Conference Proceedings

Edited by:
Luciana Duranti and
Elizabeth Shaffer

The Memory of the World in the Digital Age: Digitization and Preservation

An international conference on permanent access to digital documentary heritage

United Nations
Educational, Scientific and
Cultural Organization

Memory of the World
20th Anniversary

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In collaboration with

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26 to 28 SEPTEMBER 2012
Vancouver, British Columbia, Canada
Sheraton Vancouver Wall Centre

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UNESCO Memory of the World Programme, Knowledge Societies Division

This book of Proceedings includes most of the papers and posters presented at the International Conference "The Memory of the World in the Digital Age: Digitization and Preservation" held on 26–28 September 2012 in Vancouver, British Columbia, Canada, by the UNESCO Memory of the World Programme, Knowledge Societies Division, and The University of British Columbia in collaboration with the University of Toronto.

The proceedings have been compiled and formatted with minor editing; papers and posters appear as submitted. The authors are responsible for the choice and the presentation of the facts contained in this publication and for the opinions they express, which are not necessarily those of UNESCO and do not commit the Organization.

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InterPARES Project
International Research on Permanent Authentic Records in Electronic Systems

Preface

This publication presents the proceedings of the international conference 'Memory of the World in the Digital Age: Digitization and Preservation' which was held in Vancouver, Canada, from 26 to 28 September 2012.

More than 500 experts and other interested persons from all regions of the world participated in this knowledge-sharing and policy-driving event to discuss and exchange opinions on how to protect the world's documentary heritage. Although this heritage is the record of knowledge, its physical carriers are extremely vulnerable and can easily disappear without a trace. Whether recorded on a clay tablet or an electronic tablet, our methods of sharing content and knowledge need to be protected.

It is impossible to exaggerate the importance of documentary heritage in our lives. It governs our actions whether these relate to creating the basis of mutual respect between different civilizations and communities or building knowledge societies. Documentary heritage provides the foundation of peace, our identity and knowledge.

UNESCO's interest in this subject matter is as fundamental as its constitution with its mandate to contribute to building peace through the spread of knowledge from improved access to printed and published materials. These core materials, our documentary heritage, have been preserved in archives, libraries and museums for generations.

But while measures needed to maintain access to print materials are globally understood, the newer challenges related to preserving digital information are not keeping pace with technological development. The need for dedicated hardware and software, associated with their rapid obsolescence, hamper our ability to keep invaluable content accessible. Unless timely migration to newer technologies, operating systems and software platforms is assured, we face the risk developing digital Alzheimer's.

UNESCO's expectation from this Conference was to obtain a better definition of our expected role, and our contribution to setting a global digital agenda. The UNESCO/UBC Vancouver Declaration sets out specific recommendations which we will be implementing and incorporating into our digital strategy. Likewise, we expect that our Member States, professional organizations and private sector bodies will also implement the recommendations addressed to them.

Only through collaborative strategic alliances can we overcome the major challenges threatening the preservation of digital information. We believe that the presentations featured in this publication provide the basis for a global commitment to preserving the memory of our world in this digital age.

Jānis Kārkliņš
Assistant Director-General
for Communication and Information

Contents

Strengthening the Regulatory Framework in a Digital Environment

A Review of Archives Legislation

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Abstract

This paper outlines some of the challenges posed to archival legislation in Commonwealth countries regarding the creation, management, and preservation of records in increasingly complex digital environments. The author argues that archival science can contribute to the strengthening of current archival legislation, so as to address issues in the digital environment. The author also proposes future areas of empirical research on archival legislation.

Author

Elaine Goh is a doctoral student at the University of British Columbia. Her research interest is on archival legislation in Commonwealth countries and on organizational culture and behaviour. Elaine is a graduate research assistant of the International Research on Permanent Authentic Records in Electronic Systems (InterPARES) Project. Prior to starting her doctoral program, Elaine worked as the Assistant Director of Records Management in the National Archives of Singapore.

1. Law and Technological Development

Legislation is one of the "medium(s) through which law is expressed."[1] One approach in terms of understanding how law is expressed is the instrumental and functionalist perspective. This perspective argues that the rules of law should be imbued with certain qualities or attributes. For example, the rules of law should be stable in terms of comprising "determinate requirements that people should consult before acting and not retrospectively establish legal obligations."[2] The law should have the quality of clarity and precision, so that those involved in the implementation and enforcement of the law understand the rules and are able to apply the law consistently.[3] The law should also be imbued with the quality of "foreseeability" in terms of its ability to predict future events, in order to guide human actions and behavior.[4] Despite the fact that most legislations aim to have "precise prescriptions", such prescriptions may not necessarily be a "faithful description of any state of affairs but a complex ideal that is even more complex to realize."[5]

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[1] Wim Voermans, "Quality of EU Legislation Under Scrutiny: What Kind of Problem, by what Kind of Standards," in *Quality of Legislation - Principles and Instruments - Proceedings of the Ninth Congress of the International Association of Legislation (IAL) in Lisbon, June 24th-25th, 2010*, ed. Luzius Mader and Marta Tavares de Almeida (Germany: Nomos, 2011), 35.

[2] Naomi Choi, *Rule of Law* (Thousand Oaks, California: Sage Reference Online), accessed 22 July 2012, http://knowledge.sagepub.com/view/governance/n475.xml?rskey=XDEOlq&row=4.

[3] Jorge Miranda, "Law, Rule of Law and Quality of Law," in *Quality of Legislation: Principles and Instruments - Proceedings of the Ninth Congress of the International Association of Legislation in Lisbon, June 24th-25th, 2010*. (Germany: Nomos, 2011), 27.

[4] Ibid.

[5] Roderick A. Macdonald, "Legislation and Governance," in *Rediscovering Fuller: Essays on Implicit Law and Institutional Design*, ed. Willem J. Witteveen and Wilbren Van der Burg (Amsterdam: Amsterdam University Press,

In the legal literature, there has been extensive coverage with regard to the inability of the law to keep up with technological change. According to Moses, "as technology gives rise to new possibilities, and people engage in new forms of conduct, the law continues to be directed to solving old problems and is unable to keep up with the modern world."[6] Consequently, "technological change can make the law become unclear and it can make law that was previously unobjectionable become subject to criticisms."[7] Another risk caused by the inability of the law to address technological developments is that "courts and legal practitioners are faced with applying decades—and even centuries—old definitions and principles to radical technologies not even conceived of less than twenty years ago."[8]

One area where one can witness the inability of existing laws to address challenges in the digital environment are records related legislations, which is defined as legislation that "deals with records or information generally such as evidence legislation, which is not in connection with a specific legislated activity."[9] This can be illustrated by the recent review of the *Evidence Act (1997)* in Singapore. The Minister of Law in Singapore in the second reading of the Evidence (Amendment) Bill explained that when the act was first introduced in 1996, a "cautious approach" was taken in terms of admissibility of computer output as evidence.[10] The Minister described the approach as a "cumbersome process not consonant with modern realities" and stressed that "computer output evidence should not be treated differently from other evidence."[11] The Minister's comments resonated with a consultation paper by the Singapore Law Academy.

The Academy claimed that that the *Evidence (Amendment) Act 1996* was developed on the premise that the certification of electronic records was based on a client-server network model, where responsibility of records is vested with the systems administrator. However, businesses are now adopting a delegated responsibility model, where responsibility for the computing system and business operations are now distributed among the client, information technology vendors and with other service providers.[12] The Academy observed that "in such computing and business models, it will be hard to identify the party or organisation responsible for the reliability of the electronic evidence."[13] The statement made by the Academy outlines some of the major challenges faced by archivists and records professionals in terms of ensuring the long-term trustworthiness of records over space and through time, particularly through the

1999), 288; Naomi Choi, *Rule of Law* (Thousand Oaks, California: Sage Reference Online, accessed 22 July 2012, http://knowledge.sagepub.com/view/governance/n475.xml?rskey=XDEOlq&row=4.

[6] Lyria Bennett Moses, "Agents of Change: How the Law 'Copes' with Technological Change," *Griffith Law Review* 20, no. 4 (2011): 763

[7] Lyria Bennett Moses, "Adapting the Law to Technological Change: A Comparison of Common Law and Legislation," *University of New South Wales Law Journal* 26, no. 2 (2003): 396.

[8] Gregory E. Perry and Cherie Ballard, "A Chip by any Other Name would Still be a Potato: The Failure of Law and its Definitions to Keep Pace with Computer Technology," *Texas Tech Law Review* 24 (1993): 799.

[9] Jim Suderman, Fiorella Foscarini, and Erin Coulter, "International Research on Permanent Authentic Records in Electronic Systems (InterPARES 2 Project) Policy Cross-Domain: Archives Legislation Study Report," 2 September 2005, 4, accessed 5 September 2012, http://www.interpares.org/display_file.cfm?doc=ip2%28policy%29archives_legislation_study_report.pdf.

[10] Singapore. Second Reading Bills. Evidence Amendment Bill, 14 February 2012, accessed 5 September 2012, http://sprs.parl.gov.sg/search/topic.jsp?currentTopicID=00076883-WA&currentPubID=00076904-WA&topicKey=00076904-WA.00076883-WA_3%23id-6e0461e8-8588-49d0-b05e-fc6c2d596955%23.

[11] Ibid.

[12] Daniel Seng and Sriram Chakravarthi, *Computer Output as Evidence* (Singapore: Singapore Academy of Law, 2003), 80, accessed 5 September 2012, http://www.lawnet.com.sg/legal/ln2/comm/PDF/Computer_Output_as_Evidence.pdf.

[13] Ibid.

use of cloud computing. Cloud computing poses several risks that can compromise security and adversely affect the governance framework for the management and preservation of records. These risks reflect the need of developing and strengthening existing archives acts in relation to records management functions. As argued by Chasse, "the silence of case law does not justify the silence of legislation. The impact of electronic technology upon law and practice, and its rapid change, should lead to the conclusion that legislation is needed before the law is demonstrably inadequate."[14]

2. Objectives

This paper outlines the major challenges posed by digital technologies, particularly in a cloud computing environment, and discusses how such an environment can compromise the trustworthiness of records. The paper puts forth the position that a strong archival legislation can help to institute adequate controls for the proper creation, maintenance and preservation of records. In addition, the paper highlights some of the current weakness and inadequacies of certain archives acts, and argues that archival science can bridge the gap between the current archival legislation and its ability to address issues in the digital environment. Finally, the paper concludes by recommending some possible areas of research relating to archival legislation.

3. Challenges in the Cloud Computing Environment

Cloud computing is defined as a "model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers storage, applications and services) that can be rapidly provisioned and released with minimal management effort or cloud provider interaction."[15] Cloud computing is not a new technology per se, but it is regarded as a novel service delivery model, designed to bring about better economies of scale and scalability of information technology services and infrastructure.[16] Tucker, in a CTO Roundtable discussion explained, "cloud computing is not so much a definition of a single term as a trend in service delivery taking place today."[17]

The National Institute of Standards and Technology in the United States has outlined three service models.[18] First, the Cloud Software-as-a-Service (SaaS) allows consumers to access the application system, and the cloud service provider will provide the necessary infrastructure and application capabilities. Second, the Cloud Platform-as-a-Service (PaaS) involves the cloud provider supplying the necessary infrastructure, operating environments, and tools for the development of specifically created or

[14] Ken Chasse, "Electronic Records as Documentary Evidence," *Canadian Journal of Law and Technology* 6 (2007): 142, accessed 5 September 2012, http://cjlt.dal.ca/vol6_no3/chasse.pdf.
[15] Peter Mell and Timothy Grance, *The NIST Definition of Cloud Computing - Recommendations of the National Institute of Standards and Technology* (Gaithersburg: National Institute of Standards and Technology,[2011]), vi, accessed 5 September 2011, http://csrc.nist.gov/publications/nistpubs/800-145/SP800-145.pdf.
[16] Chris Rose, "A Break in the Cloud? The Reality of Cloud Computing," *International Journal of Management and Information Systems* 15, no. 4 (2011): 59; Jared A. Harshbarger, "Cloud Computing Providers and Data Security Law: Building Trust with United States Companies," *Journal of Technology Law and Policy* 16 (2011): 232.
[17] Mache Creeger, "CTO Roundtable: Cloud Computing," *Communications of the ACM* 52, no. 8 (August 2009): 52.
[18] Peter Mell and Timothy Grance, *The NIST Definition of Cloud Computing - Recommendations of the National Institute of Standards and Technology* (Gaithersburg: National Institute of Standards and Technology,[2011]), 4, accessed 5 September 2011, http://csrc.nist.gov/publications/nistpubs/800-145/SP800-145.pdf.

acquired applications by the consumer. Finally, under the Infrastructure-as-a-Service (IaaS), model, the consumer does not physically manage the infrastructure, such as computers and networks, but the consumer has the flexibility to control both the operating environment, such as the type of operating system and database, and type of application systems.[19] Regardless of the model adopted by the user, cloud computing is essentially a distributed service delivery model, which involves the outsourcing of information and communications technology (ICT). This has implications in terms of the management and preservation of digital records.

One challenge in cloud computing is concerns raised with regard to the security of the recordkeeping infrastructure. Cloud providers may make changes to the computing infrastructure, the operating environment, and/or the application implementation, in order to deal with issues relating to usage load and storage. These technological changes may inadvertently affect the security of the recordkeeping system.[20] The nature and extend of this effect is partly dependent on the specific type of service model. For example, the use of SaaS as a cloud service model, i.e., web-based collaboration tools such as Google Apps, means that the responsibility for network, infrastructure security, and application code security primarily vests with the cloud provider.[21] In an IaaS service model, the cloud provider has control over the security of the computing facility, whereas the cloud user has control and responsibility over the application code.[22]

There are also transborder jurisdictional issues with regard to the control of records in a cloud computing environment, since records may be stored on data centres in different locations. Certain countries may not necessarily conform to the data protection and privacy related legislations and policies of the countries of the record creators.[23] There might also be an "unknown number of copies of the same digital document in different iterations across different jurisdictions" which "could affect the identification of relevant data for criminal proceedings." Multiple copies of records also pose problems for records retention, since it is "common for service providers to replicate records for multiple backup, sending copies to sites in different locations or even different jurisdictions" and "this can mean that time-expired records are not properly deleted from every server held in every site."[24] The accuracy, reliability and authenticity of records is at risk if the identity of the records are altered, should there be a lack of audit trails of the recordkeeping system and if there are no proper procedures to ensure proper delineation

[19] Ibid., pp.2-3; Chris Rose, "A Break in the Cloud? the Reality of Cloud Computing," *International Journal of Management and Information Systems* 15, no. 4 (2011): 61-64.
[20] Scott Paquette, Paul T. Jaegar, and Susan C. Wilson, "Identifying the Security Risks Associated with Governmental use of Cloud Computing," *Government Information Quarterly* 27, no. 3 (2010): 245-253.
[21] Peter Mell and Timothy Grance, *The NIST Definition of Cloud Computing - Recommendations of the National Institute of Standards and Technology* (Gaithersburg: National Institute of Standards and Technology,[2011]), 2-3, accessed 5 September 2011, http://csrc.nist.gov/publications/nistpubs/800-145/SP800-145.pdf; Stephen Mason and Esther George, "Digital Evidence and 'cloud' Computing," *Computer Law & Security Review* 27, no. 5 (2011): 525.
[22] Peter Mell and Timothy Grance, *The NIST Definition of Cloud Computing - Recommendations of the National Institute of Standards and Technology* (Gaithersburg: National Institute of Standards and Technology,[2011]), 4, accessed 5 September 2011, http://csrc.nist.gov/publications/nistpubs/800-145/SP800-145.pdf.
[23] Miranda Mowbray, "The Fog Over the Grimpen Mire: Cloud Computing and the Law," *SCRIPTed* 6, no. 1 (2009): 135-136, http://www.law.ed.ac.uk/ahrc/gikii/docs3/mowbray.pdf; Stephen Mason and Esther George, "Digital Evidence and 'cloud' Computing," *Computer Law & Security Review* 27, no. 5 (September 2011): 525-526.
[24] Australasian Digital Recordkeeping Initiative, *Advice on Managing the Recordkeeping Risks Associated with Cloud Computing*. 2010: Council of Australasian Archives and Records Authorities, 29 July 2010, 10.

of responsibility between the cloud provider and the user.[25] Issues with regard to the ownership, custody of records are also at risk, particularly if service providers merge and dissolve. In addition, there are challenges in exporting and migrating records across various platforms, particularly if record owners decide to change cloud providers.[26] These data migration challenges can be due to the incompatibility of data storage and transmission formats between vendors, or the sheer scale and complexity of the data to be migrated.

Given such challenges, it is clear that outsourcing of ICT services does not mean an outsourcing of risks. Record creators cannot entirely trust records in a cloud computing environment and it will require far more than authentication technologies to enable such records to be trustworthy. When archivists speak of trust in records, we refer to the "accuracy, reliability and authenticity of records."[27] As "targets of our primary trust," we can place our trusts on records, provided that there are adequate controls on the policies, procedures, mechanisms governing the record's creation and maintenance stage.[28] However, trust is also a "three part relation that is grounded in the truster's assessment of the intentions of the trusted with respect to some action."[29] Hardy adds that "A trusts B to do X" and that "trust depends on the context."[30] This relational aspect of trust relations between records creators and government agencies can be enforced through understanding these two parties as "agencies of accountability."[31] These agencies "provide insurance of trustworthy conduct, by putting pressure (facilitating, controlling or sanctioning) on persons, roles, institutions or systems that are the targets of our primary trust."[32] The trust relations between the record creator and the national archives can be enforced through articulating their roles and responsibilities as articulated in the archives law. Given that the trustworthiness of records are at risk in a digital environment and given the importance of recordkeeping in society, the law can help in sustaining the "trust relationship" between the creating agency and the preserver by "(taking) over those areas in which there is significant value at stake."[33]

4. Analysis of Archival Legislation in Commonwealth Countries

Archives researchers have critiqued the archives acts in their respective countries as being ineffectual and reactive with regard to management of digital records. Archives acts are described as being "weak", "outdated, "old and inconsistent."[34] Most archival legislation in Commonwealth countries based their

[25] Katharine Stuartand and David Bromage, "Current State of Play: Records Management and the Cloud," *Records Management Journal* 20, no. 2 (2010): 220-221.
[26] Barclay T. Blair, "Governance for Protecting Information in the Cloud," *Association of Records Managers and Administrators International,* 2010, HT 4, http://www.arma.org/HotTopic/HotTopic910.pdf.
[27] ICA International Terminology Database, accessed 20 July 2012, http://www.web-denizen.com/.
[28] Piotr Sztompka, *Trust: A Sociological Theory* (UK: Cambridge University Press, 1999), 47-48.
[29] Hardin, Russell, *Trust and Trustworthiness* (New York: Russell Sage Foundation, 2002), xx.
[30] Ibid., p. 9.
[31] Piotr Sztompka, *Trust: A Sociological Theory* (UK: Cambridge University Press, 1999), 47-48.
[32] Ibid.
[33] Hardin, Russell, *Trust and Trustworthiness* (New York: Russell Sage Foundation, 2002), 64.
[34] Chris Hurley, "From Dust Bins to Disk-Drives and Now to Dispersal: The State Records Act 1988 (New South Wales)," *Archives and Manuscripts* 26, no. 2 (November 1998): 390-409; The National Archives. "Proposed National Records and Archives Legislation - Proposals to Change the Current Legislative Provision for Records Management and Archives - Consultation Paper," (2003) http://collections.europarchive.org/tna/20081023125241/http://www.nationalarchives.gov.uk/documents/policy-consultation.pdf (accessed 20 July, 2012).

archival legislation on the UK Public Record Act of 1958, an act written for a paper based records environment and unable to meet the challenges posed by the digital environment.[35] In fact, the National Archives in UK consultation paper on a proposed archival legislation writes,

> The public sector needs a legislative framework which will assure the accuracy and comprehensiveness of the records it makes. Keeping records that can serve as evidence of an organisation's policies, procedures, actions and decisions, and associated matters of governance, accountability and propriety cannot be left to chance.[36]

One weakness of the current archival legislation in Commonwealth countries is that it does not stipulate the recordkeeping roles and responsibilities of government agencies as records creators. The act only states that government agencies should seek responsibility from the national authority before destroying public records. Most archival legislation in Commonwealth countries stipulate the role of the national archives in terms of acquiring, preserving and promoting access to archival records. In other words, the archival legislation fulfils a constitutional function in terms of establishing an institution.[37] The archival legislation in Canada and Singapore also states that the national archives should play an advisory role in conducting or facilitating the development of a records and/or information management programme in the government. In Singapore, the act even state that the national archives "shall advice public officers concerning standards and procedures pertaining to the management of public records."[38] However, archival legislation in Canada and Singapore is notably silent with regard to the shared lines of responsibilities and the accountability structures, with regards to recordkeeping and preservation, between record creators and the national archives. As such, there is no means of verifying that records creators and preservers fulfill their responsibilities according to accepted professional standards.

Establishing lines of responsibilities and an accountability framework through an archival legislation helps to preserve the trustworthiness of records. Through such lines of responsibilities and accountability frameworks, the creating agency is given the "primary responsibility for their reliability and authenticity while they are needed for business purposes," while the archives is accorded "responsibility for their authenticity over the long-term."[39] Moreover, as the reliability of records is dependent on the "completeness of the record's form and the amount of control exercised on the process of its creation," archival legislation should specify that government agencies must exercise due diligence

[35] Michael Roper and Laura Millar, ed., *A Model Records and Archives Law* (United Kingdom: International Council on Archives and International Records Management Trust, 1999), http://www.irmt.org/documents/educ_training/public_sector_rec/IRMT_archive_law.pdf.
[36] The National Archives. "Proposed National Records and Archives Legislation - Proposals to Change the Current Legislative Provision for Records Management and Archives - Consultation Paper," (2003), 7, accessed 20 July, 2012, http://collections.europarchive.org/tna/20081023125241/http://www.nationalarchives.gov.uk/documents/policy-consultation.pdf.
[37] Wim Voermans, "Quality of EU Legislation Under Scrutiny: What Kind of Problem, by what Kind of Standards," in *Quality of Legislation - Principles and Instruments - Proceedings of the Ninth Congress of the International Association of Legislation (IAL) in Lisbon, June 24th-25th, 2010*, ed. Luzius Mader and Marta Tavares de Almeida (Germany: Nomos, 2011), 35.
[38] *National Heritage Board Act*, Singapore Statutes Online, 1993, no. 13, http://160.96.185.113/aol/search/display/view.w3p;page=0;query=Id%3A%22f03d693e-b8dd-4130-a14f-be68ea23198d%22%20Status%3Apublished;rec=0.
[39] Luciana Duranti, "The Impact of Digital Technology on Archival Science," *Archival Science* 1, no. 1 (2001): 49, http://dx.doi.org/10.1007/BF02435638.

in outsourcing government records to third party service providers, ensuring that adequate measures are in place for the agency to exercise control over the identity and integrity of its records.[40]

Nevertheless, there are some archival legislation which attempt to specify the roles and responsibilities of both the record creator and preserver. For example, the *Public Records (Scotland) Act 2011* states that government agencies should submit a records management plan to the archival authority.[41] The archival authority, in turn, is required to submit an annual plan to the Scottish Ministers on the records management plans submitted by the agencies. The archival authority needs to include details such as the records management reviews that they conducted, as well as the "names of any authorities that have failed to comply with any of the requirements of an action notice together with details of the alleged failures."[42] Another example of an archives act which states the recordkeeping responsibilities of both public offices and the archival authority is the Public Records Act (2005) in New Zealand. The act specifies the recordkeeping responsibilities of public officers with regard to the creation and maintenance of "full and accurate records of its affairs, in accordance with normal, prudence business practice, including the records of any matter that is contracted out to an independent contractor."[43] The act requires that records under the control of public officers must be maintained in an "accessible form" until the disposal of the records are "authorised by or under this Act or required by or under another Act."[44] The act also articulates the role of the Chief Archivist in issuing standards relating to the creation, maintenance, appraisal and access to records. The Chief Archivist is expected to present a report to the Minister on recordkeeping practices in public officers annually, and to conduct an audit of recordkeeping practices of the public sector.[45]

Specifying the roles and responsibilities of both the record creator and the preserver in the archival legislation is important in a digital environment, as it is based on the premise that "management of digital records must proceed from a comprehensive understanding of all phases or stages in the lifecycle of records, from the time they are generated, through their maintenance by their creator, and during their appraisal, disposition and long-term preservation as authentic memorials of the actions and matters of which they are a part."[46] It will also be useful if archival legislation provides a definition of archival concepts like reliability and authenticity, which would apply to both the record creator and the archives. For example, authenticity is the trustworthiness of a record as a record and is dependent on the "record's state, mode and form of transmission, and to the manner of its preservation and custody."[47] As such,

[40] ICA International Terminology Database, accessed 20 July 2012, http://www.web-denizen.com/.
[41] The National Archives of Scotland merged with the General Register Office for Scotland in April 2011 to become an entity known as the National Records of Scotland. *Public Records (Scotland)* Act, 2011, accessed 21 July 2012, http://www.nas.gov.uk/documents/PublicRecordsScotlandActPublished.pdf.
[42] *Public Records (Scotland)* Act, 2011, accessed 21 July 2012, http://www.nas.gov.uk/documents/PublicRecordsScotlandActPublished.pdf.
[43] *Public Records Act*, *Parliamentary Counsel Office* 2005, no, 14, http://www.legislation.govt.nz/act/public/2005/0040/latest/DLM345529.html.
[44] Ibid.
[45] Ibid.
[46] Yvette Hackett, Domain 3 Task Force, "Appendix 21: Preserver Guidelines – Preserving Digital Records: Guidelines for Organizations," [electronic version] in *International Research on Permanent Authentic Records in Electronic Systems (InterPARES) 2: Experiential, Interactive and Dynamic Records*, ed. Luciana Duranti and Randy Preston (Padova, Italy: Associazione Nazionale Archivistica Italiana, 2008), 734. http://www.interpares.org/display_file.cfm?doc=ip2_book_appendix_21.pdf.
[47] Luciana Duranti, "The Reliability and Authenticity of Electronic Records," in *Preservation of the Integrity of Electronic Records*, ed. Luciana Duranti et al. (The Netherlands: Kluwer Academic Publishers, 2002), 27.

maintaining and preserving the authenticity of records is a joint responsibility between both the record creator and the archives.

The second weakness of the archival legislation in Commonwealth countries is that the acts typically state that government agencies should seek permission from the national archives before destroying public records. Such a clause works on the assumption that appraisal of records takes place only at the end of the lifecycle when the records become inactive. In reality, appraisal of records, particularly in the digital environment, should be conducted during the active stage of the record's lifecycle. This will enable the archivist to obtain documentation about the recordkeeping environment of the creating agency as well as technical documentation on the digital system which creates and maintains the records.[48] There is also a need to monitor the appraised electronic records before the records are transferred into archival custody so as to ensure that there are no significant changes in the records and the recordkeeping environment, which can affect the identity and integrity of the records.[49] Moreover, the timely appraisal of records is in line with the chain of preservation concept. This concept is based on the premise that "from the perspective of long-term or continuing or enduring preservation, all the activities to manage records throughout their existence are linked, as in a chain, and interdependent."[50] Last but not least, the absence of the use of the term appraisal in a number of archives legislation means that archivists lack "adequate legislative or policy foundations" and that "without a proper mandate to act towards achieving their goal, archivists work at a distinct disadvantage."[51]

Another limitation of the archival legislation in Commonwealth countries is they tend to state that records should be transferred to archival custody several decades after they have become inactive.[52] For example, the Public Record Act (1958) stipulates that public records "shall be transferred not later than thirty years after their creation either to the Public Record Office or to such other place of deposit appointed by the Lord Chancellor under this Act as the Lord Chancellor may direct." Although records may be transferred to archival custody earlier than 30 years between the archives and the transferring agency, the archives act works on the assumption that preservation requirements tend to be incorporated during the end of the record's lifecycle. The lengthy time frame for the transfer of records is not an

[48]Appraisal Task Force, International Research on Permanent Authentic Records in Electronic Systems (InterPARES), "Appraisal Task Force Report," (2001), p. 19. http://www.interpares.org/book/interpares_book_e_part2.pdf; Yvette Hackett, "Methods of Appraisal and Preservation - Domain 3 Task Force Report," in *International Research on Permanent Authentic Records in Electronic Systems (InterPARES) 2 Experiential, Interactive and Dynamic Records*, ed. Luciana Duranti and Randy Preston (Padova, Italy: Associazione Nazionale Archivistica Italiana, 2008), 190-191.

[49] Appraisal Task Force, International Research on Permanent Authentic Records in Electronic Systems (InterPARES), "Appraisal Task Force Report," (2001), p. 14. http://www.interpares.org/book/interpares_book_e_part2.pdf

[50] Terry Eastwood, Randy Preston and Hans Hofman, "Modeling Digital Records Creation, Maintenance and Preservation," in *International Research on Permanent Authentic Records in Electronic Systems (InterPARES) 2 Experiential, Interactive and Dynamic Records*, ed. Luciana Duranti and Randy Preston (Padova, Italy: Asssociazione Nazionale Archivistica Italiana, 2008), p. 229.

[51] Terry Eastwood, "Reflections on the Goal of Archival Appraisal in Democratic Societies," *Archivaria* 54 (Fall, 2002): 69.

[52] F. Foscarini, "InterPARES 2 and the Records-Related Legislation of the European Union," *Archivaria* 63 (2007), 127, http://journals.sfu.ca/archivar/index.php/archivaria/article/view/13131/14376; Chris Hurley, "From Dustbins to Disk-Drives: A Survey of Archives Legislation in Australia," in *The Records Continuum - Ian Maclean and Australian Archives First Fifty Years*, ed. Sue McKemmish and Michael Piggott (Clayton: Ancora Press, 1994), 206-233.

effective strategy to address the management of digital records, where preservation requirements should be "incorporated and manifested in the design of record-making and recordkeeping systems."[53]

Finally, archival legislation in Commonwealth countries has varied ways in defining the concept of records and archives. Some of these definitions linked records and archives in terms of its value, in relation to an activity, the passage of time and transfer to an archival institution. For example, the archives act in Singapore differentiates public records as "records of any kind whatsoever produced or received by any public office in the transaction of official business or by any officer in the course of his official duties," whereas public archives are those records which are "more than 25 years old" of "national or historical significance" and which have been transferred to archival custody.[54] Such a definition tends to associate public records and public archives in terms of physical placement, which results in a conceptual divide between the management of active and inactive records.[55] The movement towards increasing privatisation within the public sector means that records from such organizations that do not fall into the schedule of public bodies are potentially excluded from the archives act. Furthermore, such a definition is limiting not only in a traditional analogue environment but also in the digital environment. In the digital environment, it may be potentially contentious to determine which instantiation of the same digital entity belong to whom, especially when there are multiple service providers.

5. Conclusion - Call for Future Empirical Research

The weakness of the archival legislation illustrates the inadequacy, "under-inclusiveness" and the "obsolescence of existing legal rules" in dealing with the challenges posed by the digital environment and the changing nature of public administration.[56] There is a need to strengthen archival legislation through incorporating archival science including concepts, like the chain of preservation, reliability, and authenticity, as well as the theory of provenance. Duranti notes that the archival legislation of ancient Rome was anchored on the principles of archival science. For example, concepts such as the unbroken chain of custody and the 1898 Dutch manual on arrangement and description were based on early Roman law.[57] However, with the passage of time, archival legislation departed from the principles and concepts of archival science. As such, there is a need for archivists to revisit these principles and concepts and to work with legislators to strengthen the legislative framework of the archives law.

Finally, one area that requires further empirical research is to understand the perspectives of archivists and records professionals on whether the archives act provides them with a framework to

[53] InterPARES 2, "Appendix 19 - A Framework of Principles for the Development of Policies, Strategies and Standards for the Long-term Preservation of Digital Records," in *International Research on Permanent Authentic Records in Electronic Systems (InterPARES) 2 Experiental, Interactive and Dynamic Records*, ed. Ludiana Duranti and Randy Preston (Padova, Italy Associazione Nazionale Archivistica Italiana, 2008), 709.
[54] *National Heritage Board Act*, Singapore Statutes Online, 1993, no. 13, http://160.96.185.113/aol/search/display/view.w3p;page=0;query=Id%3A%22f03d693e-b8dd-4130-a14f-be68ea23198d%22%20Status%3Apublished;rec=0.
[55] V. Lemieux, "Archival Solitudes: The Impact on Appraisal and Acquisition of Legislative Concepts of Records and Archives," *Archivaria* 1, no. 35 (1992), 156, http://journals.sfu.ca/archivar/index.php/archivaria/article/view/11894/12847.
[56] F. Foscarini, "InterPARES 2 and the Records-Related Legislation of the European Union," *Archivaria* 63 (2007): 121-136, http://journals.sfu.ca/archivar/index.php/archivaria/article/view/13131/14376.
[57] Luciana Duranti, "Archival Science," in *Encyclopedia of Library and Information Science*, vol. 59, ed. Allen Kent (New York, Basel, Hong Kong: Marcel Dekker, 1996), 2-5.

effectively manage records. The application and implementation of an archival legislation involves interaction among stakeholders from different government agencies, including the national archives, and this process of interaction is not adequately covered in case law. Another related area of research is to explore organizational dynamics and interactions among archivists and government representatives as they negotiate their responsibilities in relation to an archives act, including how they interpret and apply an archives act in the management of records. For example, Hurley observed that there was the "interplay of bureaucratic politics" in the implementation of the *State Records Act* in New South Wales and the act was even "opposed and watered down by other agencies who believe that their turf is being invaded."[58] Hurley's statement is a reminder to archivists and records professionals that it is useful to go beyond the instrumental approach in understanding law in terms of its "explicit rules, specialised offices and institutions, and determinate procedures."[59] There is also a need to understand archival legislation from the bottom-up. Such a perspective will illustrate the gaps between the law in theory and the law and in practice through providing an insight on why and in what circumstances archivists and records professionals interact with the archives act, as well as cases where the archives act is not relied upon by records professionals.

[58] Chris Hurley, "From Dust Bins to Disk-Drives and Now to Dispersal: The State Records Act 1988 (New South Wales)," *Archives and Manuscripts* 26, no. 2 (November 1998): 393.
[59] Roderick A. Macdonald, "Legislation and Governance," in *Rediscovering Fuller: Essays on Implicit Law and Institutional Design*, ed. Willem J. Witteveen and Wilbren Van der Burg (Amsterdam: Amsterdam University Press, 1999), 310.

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