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# CROSSING THE THRESHOLD: INTO A DIGITAL FUTURE[1]

# EŞİĞİ GEÇMEK: DİJİTAL BİR GELECEĞE

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## Abstract

*In almost every country in the world, the programmes of the departments providing archival education in universities are in conflict with a theory about what the profession is, even though it is practice oriented. At this point, education programs and curricula are important. For an effective professional experience, the threshold between practice and theory needs to be learned carefully. As well as those who provide education, students have responsibilities such as recognizing deficiencies in the current situation; gaining new knowledge and understanding; acquiring and using new forms of written and oral discourse and adopting new professional skills and behaviours. In this study, the key points to be overcome in records and archive management training are explained like conceptual implications of digital-born records, the effect of the records continuum model, reduction of professional authority and technology-assisted evaluation of digital-born records. In addition, the importance of digital education, training and learning in the context of the applications of the British National Archives have been evaluated. As a result, in the era where there are many opportunities in information management within the context of effective education and training curricula it can be taught how to manage digital-born records effectively as a threshold to be exceeded.*

***Keywords:*** *Recordkeeping, Threshold, Records and Archive Management*

## Öz

*Dünyanın hemen hemen her ülkesinde, üniversitelerde arşivcilik eğitimi veren bölümlerin programları her ne kadar uygulama odaklı da olsa, mesleğin ne olduğuna dair bir teoriye karşı adeta bir çatışma halindedir. Bu noktada eğitim-öğretim program ve müfredatları önem arz etmektedir. Etkili bir meslek deneyimi için uygulama-teori arasındaki eşiğin dikkatli bir şekilde öğrenilmesi gereklidir. Eğitimi verenler kadar öğrencilerin de sorumlulukları bulunmaktadır: Mevcut durumda eksiklikleri tanımak; yeni bilgi ve anlayış kazanmak; yeni yazılı ve sözlü söylem biçimlerini edinmek ve kullanmak; yeni mesleki beceri ve davranışları benimsemek. Çalışmada, belge ve arşiv yönetimi eğitiminde aşılması gereken kilit noktalar; dijital-doğan belgelerin kavramsal çıkarımları, belgelerin sürekliliği modelinin etkisi, mesleki otoritenin azaltılması ve dijital-doğan belgelerin teknoloji destekli değerlendirilmesi olarak belirlenmiş ve detaylı bir şekilde açıklanmıştır. Bunun yanında dijital ortamda eğitim, öğretim ve öğrenmenin önemi İngiliz Milli Arşivi uygulamaları bağlamında değerlendirilmiştir. Sonuç olarak, bilgi yönetimi konusunda birçok fırsatın çıktığı çağımızda, etkili eğitim ve öğretim müfredatları temelinde profesyonel bağlamda karşıklı çalışabilirlik anlayışı içerisinde, aşılması gereken bir eşik olarak belirlenen dijital-doğan belgelerin nasıl etkili yönetileceği öğretilebilir.*

***Anahtar Kelimeler:*** *Arşivleme, Eşik, Belge ve Arşiv Yönetimi*

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## Introduction

This paper originated as a presentation delivered at the University of Marmara in 2016 at the 2nd International Information and Records Management Department Conference. As the audience at that conference comprised a great number of students of information science, my aim was to present some challenging aspects of information, records and archives management and technology through the lens (or perspective) of learning.

My plan was to consider three interconnecting themes. Firstly, to discuss the broad context of recordkeeping education programmes as these are delivered in our universities: what might be the optimum recordkeeping programme? Secondly, to look in some depth at the student experience in transition to professionalism: how is that threshold successfully crossed? Finally, to suggest examples of key 'threshold' concepts the student might need to understand in order to make that transition to professionalism, focusing specifically on a digital issue.

My own professional experience might help to place this paper in context. Since 2010 I have worked as a freelance consultant. Before that I spent time as a recordkeeping practitioner first in local archives and finally in the UK National Archives, where I was responsible for the research and collections management portfolio. Between these two periods as a practitioner, I spent eleven years as Director of the Liverpool University Centre for Archive Studies (LUCAS) managing the archives and records management undergraduate and postgraduate programmes at the University of Liverpool. This introduced me to ideas about pedagogy, about education and training – and about how people learn. I also learned about academic study, and the importance – and the excitement of new ideas.

## The Context of University Programmes in Information, Records and Archives Management

Many people have tried to identify what the ideal university information, records and archives programme might look like. Quite sensibly, I think, it is now recognised that such an ideal does not exist. As Duranti (2007) says, any education is conditioned by its context: "it will depend on the *history and culture* of the country in which it is located and its commitment to recordkeeping; on the *structures of national and local organisations*; on the *types of material* to be managed and preserved; and on *archival, educational and professional traditions".* Different university contexts will also affect the content of the curriculum: for example how far do the University of Marmara's recordkeeping programmes differ from those of the University of Ankara and why?

Different contexts and disciplinary backgrounds also produce different perspectives of the actual material – the information, data, records and archives – and how it might be managed. According to Yeo (2003):

"Those whose understanding has been shaped by an *archival* education are likely to emphasize the roles of evidence, contextual provenance, integrity, and authenticity; those whose background is in *information management* see records primarily as information assets for government or corporate business; while those brought up in what may loosely be called the '*manuscripts'* tradition tend to view them as quasi bibliographic materials."

And since later in this paper I will be focusing on data, data science and computational science I will add to Yeo's statement: those whose understanding has been shaped by a *data science* background emphasise records as data that can be analysed, manipulated, interpreted, visualised and presented for a range of purposes - from driving business intelligence in organisations to supporting E-discovery and the appraisal of born digital records.

Wherever they are based, those delivering educational recordkeeping programmes recognise the tension that exists between recordkeeping theory and practice in what is a very practice-oriented profession. They need to provide students with both conceptual understanding of their subject and the practical tools for implementing functions in the workplace. Collaboration between academics and practitioners enables the alliance of innovative thinking and cutting-edge practice to solve key problems, while adding to knowledge through the dissemination of research findings. This iterative cycle and its products, national and international research, provide an essential backdrop to any education programme.

Alongside providing relevant content, academic programmes are increasingly expected to engage in pedagogy - the method and practice of teaching. This ranges from the general development of a person through a liberal education, to the imparting and acquisition of specific vocational skills. It is also about understanding *how* students learn and *how best* to teach them. Good teachers understand that not only must they convey their subject compellingly; they must recognise that teaching productively means responding and being sensitive to the way students learn.

**The Student Experience: Transitional/Liminal States and Threshold Concepts**

There are many students in today's audience. As students they – *you* – are in the process of transition from an unqualified state into a well-informed, graduate and a professional one. This process of transition might be perceived as crossing a threshold – undergoing a rite of passage, if you like.

Recent research, particularly by Jan Meyer and Ray Land, has investigated the status of the student during their period of study. They have defined this status as *liminal* or *transitional.* 'Liminal' and 'liminality' are unusual words: they come from the Latin word *līmen*, meaning 'a threshold'.

Cultural anthropologists first discussed liminality in relation to the rites of passage from child to adult male in certain tribal societies.

Gennep (1960) says: "A liminal state is a period of transition during a rite of passage, that point when an identity shift occurs".

But the term can be used to describe many other transitional states. It can be applied to the state of being engaged to marry: the transitional (liminal) state between being a single person and a married person is the period of engagement – the threshold that must be crossed.

Why does this matter? Well, as we have noted, those of you who are students are currently in a liminal - or transitional - state. Between the 'moment' of your university registration and the 'moment' of your graduation exists the liminal state of being a student. And in order to graduate successfully you must cross a 'virtual' threshold that separates the one state from the other. This transition, across the threshold, can (and perhaps should) be challenging.

What does crossing this threshold involve? Land says you that you need to be able to see or imagine a potential version of yourself practising whatever it is that the specific community in question practises: the one you want to join which in our case is the recordkeeping profession. So, you see yourself doing it: you can imagine yourself managing an archive facility or running an information management programme for example.

In working towards this goal – in crossing the threshold and reaching the other side - you need to do four things:

1. Recognise the shortcomings of your current state
2. Acquire (and entrench yourself in) new knowledge and understanding
3. Attain and use new forms of written and spoken discourse
4. Adopt new professional skills and behaviours

This is a challenging process, and it is important to acknowledge at the outset that everyone learns in a different way. Everyone travels at his or her own pace, and they do not necessarily progress in a linear fashion - from not understanding to grasping the issue in question. There may be checks along the way: it is an iterative and sometimes circular process until that 'light bulb' moment when we can say we really 'get it'; we really understand the issue.

One thing is certain: in order to progress towards a successful transition, students must understand, accept and embed several core disciplinary concepts that will become indispensable in their future work. In any discipline such concepts are referred to as 'threshold' concepts because they act as critical portals or gateways in the development of a learner's understanding of a subject.

According to Meyer and Land (2003), a threshold concept 'can be considered as akin to a *portal*, opening up a new and previously inaccessible way of thinking about something. It represents a transformed way of understanding, or interpreting, or viewing something without which the learner cannot progress.' Such concepts can be troublesome, but as students gradually comprehend – to 'get' – the threshold concepts that underpin their discipline so they move through the liminal/transitional space or state.

From the teaching point of view educators need to appreciate that understanding threshold concepts in order to transition successfully is less about packing the curriculum full of ever-increasing content: Even though there is so much that is new that we are tempted to include it all (Cousin, 2006). It is probably more useful and relevant to identify and focus on what seems central to our disciplines – those threshold concepts at their core – that help us to make refined decisions about what is fundamental in a curriculum.

According to Meyer, Land and Davies (2006), threshold concepts have been dubbed the 'jewels of the curriculum' because they identify key areas that students must fully understand if they are to progress. How do we recognise them? Threshold concepts:

- Have a *transformative impact* on students' learning and understanding
- Allow the learner to *make connections* that were previously not apparent
- Can encompass both *disciplinary knowledge and other teachable elements* (such as professional behaviours)

- Ultimately, allow students to *enter the community of professional practice* (Procter, 2015).

## Threshold Concepts in Information, Records and Archives Management

If these general principles are to be applied in the recordkeeping discipline it is necessary to identify which ideas might meet such criteria for a threshold concept. Which ones is it necessary to understand before we can act confidently as information professionals? There are many to choose from and any of us might make a different selection - because crossing this threshold to understanding is a personal and subjective experience. It might be a useful exercise for everyone to try to identify those concepts that have challenged them, in the knowledge that there is no right or wrong answer. I have selected four threshold concepts, which have challenged me and/or my students intellectually or professionally over the years.

Two threshold concepts that can cause **intellectual discomfort** are 1) the conceptual implications of born digital records; and 2) the implication and effect of the record continuum model. Two that can cause **professional discomfort** are 3) the dilution of professional authority in an increasingly non-professional environment and 4) the influence of technology over practice: with special reference to the technology-assisted appraisal of born digital records.

### *The Advent of Electronic Born-Digital Records*

With the advent of **electronic born-digital** records our perception of records and information was altered. Their format and media had changed dramatically and the way we managed them had to be correspondingly transformed. The move from paper-based formats to digital media was apparent as correspondence moved to email; financial ledgers to datasets; files and dossiers to shared drives and e-systems; maps to geographical information systems, and publications to web sites – it seemed as if we were heading for paperless lives.

Gone was any notion of a passive role, where we could be confident that records would safely arrive on our doorstep: for records to survive record-keepers had to deal proactively with the creators of records and the processes that generated them. They had to accept Cook's (1994) challenge: to stop rowing and start steering (the recordkeeping ship). The light bulb moment for me – the moment of transition - was a paper given in 1997 by a lecturer from University College in the University of London that clarified just how the characteristics of electronic records would require a complete reconfiguring of their management.

Since then the exponential growth of digital data systems (from social media to big data) has required increasingly innovative approaches: Recordkeepers must keep pace with new developments if they are to contribute meaningfully to their management.

### *The Record Continuum*

My second intellectually challenging threshold concept was that of the **record continuum** which was developed by Australian archivists notably Frank Upward and Sue McKemmish from Monash University from the 1990s**.** With the development of born digital records the traditional concept of the life cycle, so comfortable, practical and easy to grasp for managing paper records became less applicable. The abstract model of the record continuum was harder to come to terms with. It is a theoretical model that suggests a continuous time-space construct that encompasses recordkeeping and archival processes considering the creation,

capture, organisation and pluralisation dimensions of records. It was not about processing records in a linear way but an approach which was to be "continuous, dynamic and ongoing without any distinct breaks or phases." (Gomez, 2019; Bantin, 1998) My light bulb moment here should have happened when hearing a talk by Frank Upward in Australia – but it didn't: I remained baffled for a year so until I came to appreciate its value.

Frings-Hessami (2019) states that the continuum concept still provides an important foundation for understanding the dynamic nature of records, data and information and continues to be refined to take account of new thinking and new challenges.

### *Blurring of the Boundaries*

A threshold concept that has caused professional concern relates to the blurring of the **boundaries between professional and non-professional**, expert and non-expert (Theimer, 2018). The 21st century is witnessing the increasing automation of functions, and non-specialists can now operate digital and online systems to perform tasks previously undertaken by professionals. Many professions may be seen to be vulnerable: as we increasingly book our own holidays and complete our own tax returns travel agents and accountants may become dispensable.

This trend can be illustrated from the UK recordkeeping experience as the power to research family trees online can bypass experts in genealogy and family history. Developments too in the roles of community archives and of volunteers show how non-specialists contribute to the infrastructures and processes of recordkeeping. In community archives, members of communities (local, historical, ethnic, arts and other groupings) have set up their own archives without applying 'approved' archival processes and standards. It can be disconcerting that our professional expertise is not sought; and some communities reject anything which supports establishment thinking. Allied to this is the increasing dependence on a growing band of volunteers in archives: some are not happy that these might do the work the archivist considers to belong in the professional sphere. However, the volunteer contribution in UK archives is huge, particularly in public sector.[2] For me this was not a difficult transition: Both community archives and volunteers have had a generally positive effect in the UK archive sector, bringing in new support from new environments.

### *Technology-assisted Review*

I will conclude this paper in considering my 4th threshold concept which further illustrates the effect of technology on recordkeeping processes. As it is of current relevance and has huge implications for the education and training of recordkeeping professionals, I shall spend a little more time on it. It concerns the **technology-assisted review and appraisal** of born digital records.

The appraisal and selection of records is a core recordkeeping function that depends on the knowledge and experience of information professionals. This skill has developed to meet new challenges: macro appraisal, functional analysis, and documentation strategies have all become part of the professional toolkit, supported by ground-breaking theoretical debate.

[2] The Chartered Institute of Public Finance and Accountancy (CIPFA) statistics for 2015/16 showed that volunteers contributed 268,000 hours to archives in 2015/16 equating to over 150 full time equivalent staff.

The impact of technology in implementing recordkeeping functions is not new. The use of cataloguing software, electronic document and records management systems and digitisation products has enabled the preservation of and access to vulnerable material. Online e-government services to citizens are also enormously successful: Şentürk (2014) writes that by 2013 Turkey had nearly 600 e-government services from 72 institutions, with nearly 15 million registered users. Why should the idea of technology assisted review be more troublesome than say e-government services? Is it the notion that a kind of artificial intelligence is being applied, taking appraisal out of our control?

There are clearly challenges in appraising huge data stores and the mass of unstructured data that resides in email, shared drives and other systems. The original intention in early electronic systems had been for appraisal and retention to be decided as the record was created: but this clearly has not worked. Can it still be feasible for appraisal to be undertaken *without* technical assistance?

The legal profession has led the way in using technology to search digital data and information known as 'e-discovery'. Courts of law in the US and the Republic of Ireland have approved of e-discovery as an acceptable way to search for relevant electronically stored information (The National Archives, 2016). With such approvals one can see the direction of travel: the tools employed in the legal sector for e-discovery are now being explored by national archives to assist the review of digital government information. Kandur (2015) describes how in Turkey the Turkish Electronic Records Management Standard TSE13298 is updated to facilitate both the archiving and transfer of electronic records to the national archives.

In England and Wales The National Archives' Digital Transfer Project was set up in 2014 to develop a scalable process for the transfer, ingest and presentation of born-digital records with long-term value from government departments to The National Archives; and to enable them to be held securely while closed, and be accessible to the public when open (The National Archives). However, this transfer can only happen once the huge amounts of data and information held in departments have been appraised and reduced, and a small proportion selected for transfer for archival and historical purposes. In 2016 twelve departments were scheduled to transfer digital records, with about 50 departments by 2021.

In 2015 the Cabinet Secretary's *Review of Government Digital Records* set out the challenges and recommendations concerning the handling of born digital records (Allan, 2015; The National Archives, 2016). This was followed by two reports issued by The UK National Archives in February 2016. The first set out the challenges in the digital landscape. This included the volume and lack of structure of born-digital records, the technology needed for reviewing them and the resources needed in government departments to implement this. The second reported on trials conducted on eDiscovery tools and how far these could be used for technology-assisted review, for appraising, selecting and sensitivity reviewing unstructured born-digital records. It was found that these could help to:

- Understand the information at a high level (e.g. volume by dates of creation, split by format)
- Reduce the amount of information by excluding duplicates and non-meaningful files or formats (e.g. calendar invitations) and thus prioritise the

information to review

- Cluster the information automatically or against pre-set categories to extract meaning.[3]

As a result, selection and appraisal decisions at a high level rather than through document-by-document review would be possible. Technology assisted review and predictive coding allows a skilled reviewer to code a small seed set of data which allows the creation of a computer algorithm to prioritise and identify relevant documents over time. The system learns from the reviewers' coding decisions and once the system is trained, it can estimate the relevance of documents. The result is a more consistent and nuanced approach to measuring relevance than with basic keyword search and a more accurate measurement of precision and recall in search results.

The report concluded that technology-assisted review can support government departments as part of a born-digital records transfer to The National Archives. It argued that

"It would be easy to think that technology-assisted review is an inferior process to manual review…however there is evidence that [it] can be as accurate, if not more accurate than manual research or key-word searches alone. Research has shown that keyword searches returned only 20% of the relevant documents, while technology-assisted review found about 75%." (The National Archives, 2016)

**Education, Training and Learning in a Digital Environment**

What are the educational and learning implications of this fourth threshold concept regarding the skills required for tomorrow's information managers? While the technology is being developed, the National Archives noted that:

"Our pilot sessions have indicated… a need for new technical skills within government departments in order to… cope with the digital transfer process… The breadth and complexity of digital records is not likely to diminish nor is the difficulty of trying to ensure they remain available and useable until transfer to The National Archives. Knowledge and Information Management teams within departments need advanced digital skills to give them the ability to adapt and think innovatively about digital information management solutions." (The National Archives, 2016)

The report continued 'as we go down the road of data science and data visualisation there is a definite lack of understanding as to what will need to be preserved to capture decision-making justifications and enable policy decisions. This touches on data reproducibility and sustainability along with a number of other issues.'

The skills described here are those belonging to the field of data science where data analytics, data mining, visualisation, database design, and business intelligence are embedded. Although it is a different discipline from information management it is increasingly strongly linked. As Lemieux notes, a blend of computational and archival thinking will be needed 'if records and archives professionals are to imbue emerging technical infrastructure with

[3]Technologies such as Latent Dirichlet Allocation, e.g. an LDA model might have topics that can be classified as CAT_related and DOG_related. A topic has probabilities of generating various words, such as milk, meow, and kitten, which can be classified and interpreted by the viewer as "CAT_related". Latent Semantic Indexing (an indexing and retrieval method able to extract the conceptual content of a body of text by establishing associations between those terms that occur in similar contexts) and relational databases as well as eDiscovery tools.

principles that reflect an understanding of the requirements for sustainable archival futures' (Lemieux, 2018). Exploration and discussion of a new trans-discipline described since 2016 as computational archival science (CAS) is being developed. The Digital Curation Innovation Center offers an initial working definition of CAS as:

"A transdisciplinary field concerned with the application of computational methods and resources to large-scale records/archives processing, analysis, storage, long-term preservation, and access, with aim of improving efficiency, productivity and precision in support of appraisal, arrangement and description, preservation and access decisions…" (CAS Portal, n.d.).

There are recommendations as to how such a transdiscipline might be established. A statement supported by universities in the UK, Canada and the USA is clear about the challenges involved:

"Further development of the CAS agenda will require the development of transdisciplinary iSchools with faculty from computer science, archival science, and data science. To successfully inject the contributions of these different disciplines into courses will require collaborative development of syllabi and team teaching. To ensure that students master basic skills, but at the same time learn how to think flexibly to adapt to rapidly changing technological environments in which records are created and used, will require extensive hands-on experience working with cyberinfrastructure to carry out archival functions." (Marciano, et al., 2018)

## Conclusion

Some say that we are still in the silent movie era with respect to the management of big data and information, and that we will require a whole new band of professionals that can combine a deep understanding of analytics with real insight into how organisational value can be created. As professionals we have always been determined to make strong alliances with other disciplines: with historians and archaeologists; with librarians and rare book experts; with museums and conservation experts and with IT professionals.

It seems both timely and essential to find common ground with data scientists and allied colleagues in order to progress in the growing area of CAS to facilitate better management of born digital record, information and data functions. The intellectual implications for recordkeeper have yet to be identified; extensive collaboration between universities, professional associations and workplace professionals as to what education and training is required must take place. For those who intend to work with born digital information, records and data this is undoubtedly a threshold that needs to be crossed.

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