

# CYBERSCHOLARSHIP AND THE RESEARCH LIBRARY

**ARL Fall Forum**  
**Library Workforce for 21<sup>st</sup> Century Research Libraries**

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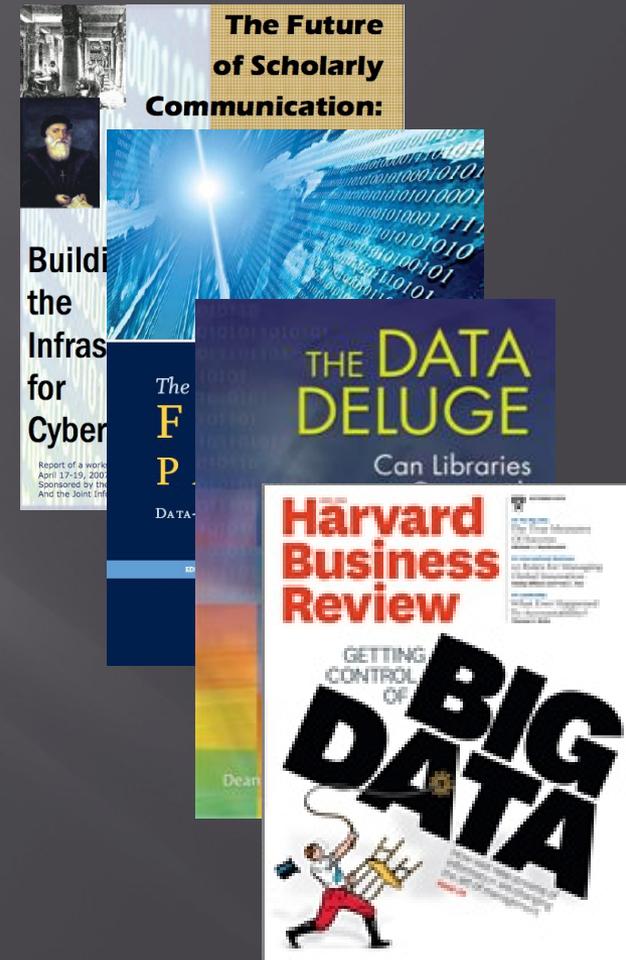
# The future ain't what it used to be ...

Come gather 'round people  
Wherever you roam  
And admit that the waters  
Around you have grown  
And accept it that soon  
You'll be drenched to the bone.  
If your time to you  
Is worth savin'  
Then you better start swimmin'  
Or you'll sink like a stone  
For the times they are a-changin'.



# Cyberscholarship

- ▣ Qualitatively different opportunities for new forms of research
- ▣ Interdisciplinary investigations engage scientists, technologists, and humanities scholars.
- ▣ Transformative opportunities and challenges to libraries and the information professions



# Emerging forms of research

- ▣ Data-driven... exploratory, correlative...
  - Technology-enabled: A human reads one document at a time; a computer analyzes millions, revealing otherwise undetectable patterns
  - Transformative: Stretches library traditions to collect, curate, preserve, and provide access to content of enduring value
- ▣ Communication-enabled
  - Encourages experimentation
    - ▣ arXiv, genomics, NVO, LHC, ...
    - ▣ social media, wikis, blogs, ...
  - Accelerates the exchange of ideas
  - Expands the field of contributors
  - Disrupts conventional librarianship



# Infrastructure challenges

- ▣ Stewarding contemporary scholarship
  - Digital content
  - Web services
  - Workflows
- ▣ Curating primary research data
  - Often discarded
  - Rarely accessible
  - Frequently incompatible
- ▣ Approaching a tipping point
  - Digital content the norm in most disciplines
  - Infrastructure and professional services lagging



# Peter Murray-Rust (Cambridge)



- ▣ “... the current scientific literature, were it to be presented in semantically accessible form, contains huge amounts of undiscovered science.”
- ▣ “However, the apathy of the academic, scientific, and information communities, coupled with the indifference or even active hostility and greed of many publishers, renders literature-data-driven science still inaccessible.”

# Challenges / Opportunities

- ▣ Refine the MLIS curriculum
  - Reach beyond the library
  - Champion digital stewardship
  - Engage with disciplinary research
- ▣ Recruit students to prospective careers
  - STEM students, business students, ...
  - Diversity students
- ▣ Explore emerging roles
  - Library as data repository & publisher
  - Embedded librarian/informationist with disciplinary expertise
  - Proactive mediation throughout lifecycle of scholarly workflows
- ▣ Partner to define and shape new career paths
  - Data librarian / data scientist (e.g., as Co-PI on major research projects)
  - Dual degree programs (e.g., X-Informatics)





# Emerging Roles & Careers for Data Professionals\*



- **Data Creator** - Researchers with domain expertise
- **Data Manager** - Computer scientists or information technologists responsible for computing facilities, storage, continuing access, and preservation of data
- **Data Scientist** – Information professionals working with data creators, engaging in creative inquiry and analysis
- **Data Librarian** – Information professionals specializing in digital stewardship, including the curation, preservation and archiving of data

\* JISC

# Opportunities to Rethink “Collections” and “Services”

highest

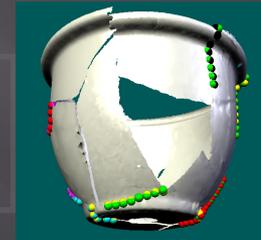
Computational objects & digital rendering of the human record



Value-added experimental data  
(human involvement)

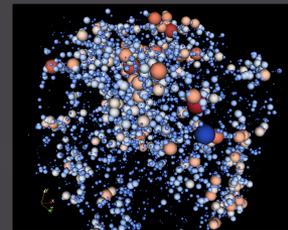


Irreplaceable sensor data  
(automated collection and preparation)



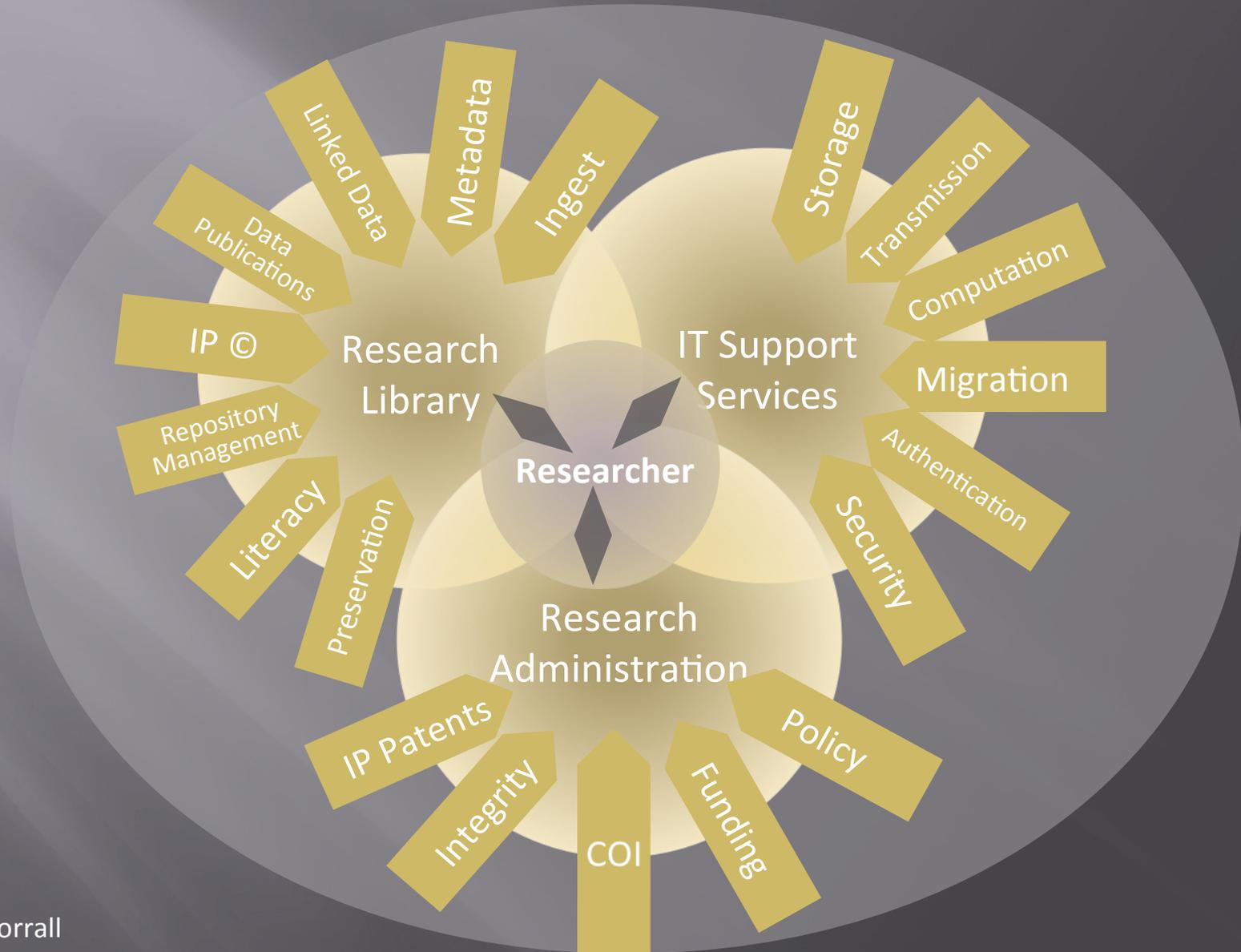
lowest

Re-generable (e.g., simulation) data



Priority

# Opportunities to Rethink Leadership\*



\* S. Corral

# Workforce Issues in Turbulent Times

- Retaining the high ground
- Sustaining linkage to institutional mission
- Creating new value-added services
- Supporting disciplinary research teams
- Assuring stewardship of the scholarly record



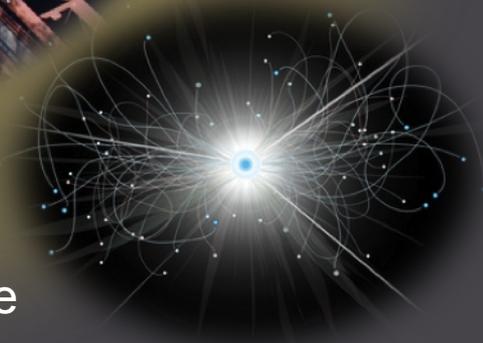
# Research Libraries – Sustaining a Mission of Connecting & Preserving



Access



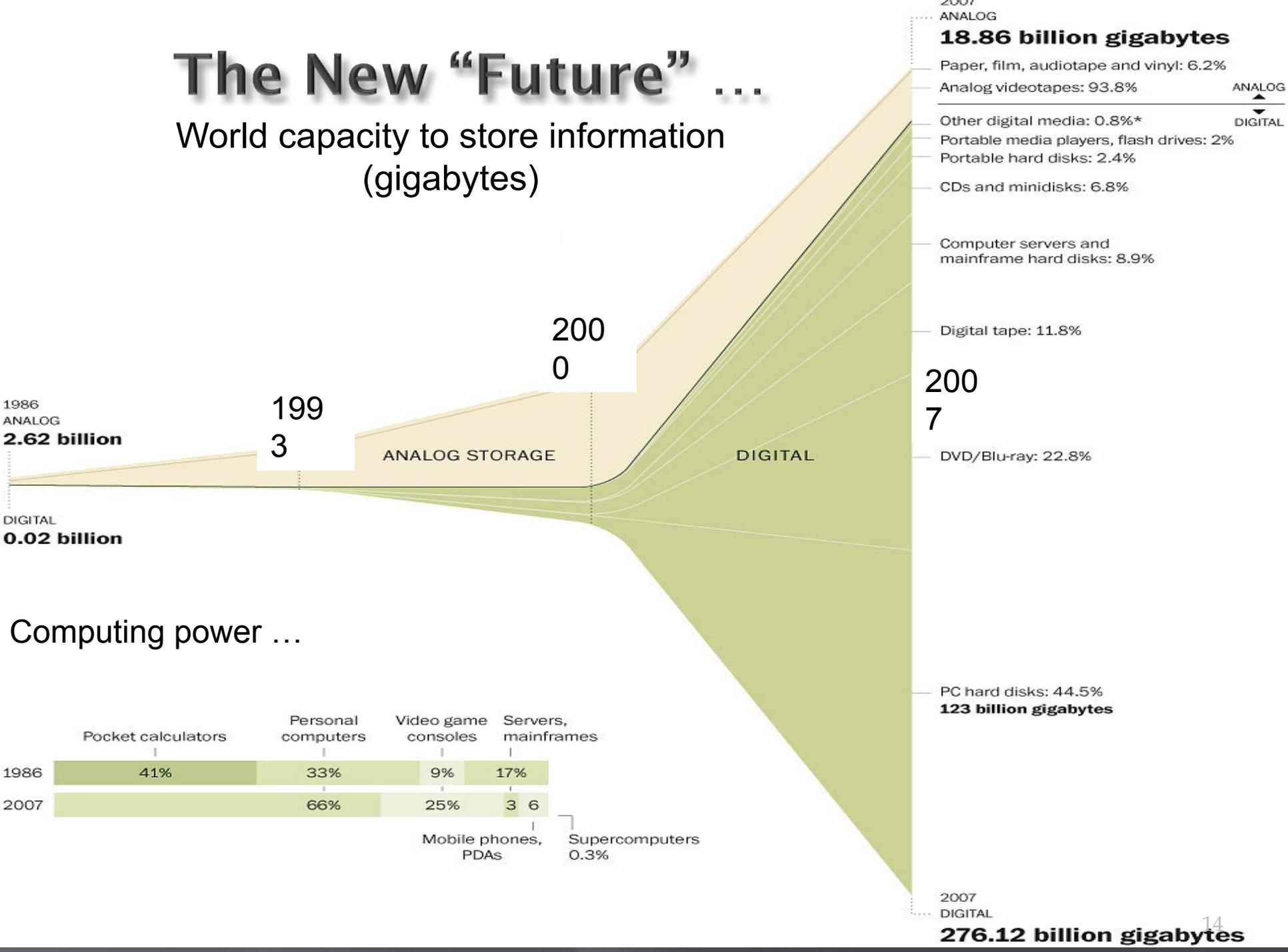
Curation



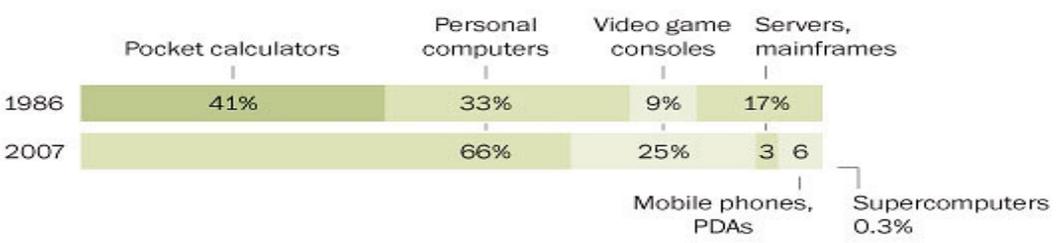
Capture

# The New "Future" ...

World capacity to store information  
(gigabytes)



## Computing power ...



# Consequences of digitization

(NSF/JISC Repositories Workshop\*)

- ▣ Transformation of *scholarly communications*
- ▣ *Data-driven discovery* as new scientific paradigm
- ▣ Reconciling issues with *scale and complexity*
- ▣ Adapting *organizations* to exploit distributed heterogeneous information
- ▣ Enabling conditions for wide adoption by *individuals*