

The Role of Context-based Information Architecture in Providing Access to Distributed Resources

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Human beings live and work in context-rich environments

The point of this paper is to make a case for the utilization of **contextual information** to build a **global** (but multi-layered) framework that unites the **diverse** information that by the forces of technology and society tends to become isolated. The actuality is that everything is **connected** - otherwise nothing would work. We need to extend this connectedness to our **information resources** - otherwise they will not work for us.

Important terms

- Complexity

- inherent in social and operational systems - it is "the unobserved wilderness of what happens simultaneously" [N. Luhmann, 2000]

- Context

- what an 'agent' needs to know to understand something

- Networks

- in particular open, scale-free complex networks (graphs of nodes and arcs or entities and relationships or agents and links) - in particular networks that exist through time

- Frameworks

- zones or higher level networks within networks (both synchronic and diachronic)

- Resources

- any form of recorded or preserved information

This paper is not about networks and frameworks in a metaphorical sense - as a means to help us understand something complex - that is a by-product - it is about building actual frameworks out of connected information.

Influences

- From Anthropology and social theory: John A. Barnes (University of Cambridge) for his work on social networks and his links back to A.R. Radcliffe-Brown and B. Malinowski, and then even further back to E. Durkheim. Looking forward he leads to A. Giddons (Director, London School of Economics). Also in this area the work of S. Milgram, especially his work that led to the identification of the small world effect.

- From Archives: P. Scott and the Australian archivists from the 1960s and their intellectual successors in particular S. McKemmish and F. Upward (Monash University) for their work in re-thinking the informatics of archival description and management but also the Encoded Archival Context Working Group in re-thinking what can be done with contextual information.
- From Physics: D. Watt and A.-L. Barabasi for their work exploring the foundations of open complex scale-free networks. As well as the work of the information theorists in particular C. van Bayer and his links back to C. Shannon.
- From Music: A variety of influences from the 1960s and 1970s covering both compositional theory, aesthetics and the analysis of sound from an information perspective.
- From History and Philosophy of Science: The HPS Department at the University of Melbourne since 1985 who introduced me to people such as B. Latour, Geoffery Bowker and others who explored the actor-network ideas.

The meaning of everyday activities either at home or at work makes sense because of contextual frameworks each of us builds intuitively as our lives unfold.

If we imagine our lives as a complex network - We can find contextual frameworks everywhere - simplified versions of life's complexity that help us keep things in perspective and manage the connectedness ...

These contextual frameworks comprise relationships between:

- us and other people,
- the organisations we work for or with,
- the physical environments in which we live, work and travel, and
- the objects, artefacts and ideas

that form the political, social, technological, intellectual, scientific, economic and cultural fabric of our society

A contextual information framework incorporates information surrogates of selected contextual framework elements in an information network.

Experience has shown that large-scale collected information resources (catalogues, bibliographies, archival registers etc), especially those that cross national boundaries and cover large time periods, that are accumulated without relevant contextual information become difficult to use.

- Every information resource is contextually constrained
 - it is not possible to conceive of an information resource that could be created or exist out of some context. If we want to create a global network (the WHSO) the management of information resources must start with contextual information management as a necessary requirement.
- Universal classification systems cannot work - conceptually, philosophically, analytically and empirically
 - ontologies are far too contextually bound - they can be interlinked but they cannot be unified (in a simplistic sense)
- Language by itself creates multiple zones in information networks
 - try a Google search using the same phrase translated into a number of different languages to see how effectively language creates disconnected silos of information.
- Life is messy
 - consistency is the goal but inconsistency is our natural human tendency. We have to learn to live with imperfection rather than fight against it.

Contextual metadata should provide the means by which resources can be viewed from the human contexts that led to their creation and enable us to build systems to find and access other relevant materials

- Cultural informatics

- is the emerging discipline that investigates the use of structured information about cultural stuff for social and operational purposes - especially the utilization of information networks (the Internet and the Web in particular)

- Semantics, ontologies, and the transmission of meaning

- are primary concerns of cultural informatics - there is a lot here to be learnt from HPS.

- International standards

- in the library [IFLA - FRBR], archives [ICA - ISAAR(CPF) and ISAD(G)] and museum [CIDOC - CRM] worlds, conceptually similar standards have evolved. They all identify the critical and necessary role of contextual information (though they do not all use the same language) but they are still all surprisingly silent on how this information could or should be used in a globally connected information universe.

- User driven

- it is user groups, like the historians of science, that are driving the building of connected information systems like World History of Science Online

Furthermore, detailed contextual information about the people, organisations and other entities involved will help users comprehend the works they discover.

Examples of contextual information frameworks in Australia include:

- Bright Sparcs

- registers people, archival collections and historical publications and maps links between and within the databases.

- Australian Science at Work

- registers organisations, archival collections and historical publications and maps links between and within the databases.

- The Australian Dictionary of Biography Online (soon)

- registers people, archival collections and historical publications and maps links between and within the databases.

- Agreements, Treaties and Negotiated Settlements

- registers legal documents, organisations, people, locations, concepts, archival collections and historical publications and maps links between and within the databases.

- The Australian Trade Union Gateway

- registers trade unions, people, archival collections and historical publications and maps links between and within the databases.

- Reason in Revolt

- registers copies of key resources (pdf), people, organisations, political parties, concepts and related publications and maps links between and within the databases.

More examples ...

- HIVP/AIDS in the Asia Pacific - LaTrobe University and various partner universities
- MusicAustralia - National Library of Australia and partner organisations
- PictureAustralia - National Library of Australia and partner organisations
- PeopleAustralia (proposed) - National Library of Australia and partner organisations
- South Seas Project - National Library of Australia and partner universities
- University of Melbourne Faculty of Science Compendium - local focus - meeting internal knowledge management needs
- University of Melbourne Faculty of Medicine Compendium - local focus - meeting internal knowledge management needs
- The Australian Venom Compendium - national - meeting a critical health information need
- The Gateway to Australian Business Archives - national
- Lost lives - based around an historic event - built and maintained by a single family

All these projects utilise contextual information framework principles which include identity persistence and electronic citability for all contextual elements.