Japan Society for Archival Science* 1 (2004) 20-35; "Writing on Archiving Machines", in: Sonja Neef, José van Dijck, and Eric Ketelaar (eds.), *Sign here! Handwriting in the Age of New Media* (Amsterdam University Press, Amsterdam 2006) 183-195; "Everyone an archivist", in: Niklaus Bütikofer, Hans Hofman, and Seamus Ross (eds.), *Managing and Archiving Records in the Digital Era. Changing Professional Orientations* (hier + jetzt, Verlag für Kultur und Geschichte, Baden, 2006) 9-14.

application software.<sup>23</sup> The digital archive can only be communicated through space and time by being continuously “manufactured just-in-time, on the spot.”

ISO 15489 requires ensuring “the technical and intellectual survival of authentic records through time”. This means reconstructing the content, form and structure of a record through time, every time making an ‘authentic copy’ of an original that never existed in reality but only as a virtual construction.

The original in the digital age has disappeared, it has to be reconstructed time and again through copies: the original is inscribed in its copy, Wolfgang Ernst writes.<sup>24</sup> The copy permits a (re)construction of the original. The ‘disappearance of the original’ in a digital age makes for a major paradigm shift in archivistics, as Hugh Taylor foresaw as early as 1988.<sup>25</sup> Its object is no longer a tangible document or file in a logical and partly physical context that is fixed and complete and that can be arranged and described, used and preserved, as in the paper world. The object of archivistics theory, methodology and practice in the digital age is not the archive-product but the archive-process.

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<sup>23</sup>Dollar, 45-48; Jeff Rothenberg, “Preserving Authentic Digital Information”, in: *Authenticity in a Digital Environment* (Council on Library and Information Resources, Washington DC 2000) 51-68, here 65-66.

<sup>24</sup>Wolfgang Ernst, “(in)Differenz: Zur Extase der Originalität im Zeitalter der Fotokopie”, In *Materialität der Kommunikation*, edited by Hans U. Gumbrecht and Karl L. Pfeiffer, (Suhrkamp, Frankfurt 1988) 498-518, here 515.

<sup>25</sup>Taylor, Hugh. “‘My Very Act and Deed’: Some Reflections on the Role of Textual Records in the Conduct of Affairs.” *American Archivist* 51 (1988): 456-69; reprinted in Cook, Terry, and Gordon Dodds, eds. *Imagining Archives. Essays and Reflections by Hugh A. Taylor* (The Scarecrow Press, Lanham and Oxford 2003) 131-148.

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This brings me to the second of the essential principles supporting the archival perspective, which Anne Gilliland identified: the life cycle of records.

The life cycle model for managing records portrays the life of a record as going through various stages or periods.<sup>26</sup> In stage one, the record is created, it then goes through an active period, at the end of which the record may be reviewed and determined to have no further value, at which point it is destroyed, or the record can enter stage three, where it is relegated to a semi-active status. At the end of stage three, another review occurs, at which point a determination is made to destroy or send the record to stage four, which is reserved for inactive records with long-term, indefinite, archival value.

This life cycle model can in the digital age no longer support the archival perspective. True, like the archive-process the life cycle model encompasses all the activities from capture of documents into a recordkeeping system, to their management, use, and disposal. But unlike the life cycle concept suggests, these activities do not occur in a linear movement, from creation to final disposition, but in a continuum, and in recurring cycles. Appraisal, for example, is done at the front-end, where documents are deemed to be captured into the system or not. But description and preservation imply appraisal too: what to describe and what not, what to preserve and what not. "By

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<sup>26</sup>Bantin, Philip C., "Strategies for Managing Electronic Records: A New Archival Paradigm? An Affirmation of Our Archival Traditions?," *Archival Issues* 23:1 (1998) 17-34. Online version available at <http://www.indiana.edu/~libarch/ER/macpaper12.pdf>.

choosing a particular digital preservation method, we determine which aspects of such entities will be preserved and which ones will be sacrificed...we must choose what to lose."<sup>27</sup> Another example of recordmaking and recordkeeping in a continuum is description. In the world of audiovisual archives digital media asset management has moved description from the end of the TV- and radio-production chain to the front and metadata are created, added and edited at different stages of the chain, a chain never ending as long as the material is used. The archive is never closed, it is shaped by the anticipation of the future, as Derrida wrote.<sup>28</sup>

In the conceptualization of the records continuum, recordkeeping objects "are marked out by their processes of formation and continuing formation".<sup>29</sup> The four dimensions of the records continuum model – create, capture, organize, and pluralize – are not linear stages, but recurring loops, shaping records in each of the dimensions simultaneously.<sup>30</sup> All elements of the model contribute to the record's creation.<sup>31</sup> This is visualized in the helical model of record formation which Brien Brothman proposed recently.<sup>32</sup> The term

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<sup>27</sup>Rothenberg, 55-56; T.K. Bikson and E.J. Frinking, *Preserving the Present: toward viable electronic records* (Sdu Publishers, The Hague 1993) 68.

<sup>28</sup>Derrida (1996), 18, 68; Derrida (2002), 40.

<sup>29</sup>Frank Upward, "The records continuum", in: Sue McKemmish, Michael Piggott, Barbara Reed & Frank Upward (eds.), *Archives: Recordkeeping in Society* (Wagga-Wagga, Charles Sturt University 2005) (Topics in Australasian Library and Information Studies, No. 24) 197-222, here 206.

<sup>30</sup>Barbara Reed, "Beyond Perceived Boundaries: Imagining the potential of pluralised recordkeeping", *Archives and Manuscripts* 33/1 (May 2005) 176-198, here 179.

<sup>31</sup>Tom Nesmith, [Review of] *Archives, Recordkeeping and Society*, *Archives and Manuscripts* 33/2 (November 2005) 171-177, here 174.

<sup>32</sup>Brien Brothman, "Archives, Life Cycles, and Death Wishes: A Helical Model of Record Formation", *Archivaria* 61 (2006) 235-269.

formation reflects the "indeterminacy of relations between process and final product", or the paradox of stasis and transformation. The term alludes to something in progress, but also to the end result of that progress. A digital record is never 'finished', never complete, the record "is always in a process of becoming".<sup>33</sup> Every interaction, intervention, interrogation, and interpretation by creators, users, and archivists activates the record.<sup>34</sup> "Record formation allows that any one of the phases of the conventional records management life cycle can occur at multiple points in time and place."<sup>35</sup>

One of the strategies for digital preservation is encapsulating digital objects and storing these in a digital repository. Every time the record is called from the repository, a digital copy is made, with added metadata which show when, by whom and for what purpose the record was activated. Every activation adds a layer of metadata to the primary record. All these activations are acts of co-creatorship determining the record's meaning. As Brothman writes one cannot reduce the making of records

to an original context or singular creative moment...nor do records simply reach a final state or condition. Rather, objects and processes are enmeshed in a dynamic of departure and return, emerging

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<sup>33</sup>Sue McKemmish, "Are Records Ever Actual?", in: Sue McKemmish and Michael Piggott (eds.), *The Records Continuum. Ian Maclean and Australian Archives First Fifty years* (Ancora Press and Australian Archives, Clayton 1994) 187-203, here 200.

<sup>34</sup>Eric Ketelaar, "Tacit Narratives: The Meanings of Archives, *Archival Science* 1 (2001) 143-155 <http://cf.hum.uva.nl/bai/home/eketelaar/TacitNarratives.pdf>.

<sup>35</sup>Brothman, 261.

sameness and difference, repetition and recursion along with distancing and differentiation.<sup>36</sup>

The archive is therefore not static, but a dynamic open-ended process. Quite rightly a recent German collection of essays is called *Archivprozesse. Die Kommunikation der Aufbewahrung* (Archival processes. The communication of storage). In the introduction Jürgen Fohrmann explains that the archive should be seen as a dynamic process:

If everything that originates from the archive, is modelled by the work of the user, then again put into the archive, to be activated over again etc. - then the archive is not only to be understood as thesaurus, as place, as *Wunderkammer*, but as process.<sup>37</sup>

At the moment, this is difficult to translate into archival methodology and practice. Even digital repositories or e-depots, as currently developed, seem to be modern equivalents of the *Wunderkammer* because they have been modeled, so to speak, looking in the rear-view mirror and not as a component in recordmaking.<sup>38</sup> The OAIS (Open Archival Information System) standard ISO 14721 is not

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<sup>36</sup>Brothman, 260.

<sup>37</sup>Fohrmann, Jürgen. "'Archivprozesse' oder über den Umgang mit der Erforschung von 'Archiv'. Einleitung." In *Archivprozesse: die Kommunikation der Aufbewahrung*, edited by Leander Scholz Hedwig Pompe (DuMont, Köln 2002) 19-23, here 22.

<sup>38</sup>Barbara Reed, "The tradition and position", in: Niklaus Bütikofer, Hans Hofman, and Seamus Ross (eds.), *Managing and Archiving Records in the Digital Era. Changing Professional Orientations* (hier + jetzt, Verlag für Kultur und Geschichte, Baden, 2006) 69-86, here 76.

primarily interested in recordmaking, but in preserving information packages ingested from producers, or record creators.<sup>39</sup>

Archival theory should provide tools for a redesign of the record formation – both the process and the final product. Such redesigning will also lead to reorganization, that is redistributing responsibilities, for example between records creating agencies and archival institutions. But just as structure follows strategy, so should archival reorganization follow rethinking the archival paradigm.

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The organic nature of records – the third component of the archival paradigm – is understood by Anne Gilliland as referring to the interdependent relationship between the record and its creator: “A complex web of relationships also exists between the materials and the historical, legal, and procedural contexts of their development as well as among all materials created by the same activity.”<sup>40</sup> This web of relationships becomes even more complex in the digital age.

Technology is changing the way in which organizations work. True, important organizational changes of the Weberian bureaucracies (including decentralisation and delayering) began before the

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<sup>39</sup>Reed, “The tradition and position”, 77; Hans Hofman, “Review: Some Comments on Preservation Metadata and the OAIS Model”, *DigiCult.Info* 2 (October 2002) 15-20, available at [http://www.digicult.info/downloads/digicult\\_info2.pdf](http://www.digicult.info/downloads/digicult_info2.pdf).

<sup>40</sup>Gilliland-Swetland, 16.

widespread use of personal computers.<sup>41</sup> But ICT enables organizations in the private and public sector new modes of collaborative work, and greater flexibility, interactivity, and control. This works both within the organization and outside: the enterprise is a network, the network is the enterprise, argues Manuel Castells.<sup>42</sup> Thereby the relationship between record creator and record is blurred, because the boundaries of the creator and the boundaries of the record are blurred. In e-business and e-government more and more records are created in a network in which different partners contribute to the record, to the extent that it is difficult, even impossible, to attribute the record to any of the partnering creators.<sup>43</sup> Check for example one of the Dutch provincial risk maps on the Internet.<sup>44</sup> The provincial government extracts the data from a national database, which is filled by a host of government agencies at national, provincial and local levels. They all enter their data on dangerous objects, ranging from firework factories to airfields, and from railroads to risks for flooding. On the risk map for the province Overijssel, risks in neighbouring Dutch provinces are also shown – strangely enough the risk map ends at the Dutch-German border. Now who is the creator of the record, the risk map? In Australia – where practitioners and theorists since the 1960s developed the concept of ‘multiple provenance’ – Chris Hurley is now proposing a theory of parallel provenance, allowing to identify two or more entities each residing in a different context as establishing the

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<sup>41</sup>Alistair Tough, “Records and the transition to the digital”, in: Alistair Tough and Michael Moss (eds.), *Record Keeping in a Hybrid Environment...* (Chandos Publishing, Oxford 2006) 1-25, here 1.

<sup>42</sup>Manuel Castells, *The Internet Galaxy. Reflections on the Internet, Business, and Society* (Oxford University Press, Oxford 2001) 64-78.

<sup>43</sup>Dollar, 50-51; Tibbo, 21-23.

<sup>44</sup><http://www.risicokaart.nl/>.

provenance of a record, even when they are involved in different kinds of action, for example creation and control.<sup>45</sup>

Even more difficult is the creatorship of interactive and hyperlinked documents. In our digital world "Texts become "hypertexts" which are reconstructed in the act of reading, rendering the reader an author".<sup>46</sup> Likewise, the record becomes an interactive dialogue between the organization and the client, customer or citizen. This allows the subject of the record to become a party to the business function which created the record, a co-creator. This entails a complete paradigm shift in archival theory, policies, legislation, and practice. Archival science has only just begun to study this social and cultural phenomenon of co-creatorship.

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Anne Gilliland includes in the archival paradigm also the hierarchy in records and their descriptions, the fourth component of the archival perspective she discusses. I agree and disagree with her assessment of the applicability of this principle in the digital age. The hierarchy of records "imposed by the creating agency's filing practices and position in a bureaucratic hierarchy and by the processes through which the records were created"<sup>47</sup> is disintegrating because of the shifting to networking, individualization and globalization. On the

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<sup>45</sup>Chris Hurley, "Parallel Provenance: (1) What if Anything is Archival Description?", *Archives and Manuscripts* 33/1 (May 2005) 110-145.

<sup>46</sup>Poster, Mark. *What's the Matter with the Internet?* (University of Minnesota Press, Minneapolis 2001) 188.

<sup>47</sup>Gilliland-Swetland, 18.

other hand, the hierarchical and collective archival description traditionally practiced by archivists lend themselves perfectly to hierarchical and object-oriented metadata structures such as SGML which are the tools in the digital environment.

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Finally, *respect des fonds*, provenance and original order. The conceptualization of these core tenets of archival theory and practice, Anne Gilliland admits, has become more complex. In 1993 the *First Stockholm Conference on Archival Theory and the Principle of Provenance* agreed that the provenance or context of archives remains

a vital means of assessing the source, authority, accuracy and value of the information which they contained for administrative, legal (including access to information), research and cultural use.<sup>48</sup>

However, the formulation of the principle of provenance can not remain static, due to ever-changing aims and aspirations of society, as Michael Roper summed up the Stockholm conference. Provenance needs reconceptualization to meet the challenges I just mentioned. Our Canadian colleagues have led the way in the "rediscovery of provenance". Terry Cook called ten years ago for "a renewed focus on the context, purpose, intent, interrelationships, functionality, and accountability of the record, its creator, and its creation processes,

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<sup>48</sup>Michael Roper, "Archival Theory and the Principle of Provenance: a Summing-up," in: Kerstin Abukhanfusa and Jan Sydbeck (eds.), *The Principle of Provenance. Report from the First Stockholm Conference on Archival Theory and the Principle of Provenance 2-3 September 1993* (Svenska Riksarkivet, Stockholm 1994) 187-192, here 187.

wherever these occur."<sup>49</sup> The reformulated concept of provenance, as proposed by Tom Nesmith,

consists of the social and technical processes of the records' inscription, transmission, contextualization, and interpretation which account for it [the record's] existence, characteristics, and continuing history.<sup>50</sup>

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The keywords are renewed focus, reconceptualizing, reformulating, redefining in the digital age, as Sara Tyacke wrote,

our definitions of the record and its "record-ness", and what custody, authenticity, and provenance mean, and build in both the legal and procedural frameworks necessary at the point when the digital systems and their consequent records are created.<sup>51</sup>

But the new paradigm of archival science is not the old archival paradigm with the word machine-readable stuck to it, as Theo Thomassen wrote.

The new archival paradigm is a new explanatory model for the scientific field in a new stage of its development, a model which

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<sup>49</sup>Terry Cook, "What is past is prologue. A history of archival ideas since 1898, and the future paradigm shift", *Archivaria* 43 (1996) 17-63, here 48

<http://journals.sfu.ca/archivar/index.php/archivaria/article/view/12175>.

<sup>50</sup>Tom Nesmith, "Still Fuzzy, But More Accurate: Some Thoughts on the 'Ghosts' of Archival Theory", *Archivaria* 47 (Spring 1999) 146

<http://journals.sfu.ca/archivar/index.php/archivaria/article/view/12701/13875>.

<sup>51</sup>Tyacke, 25.

defines the fundamentals of archival science and which can only do so on the basis of the classic notions having been reinvented and reconceived.<sup>52</sup>

“The loss of physicality that occurs when records are captured electronically is forcing archivists to reassess basic understandings about the nature of the records of social and organizational activity, and their qualities as evidence.”<sup>53</sup> Thus, archival science in the 21st century will study phenomena that look like traditional facts and events, even carry traditional labels, but that are conceptually totally different. An ‘original’ is no original, a ‘record’ is not a record, ‘provenance’, ‘preservation’, ‘access’, and ‘use’ are no provenance, preservation, access, and use *as we used to know them*. New paradigms

incorporate much of the vocabulary and apparatus, both conceptual and manipulative, that the traditional paradigm had previously employed. But they seldom employ these borrow elements in quite the traditional way. Within the new paradigm, old terms, concepts and experiments fall into new relationships one with the other.<sup>54</sup>

This makes it an urgent task for us to redesign our professional terminology, while at the same time clearing the terminological

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<sup>52</sup>Thomassen, Theo, ‘The Development of Archival Science and its European Dimension’, in: *The Archivist and the Archival Science. Seminar for Anna Christina Ulfsparre...* (Landsarkivet, Lund 1999) 67-74

<http://www.daz.hr/arhol/thomassen.htm>.

<sup>53</sup>McKemmish, 200.

<sup>54</sup>Thomas S. Kuhn, *The structure of scientific revolutions*. Third edition (The University of Chicago Press, Chicago and London 1996) 149.

obscurities on the borderlines between records and management and information technology.<sup>55</sup>

*New Uses for an Old Science* – that was the subtitle of Luciana Duranti’s series of articles which in the early nineties introduced European diplomatics to the North-American archival communities.<sup>56</sup> I used it for my paper too. The principle of provenance and other basic tenets of archival science can be put to new uses in the digital age. At the same time archival science is robust enough to develop new concepts, theories, and methods which meet the challenges of the digital age.

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<sup>55</sup>Matthias Nuding, “Terminologische Unschärfen im Grenzbereich von Schriftgutverwaltung, Informationstechnik und Archivwesen,” in: Alexandra Lutz (ed.), *Neue Konzepte für die archivische Praxis* (Archivschule Marburg, Marburg 2006) 85-120.

<sup>56</sup>Luciana Duranti, *Diplomatics. New Uses for an Old Science* (The Scarecrow Press, Lanham and London 1998).