



R is for Recordari: The Concept of Record in the Digital World

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InterPARES Purpose

To establish the conceptual underpinning, the parameters, and the method of analysis that will determine the answer to the question of what entity corresponds in any known given environment to the archival definition of the record



Record

Any document created (i.e., made or received and set aside for further action or reference) by a physical or juridical person in the course of a practical activity as an instrument and by-product of it.



Records versus data

- All records are documents
- Document = recorded information
- Information = aggregation of data intended for communication over time or space
- Data = the smallest indivisible meaningful fact

Thus:

- All records contain data
- An aggregation of data may or may not be a record



Electronic Record

A record created (i.e., made or received and set aside for action or reference) in electronic form



Identifiable Characteristics of an Electronic Record

- Fixed form (i.e. its binary content is affixed to a medium so that it remains complete and unaltered, and its message can be rendered with the same documentary form it had when first set aside)
- Unchangeable content
- Explicit linkages to other records within or outside the digital system through a classification code or other unique identifier (archival bond)
- Identifiable context: juridical/administrative, provenancial, procedural, documentary, technological
- Involvement of five persons: author, addressee, writer, creator, originator
- Participation in or support of an action either procedurally or as part of the decision making process



Record Elements, Attributes, Digital Components

- A record element is a constituent part of the record's documentary form. It may be either extrinsic, like a seal, or intrinsic, like the subscription
- A record attribute is a defining characteristic of each given record (i.e. name of author) or of a record element in it (i.e. legend on a seal)
- A record digital component is a digital object that may contain all or part of a record, and/or the related metadata, or more than one record, and that requires specific methods for preservation.



Other Peculiarities

- The relation between a record and a computer file can be one-to-one, one-to-many, many-to-one, or many to many, so a file does not necessarily equal a record
- The same presentation of a record can be created by a variety of digital presentations and vice-versa, from one digital presentation a variety of record presentations can derive, so fixed form does not imply an immutable bit stream
- It is possible to change the way in which a record is contained in a file without changing the record, so form and record do not necessarily coincide



Experiential, Interactive and Dynamic Records

Experiential records are objects the essence of which goes beyond the bits that constitute the object to incorporate the behaviour of the rendering system, or at least the paths followed by its users.

Interactive records are records made and maintained in interactive systems, where each user's entry and input from other system causes a response from or an action by the system

Dynamic records are documents whose content is dependent upon data that vary continuously and are held in several databases and spreadsheets



Questions

- Is it possible to have a record in fluid form and with undetermined boundaries?
- If not, should an entity with fixed form be generated for the purpose of making a record to be kept in a trusted recordkeeping system and perhaps preserved over the long term?
- If yes, who should make it?
- On the basis of which criteria?
- When in the entity's lifecycle?



Alternatives

- To trade stability of content and fixity of form with the ability to track changes. Record=last instantiation+log of changes+ metadata
- To think of the record as existing in two modes: record in becoming when the object is accessed to add information to it; record when the object is accessed for use. Record=each instantiation accessed for use+metadata



Issues

The issues are related to:

- the maintenance of each digital object, be it larger, smaller or equal to a record, in a way that its accuracy/reliability and authenticity can be ensured
- the maintenance of the relationships among analogue and digital entities, and of the ability of the various digital objects to interact with each other, with or without human or technological mediation, both within a record and between records, in precisely the same way in which they were meant to interact when generated
- the identification of the boundaries of the entity record.



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InterPARES Context

- It is concerned with permanent preservation, hence, the entity identified as a record must be preservable
- It is concerned with authenticity, hence the entity kept as the record must have an unaltered identity, and integrity
- It has defined record identity as the persistence of the same unique identifying attributes, such as dates, name of the five persons involved in the record, name of the action, expression of archival bond.



InterPARES Context (cont.)

- It has defined record integrity as the ability to convey the same meaning it was intended to convey at the time of creation
- Has determined that preservation is only possible through production of authentic copies, hence, the entity identified as a record must reach stability
- Has stated that the chain of preservation begins at creation, hence, the entity identified as a record at creation should be the same that we preserve



Key distinction

- Copies made by the creator in the course of and for the purposes of its business are **records of the creator**
- Copies made by the preserver in the course and for the purposes of archival functions are **authentic copies of the records of the creator**

Hence:

Any alteration of the form of the record made by the creator to be able to keep the record for future action or reference is a record of the creator



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Case Studies in the Arts

Obsessed Again..., a work for bassoon and interactive electronics, was written in 1992 by Canadian composer Keith Hamel. The work was designed to use commercial hardware and software but the required equipment is obsolete. The commissioner of the work has expressed a wish to play the work. The case study objectives include identifying both digital and non-digital documents associated with the work, articulating the requirements for musical authenticity based upon the documents, building a performable, authentic realization of the work, and developing a method for the future storage, retrieval, migration and access of the work.



Case Studies in the Arts (cont.)

The Electronic Cafe Intentional (ECI) is a multimedia international network for showcasing creative, multi-cultural, multi-disciplinary, collaborative telecommunications. This case study deals with a wide variety of media types that now pose the problems of aging and obsolescent formats. ECI's activities took place from the mid-1970s to the present. The most known works are: 1980 "Hole in Space" and "Electronic Café' 1984"



Case Studies in the Arts (cont.)

Waking Dream, a performance piece for two people using multiple theatrical elements. The case study team seeks to identify the digital and non-digital components such as software, hardware designs, audio, articulate the requirements for performance authenticity for the piece, build a performable, authentic realization of the piece, and develop a method for the future storage, retrieval, migration and access of the work.



Observations

- The work is the performance
- The score/script is a set of instructions
- Other components: computer codes, patches, synthesiser, video feeds, etc. and the interaction between the performer(s) and all of the above

Hypothetically, we could

- fix the components in a definitive form with one final act of interpretation and representation
- generate a description of all these components and their interaction that allows to re-create the work



What is the Purpose of Preservation?

- To show the work as it was experienced by those who interacted with it when it was created—impossible
- To re-create, re-execute or re-install the work as it was—emulation
- Show various elements of the work—migration of digital parts
- To show the documentation of the work and of the interaction between it and the users when the work was created
- To enable a subsequent non-identical performance in which the essence of the work is conveyed, not necessarily its form and behaviour



Documentation of Work and Interactions

- Documents resulting from planning (e.g. sketches)
- Documents resulting from creation of work (hardware and software programs and codes)
- Documents resulting from the execution of the work (e.g. images, graphics, text)
- Documents capturing the major components of the work (e.g. single channel video feeds)
- Documents created to document the work (e.g. interviews, videos, photos, news, e-mails)



Enabling Subsequent Performance: Rhizome ArtBase

- Connected art object: it comprises the description of the work and its components, a thumbnail of the work, keywords and metadata, a link to the URL of the work, the biography of the artist, and his/her certification that this aggregate of parts corresponds to the work and constitutes an adequate representation of it
- Cloned art object: it includes, in addition, an authentic copy of the work preserved in the server of the project



Outcome

- The object captures the essence of the work
- The author/creator is an active participant in preservation
- Authenticity ensured by the involvement of the author/creator in the creation of a surrogate reflecting his intentions
- The record nature ensured by the fact that the author/creator creates the surrogate in the course of his business and for the purposes of it



Case Studies in the Sciences

The Geographic Information System of the Centre of Desert Archaeology in Tucson, Arizona. This study investigates how the data in the system are created and maintained in a way that they can be considered accurate and authentic over time. The study also investigates how the perception of data is related to the concept of memory of archaeologists, the related (human) landscapes and descendants of the areas that are studied by archaeologists.



Case Studies in the Sciences (cont.)

The CyberCartographic Atlas of Antarctica.
Here, the map is seen as a new organizing mechanism for digital information. It is dynamic, multi-dimensional, multisensory and multimedia and intends to become an important scientific digital knowledge asset that will from its inception include archiving as an integral component of the project.



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Case Studies in the Sciences (cont.)

MOST Satellite mission. This space telescope monitors variations in the brightness of the stars. The data consists of series of nearly uninterrupted measurements of stars' fields transmitted to a network of three radio ground stations. The primary repository is at the University of British Columbia. The MOST observations are available only to the MOST Science Team for a year, after which they must be made available to the public at large, distributed according to protocols that ensures accuracy both of the data and of their retrieval.



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What Have We Seen?

- In the first case, an historical stratification of data sets, edited but not overwritten, kept live
- In the second case, both a stratification of live data sets and the constant unpredictable generation of new data sets by each user—editing, overwriting
- In the third case, the creation of data dumps at the end of each business day, with attached identity and integrity metadata



Case Studies in e-Government

Alsace-Moselle Land Registry. A computerized land registry in Alsace-Moselle, a French, regional administrative entity. Each entry requires the signature of a judge, using a PKI combining biometric access and digital signatures. The focus of this case study is on digital signatures within a dynamic information system designed to improve the efficiency of government-citizen relations in the context of the French civil law evidence system.



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Case Studies in E-Government (cont.)

The New York State Department of Motor Vehicles. It offers online services to users, who conduct legal and financial transactions within the website, which generates records in a networked and online environment. The DMV's highly interactive online system features a complex set of interwoven electronic activities.



Case Studies in E-Government (cont.)

Revenue Commissioners of Ireland's Revenue On-line System. It enables the generation, maintenance, access and preservation of electronic-based tax and other records in a secure and appropriate environment. The research team is examining the metadata models and standards used for information creation and exchange, and issues of accuracy, authenticity and reliability as they relate to ensuring the integrity and confidentiality of information supplied by users.



Case Studies in E-government

An interactive record that

- is spread across several interacting technologies
- has no clear boundaries, and changes continuously on the basis of the input of the user (either the government officer or the citizen) and/or of the reaction of the system to such input
- rarely corresponds to one action and more often includes the whole interaction between a government office and a citizen with respect to one matter (i.e., what used to be a dossier/file).



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What Can We Do

Identify:

- the boundaries of the digital entity constituting the record which, once made or received, and repeatedly set aside in different instantiations, is to be kept for future action or reference in a trusted recordkeeping system
- the essence of such entity, i.e., its constituent parts and digital components to be kept stable as content and fixed as form and linked among themselves,
- its attributes to be manifested in metadata permanently attached to the record
- the necessary accompanying documentation of what is not fully preservable, that is, interactivity, connectivity, and functionality

Assemble the stabilized essence of the record, its metadata and system documentation and treat this entity as the record.



Imbreviaturae

- Data on the transaction type, the names of the parties, the date, the transacted property or matter, and any other specific to that transaction
- Registered, bound and indexed
- Related to a formularium
- Retrieved to create the record when needed (original)
- Kept by a trusted custodian



E-government Record

At the end of the transaction:

- Separate data from form and creating environment
- Stabilize data and original metadata
- Describe original form and functionality
- Link all above together

Upon request, re-create the record (copy in the form of original, but still the creator's record)

Trusted custodian is essential



What is the Record?

- While the business procedure is active, the interactive digital entity constitutes the overall record of the transactions between government and citizen
- Once the business procedure is concluded, the final record of the transaction will consist of the data contained in the last instantiation of the interactive entity and its metadata, linked to an exemplary of its form and a description of the record functionality and system documentation, that would already be maintained in the recordkeeping system to which such record will be transferred



A GIS Record: VanMap

An extensive database of geographic data on the City of Vancouver maintained by the City's Information Technology Department. The data are supplied and updated on a regular basis by the Engineering, Planning, Social Planning, Permits and Licenses, Real Estate Services and other departments, and to a much lesser extent by external agencies such as the provincial government and crown agencies. The fundamental purpose of VanMap is to meet the needs of internal users in providing services to Vancouver's citizens and businesses.



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A GIS Record: VanMAP

- Treated by the creator as a record
- Linked to the other records of each business process in which it participates
- It is the by-product and residue of the transaction of affairs
- Its data do not exist anywhere else in a similar aggregation
- It exhibits the qualities of all records: naturalness, impartiality, interrelationship, authenticity, and uniqueness in context



VanMap: from a Potential Record to a Record

- Develop a detailed description of each business process in which VanMap is involved and of the way in which VanMap is used in each of them, thereby revealing the relationship between the records of each business process and VanMap
- Configure the system in such a way that every day, at the closing of business, a complete image of VanMap be preserved live and fully functional within it, with the related attributes attached as metadata
- Remove the historical stratification of daily images once a year and keep it as the finished, stable, fixed record of the year



What Have We Seen

- **live** entities, which are either:
 - records in becoming, such as registers, and transactional interactive documents, or
 - potential records, such GIS systems
- **active** entities, set aside (with fixed form and stable content) either:
 - to be used in their final form, with or without functionality, such as data dumps, or
 - to be re-produced, re-enacted or “performed” as needed



Conclusions

- Dynamic, interactive and experiential digital objects can only be either potential records or records in becoming while they are live
- If the creator treats them as records, associates them with entities that are records, and does so in the course of activity and for its purposes, these objects will be records when their content will be stabilized and their form fixed
- If the acquisition of stability and fixity occurs at the hand of the creator's trusted custodian (i.e. the records' officer) and for the creator's purposes, that is, to use or refer to them in the course of its activities, the results will be records in all respects

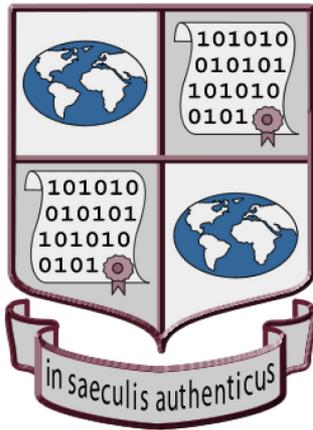


Conclusions (cont.)

- It is not possible to determine what is a record when the entity examined is live
- It is only possible to determine what systems, according to their administrative functions, should create records (UBC Student Register, VanMap)
- A record is the entity that the author/creator sets aside as memory (rather than evidence) of its actions and transactions: to be able to use it as reliable and authentic evidence, we can help on “how”, but should not dictate “what”
- The concept of record is a retrospective one
- After all is said and done, record comes from Latin “recordari” and French “record”—to remember—and it is what is left, the sediment, the residue, the trace, the memory of our lives



InterPARES Web Site



www.interpares.org



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