

*Increasing digital discovery and
delivery: Lessons in convergence
for learners, museums, and libraries*

Anne Gilliland

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We are asking our systems to do a lot ...

- Provide an agile environment that integrates different kinds of primary and secondary resources and metadata
- Make that environment as transparent, easy and effective to use as possible, even without mediation
- Support diverse user communities and modalities
- Support various types of learning

How do we do that?

- **Content:** include the resources users want/need, at the depth and granularity they want/need
- **Metadata:** exploit more types of metadata and more effectively, concentrate more on how to make primary materials available and understandable
- **Design:** systems and tools need to support the seeking, discovery, delivery and manipulation of information *and* evidence
- **Learning:** systems, scaffolding, lesson plans and exhibits need to support formal and informal learning and teaching

Including the right content

- Issues:
 - limitations on availability of digital content include copyright, costs to digitize, processing backlogs, problematic formats
 - how to prioritise content selection/development?
- Scholars, especially in the Arts and Humanities, want deep content and material they have not seen before/has not been previously published
- Instructors and students want material at the appropriate pedagogical level that targets curricular goals or requirements
- Diverse other users may want to browse or find known or specific items, illustrative or even entertaining material according to their own worldviews and vocabularies

Making more out of metadata

- Metadata is more than description, especially for primary resources
- It can provide validation, contextual, structural, procedural, curatorial, versioning, pedagogical and policy detail
- Rich, granular metadata can support collation of resources by attribute, multi-level access, contextualization and re-contextualization, online clearances, customized delivery and end-user manipulation

Issues with expert-created metadata

- Expensive and time-consuming for experts to develop so less is being created:
 - Digital library advocates have been calling for leaner metadata and more reliance on computation to exploit other properties of the content as well as full-text retrieval
 - Less-than-full-cataloging for published, especially licensed materials
 - More product, less process (Green & Meissner) - is less description really viable for primary materials?
- Creator and information professional communities adhere to their own constantly evolving standards and these still don't play well together
- We worry that we need to validate metadata contributed by others. Do we?

Distributing metadata creation

- With clear attribution, the burden of generating descriptive and contextual metadata and other annotations of content could be more broadly distributed across content creators, managers, distributors/publishers, and end users
- Could any metadata be generated automatically? E.g., in record-keeping systems, or through structural analysis or inferencing?

Supporting contextualization and re-contextualization through metadata

- Necessary for certain types of research, and development of exhibits, learning materials and pedagogical exercises
- Requires detail and granularity
- Requires pluralizing content description: one object, multiple descriptions, multiple uses
- Requires crosswalks with close and persistent mappings

Systems design and discovery

- Much work on IR and relevance assessment has been done over the past 50 years with published materials
- Much less is known about seeking information and discovering evidence using primary sources
- What IR knowledge transfers into an integrated environment and what needs to be studied/evaluated further?

Some discovery issues for primary sources/evidence

- How to find hidden or latent evidence, e.g., patterns, absences, inferences? How to discover or uncover something no one else has found? Can end-user tools help?
- How to ensure that users understand the trustworthiness of resources they have found?
- How to cope with archaic or colloquial language or date forms that might be used within a resource or used as a search term by a user?
- Coping with multi-lingual or multi-script issues

Designing for learning

- A system designed to support learning does not necessarily have the same goals as one designed to support easy information retrieval, but many systems try to do both.

Scaffolding

- Guiding learners through resources and teaching them content- or discipline-appropriate ways to approach them
- Supporting different learning modalities
- Allowing for increasingly sophisticated use and eventual independent use of the entire digital resource
- Need to select initial content that will get the learner's attention (e.g., excitement, curiosity, challenge, outrage)
 - Often visual (color vs. black and white), auditory, or something to which the learner can relate experientially or emotionally
 - Can learners contribute content or comments?
- Whether to use educational metadata, e.g., GEM, IEEE LOM, DC-Education Application Profile
- Whether to include lesson plans or learner assessments
- How much interpretation to include?

Interpretation and digital curatorship

“Digital curation, broadly interpreted, is about maintaining and adding value to a trusted body of digital information for current and future use.” - DCC

- Interpretation necessarily occurs in developing educational resources as well as exhibits. Who is best qualified to undertake either? Should libraries and archives have staff equivalent to museum educators? Would these people be digital curators?