DATA, DATA IN THE CLOUD
LIBRARIES ARE CLEARLY WELL-ENDOWED
METADATA/LINKED DATA

ISSUES OF

OPPORTUNITY, RESPONSIBILITY, AUTHORITY
AND UNINTENDED CONSEQUENCES

James G. Neal
OCLC/Johns Hopkins
18 September 2013
GOALS FOR PRESENTATION

• Consider Definitions of Shared and Linked Data

• Explore the Context In/Around the Academic Library

• Define New Relationships Promoting Shared Data

• Identify Some Examples of Rich Opportunity

• Focus on Fundamental Issues of Authority, Policy and Impact
METADATA

... data about data

... structural metadata is about the design and specification of data structures

... descriptive metadata is about individual instances of application data, the data content
LINKED DATA

... a method of publishing structural data so that it can be interlinked and become more useful

... building on standard web technologies, but rather than using them to serve web pages for human readers, it extends them to share information that can be read automatically by computers, enabling data from different sources to be connected and queried
OPEN DATA

... the idea that data should be freely available for everyone to use and republish as they wish, without restrictions from copyright, patents, or other mechanisms of control
BIG DATA

... a collection of data sets so large and complex that it becomes difficult to process using on-hand database management tools or traditional data processing applications
SOME DEFINITIONS

• Primal Innovation
  creativity as first importance, as a fundamental component of organizational and individual DNA

• Radical Collaboration
  drastic or sweeping energy, and not Kumbaya

• Deconstruction
  taking apart the axioms or rules, or the incoherence of a concept, position or word

• Survival
  not relevance or impact, but persistence and adaptation
SOME QUESTIONS OF DEFINITION

WHO?
OWNS?
OUR?
DATA?

INTELLECTUAL PROPERTY/COPYRIGHT
A MEGO TOPIC!!
CONSTRAINTS ON ACCESS TO SCHOLARLY INFORMATION

Market

\[\text{Technology} \rightarrow \text{INFORMATION} \leftrightarrow \text{Law} \]

\[\text{Norms}\]
CORE RESPONSIBILITIES OF THE ACADEMIC LIBRARY

- Information Selection
- Information Acquisition
- Information Synthesis
- Information Navigation
- Information Dissemination

- In Support of Teaching and Learning
- In Support of Research and Scholarship
- In Support of Community Development
CHANGING LIBRARY ROLES

• Libraries as Consumers
• Libraries as Intermediaries and Aggregators
• Libraries as Publishers
• Libraries as Educators
• Libraries as R&D Organizations
• Libraries as Entrepreneurs
• Libraries as Policy Advocates
SCHIZOPHRENIC VISION

- Library as Legacy
- Library as Infrastructure
- Library as Repository
- Library as Portal
- Library as Enterprise
- Library as Public Interest
WHAT IS PROVOKING NEW THINKING ABOUT THE 21\textsuperscript{ST} CENTURY ACADEMIC LIBRARY?

• Rapidly Shifting User Behaviors/Expectations
• Redundant Inefficient Library Operations
• Aging Service Paradigms
• Increasing Emphasis on Unique Resources
• Need to Achieve Scale and Network Effects Through Aggregation
WHAT IS PROVOKING NEW THINKING ABOUT THE 21ST CENTURY ACADEMIC LIBRARY?

• Advanced Open Architecture
• Mandate for Systemic Change
• Acceleration of Collective Innovation
• New Economic Context
NEW TECHNOLOGIES AND THE 21ST CENTURY ACADEMIC LIBRARY

- Mobiles and Tablets (single, portable multi-purpose device)
- Cloud Computing (distributed processing and applications)
- Geo-Everything (geolocation and geotagging)
- Personal Web (customized management of online content)
- Linked Data (connecting and relating structured information)
- Semantic-Aware Applications (meaning to provide answers)
- Smart Objects (links physical world with information)
NEW TECHNOLOGIES
AND THE 21ST CENTURY ACADEMIC LIBRARY

• Open Content (wide distribution and repurposing)
• MOOC (massive open online courses)
• Electronic Book (platforms, applications, redefinition)
• Data/Big Science (research information management)
• Games As Learning Tools (participation and interaction)
• Visualization and Simulation (more meaningful and intuitive)
21ST CENTURY LIBRARY EMBRACES

• Rapid Technology Development/Deployment
• Professional Maturation/Tension
• Library Role Diversification
• Complex Relationships/Info Flows
• Perpetual Assessment
• Challenges to PTB
• Low Tolerance for MBC
• Boundary Erosion
BUILD THE DIGITAL LIBRARY
QUALITY = CONTENT + FUNCTIONALITY

- Published/Licensed Content
- Primary Content
- Open Web Content
- Institutional Content
- Research Data Content
- Multimedia Content
- Integrated Services
- Software Tools
PRESERVE AND ARCHIVE THE CONTENT

- Archive as Repository: HOLD
- Archive as Persistence: ACCESS
- Archive as Curation: SECURE
- Archive as Steward: CARE

- Analog
- Digital Conversion
- Born Digital
- Disaster Preparedness
ADVANCE THE REPOSITORY MOVEMENT

- Discipline Repositories
- Institutional Repositories
- Data Repositories
- Departmental/School Repositories
- Individual Repositories
- Learning Repositories
- Government Repositories
- National Repositories
- Publisher Repositories
- Research Data Repositories
SUPPORT THE NEEDS OF RESEARCH

• Navigate, Analyze, Synthesize
• Open Research/Continuous Scholarly Communication
• Scholarly Products to Scholarly Process
• Expertise Databases/Subject Ontologies
• Data Management Consulting
• Integration of Disparate Sources/Grey Literature
• Special Library/Informationalist Model
SUPPORT THE NEEDS OF BIG DATA

• Federal/Funding Agency Mandate
• Massive Data Sets
• Unstructured Data/Curation
• Extraction
• Distribution
• Collaboration
• Visualization
• Simulation
• Preservation
BUILD THE NETWORK

• CONNECTIVITY
• RELIABILITY
• CAPACITY
• PERFORMANCE
• SECURITY
• NEW APPLICATIONS
ACADEMIC LIBRARIES MUST PREPARE FOR ACCOUNTABILITY AND ASSESSMENT

- Institutional Expectations
- Government/Funder Mandate
- Measures Of User Satisfaction
- Measures Of Market Penetration
- Measures Of Success
- Measures Of Impact
- Measures Of Cost Effectiveness
- System Design For Usability
- Insanity of Most ROI
WHO ARE OUR USERS?

• Students (diversity abounds)
• Faculty (expectations galore)
• Researchers (tribal differences)
• Administration (the bottom line)
• Community (local politics)
• Working Professionals (practical applications)
• Alumni and Donors (largely ignored)
• World on the Web (the new majority)
WHERE DO WE INTERSECT WITH USERS?

- Physical Spaces
- Web Spaces
- Collections
- Services
- Applications
- Technologies
- Classroom

- Laboratory
- Bedroom
- Collaborations
- Anyone
- Anywhere
- Anytime
- Anyhow
HOW DO WE KNOW ABOUT USERS?

- Ask
- Measure
- Listen
- Observe
- Compare
- Benchmark

- Experiment
- Involve
- Prototype
- Portfolio
- Evaluate
- Experience (Aha)
ENHANCE THE USER EXPERIENCE

• Technology Ubiquity
• Point-of-Need Information
• Web-based Services
• Technology Sandbox
• Privacy Space
• Social Success
• Support Services
• Information Fluency
• Post-graduate Access
• Career Assistance
RESPOND TO USER EXPECTATIONS

- Content
- Access
- Convenience
- New Capabilities
- Cost Reduction
- Participation
- Individual Productivity
- Individual Control
- Organizational Productivity
EMBRACE THE “HUMAN” OBJECTIVES

• Success (turn out well, attain desired end)
• Happiness (well-being and contentment)
• Productivity (achieving results or benefits)
• Progress (forward movement or betterment)
• Relationships (personal connections or attachments)
• Experiences (observation or participation)
• Impact (significant effect)
HILDRETH ON SYSTEM DESIGN

- Metaphorical Consistency
- Display Legibility
- Audience Suitability
- Simplicity of Design
- Ease of Navigation
- Searching Power
ACADEMIC LIBRARY DEVELOPMENT

-1950  Period of EXCLUSIVITY
1950-1970  Period of POPULARIZATION
1970-1990  Period of DISCORD
1990-2010  Period of DECADENCE
2010-2015  Period of POLYGAMY/KUMBAYA
2015-2020  Period of PARABIOSIS/SYNERGY
2020-  Period of PARTICULARISM
FORUMS FOR COOPERATION

- Library Systems
- Local and Regional Cooperation
- State Projects
- Multi-State Projects
- National Consortia/Projects
- International Partnerships
- Researcher Collaboration
- Publisher Collaboration
- Collaboration with Technology Organizations
- Corporate Partnerships
- Business Partnerships

REACHING OUT TO CULTURAL COMMUNITY
PROMOTING NEW COMBINATIONS THRU PUBLIC-PRIVATE PARTNERSHIPS
ARENAS FOR COLLABORATION

- Centers for Excellence
- Mass Production
- New Infrastructure
- New Initiatives

Quality/Productivity/Innovation
FROM POLYGAMY TO PARTICULARISM
SOME INSTITUTIONAL ACTIONS

• Build the Community Technology Infrastructure
• Bring Information Services and Educational Computing Together
• Massively Redeploy Library Space for Community Collaborations
• Organize Systematic Usability/Assessment Capability
• Align Resources to a New Uniqueness/Stewardship Model
• Advance Policy Education and Advocacy Role
FROM POLYGAMY TO PARTICULARLISM
FURTHER INSTITUTIONAL ACTIONS

• Market Resources and Services For Penetration and Diversification
• Create Web Harvesting Capacity As Part of Collections Program
• Partner With Faculty On Research Data Capture, Curation and Archiving
• Rethink Literary Education Role of Library
• Creatively Invest Collection Funds For Discovery, Access and Archiving
• Leadership for Research Information Management
FROM POLYGAMY TO PARTICULARLISM
SOME COLLECTIVE ACTIONS

• National Program of Mass Digitization of Collections
  (Digital Public Library of America)

• National Program For Print Preservation
  (Last Copy Print Repositories)

• National Infrastructure For Digital Preservation
  (Digital Preservation Network)

• More Systematic and Rigorous Approach to Standards and Best Practices

• National Program of Research Library R&D

• Accelerate Concept to Market for Systems and Tools
FROM POLYGAMY TO PARTICULARLISM
FURTHER COLLECTIVE ACTIONS

• New Scholarly Communication Business Models and Assessment Strategies

• Connections With South Asia and East Asia

• Professional Staff Preparation and Development

• Investments In Policy Action For Openness and Barrier Free Access (Library PAC)

• Investigate Appropriate Public-Private Partnerships

• Radicalize Research Library Working Relationships (Library Service Agency Network)
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SOME ISSUES FOR DISCUSSION

• Identifier Proliferation
• Commercialization
• Openness/Protection
• Maintenance
• Authority
• Unintended Consequences/Harvesting
CREATE NEW DIGITAL VALUE THROUGH THE CLOUD, THE PLATFORM, AND THE NETWORK

• Can I offer new educational and research services to existing user base?

• Can I address the needs of new user segments by repackaging current services or by creating new service capabilities?

• Can I use my ability to attract new users to generate new sources of revenue or new partnership opportunities?

• Will my future be significantly harmed by others providing the same or better value than I currently offer?
WHAT DO WE MEAN BY TRANSFORM?

• to change in composition or structure

WHAT WE ARE/WHAT WE DO

• to change the outward form or appearance

HOW WE ARE VIEWED/UNDERSTOOD

• to change in character or condition

HOW WE DO IT
HOW DO WE FEEL?

- **Anxious**  - an abnormal and overwhelming sense of apprehension and fear
  
  “Our age of anxiety is, in great part, the result of trying to do today’s jobs with yesterday’s tools.”
  
  Marshall McLuhan

- **Disrupted**  - interruption of normal course or unity, thrown into disorder
  
  “One of the litmus tests is that a disruptive technology enables a larger population of less skilled people to do things that historically only an expert could.”
  
  Clayton Christensen
  
  The Innovator’s Dilemma

- **Chaotic**  - state of utter confusion, unpredictability in the behavior of complex systems
  
  “Chaos often breeds life, when order breeds habit.”
  
  Education of Henry Adams
WHERE ARE WE GOING?

RELEVANCE

IMPACT

VALUE

SURVIVAL

EXTINCTION

PHYLETIC – one species evolves into another

TERMINAL – termination of species/no descendants
NEW TITLE NUMBER ONE

YOU CAN’T COUNT THE APPLES IN THE SEED

ASSURING VITALITY AND RELEVANCE FOR THE UNIVERSITY LIBRARY
NEW TITLE NUMBER TWO

PIONEERS NEED FRONTIERS

ARE WE READY FOR NEW MODELS OF RESEARCH LIBRARIES?
NEW TITLE NUMBER THREE

THE TROMPE L’OEIL

ACADEMIC LIBRARY OF THE FUTURE

IMAGE AND REALITY
NEW TITLE NUMBER FOUR

CHAOS BREEDS LIFE

RETHINKING THE WAY STUDENTS AND SCHOLARS WILL CREATE, COMMUNICATE, AND PRESERVE THEIR WORK