

UCLA

Presentations

Title

The Digital Future is Now: What the Humanities can Learn from eScience

Permalink

<https://escholarship.org/uc/item/15q7d9p3>

Author

Borgman, Christine L.

Publication Date

2010-05-27

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A DIGITAL HUMANITIES MANIFESTO

A PROJECT OF THE MELLON SEMINAR IN DIGITAL HUMANITIES AT UCLA

A DIGITAL HUMANITIES MANIFESTO

A PROJECT OF THE MELLON SEMINAR IN DIGITAL HUMANITIES AT UCLA

Next: [The Digital Humanities Manifesto 2.0](#) »

« Previous: [A Digital Humanities Manifesto](#)

Total comments on this page: 3

A Digital Humanities Manifesto

24

The Digital Humanities Manifesto

3

COMMENTS OVERVIEW

WHOLE PAGE (3)

BROWSE COMMENTS

by Commenter
by Section
General Comments

1 Digital humanities is not a unified field but an array of convergent practices that explore a universe in which no longer the exclusive or the normative medium in which knowledge is produced and/or disseminated; instead, print finds itself absorbed into new, multimedia configurations; and

2 Like all media revolutions, the digital revolution looks like a world where while vastly advanced, it looks backwards. It looks for specific features of the past.

3 The first wave of digital search and retrieval is qualitative, immerses the core strengths of the medium.

4 Interdisciplinary empty words and methods, and

5 The digital is a resource, open space should be

6 Yes, there is a digital humanities: The infinite, the ex

7 Copyright and the stranglehold on materials on s

sue... your entire neighborhood, school, or country. Practice digital anarchy by creatively undermining copyright and mashing up media.

8 The multi-purposing and multiple channeling of humanistic knowledge: no channel excludes the other. This is an abundance based economy, not one based upon scarcity. It values the COPY more highly than ORIGINALS and restores to the word COPY its original meaning of abundance: COPIA = COPIOUSNESS = THE OVERFLOWING BOUNTY OF THE INFORMATION AGE.

5) move on

7 **what is(n't) digital humanities (and why it matters)**

8 Digital Humanities is not a unified field but **an array of convergent practices** that explore a universe in which: a) print is no longer the exclusive or the normative medium in which knowledge is produced and/or disseminated; instead, print finds itself absorbed into new, multimedia configurations; and b) digital tools, techniques, and media have altered the production and dissemination of knowledge in the arts, human and social sciences. The Digital Humanities seeks to play an inaugural role with respect to a world in which, no longer the sole producers, stewards, and

Digital Humanities is not a unified field but an array of convergent practices that explore a universe in which:
a) print is no longer the exclusive or the normative medium in which knowledge is produced and/or disseminated; instead, print finds itself absorbed into new, multimedia configurations; and
b) digital tools, techniques, and media have altered the production and dissemination of knowledge in the arts, human and social sciences.

MENTS

al Humanities
sto
igital Humanities
sto 2.0

T COMMENTS

igital Humanities
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s Edición Digital »
rchive » A Digital
ities Manifesto 2.0
...] UCLA Mellon
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ities has released
al Humanities
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igital Humanities
sto 2.0
gblog ~ Lynn
han Leeson » Blog
» Los Angeles:
Autonomous
? says: [...]
But did you know
LA has a Center
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igital Humanities
sto 2.0
av says: Todd and
really enjoying
Humanities
sto 2.0. And, yes,
...]

A Digital Humanities
Manifesto
craigbellamy.net » A
Digital Humanities
Manifesto says: [...] I am
pleased that UCLA has
discovered the Digital
Humanities. Here is a
manifesto th[...]
A Digital Humanities
Manifesto
Knowledge Remix in the
Humanities and Social
Sciences « OPEN
REFLECTIONS says: [...]
"Process is the new god;

I'm finding that something as simple as constructing my maps of related concepts are not easily applied to primary sources in digital libraries. **So what use are the digital libraries, if all they do is put digitally unusable information on the web?** The digital libraries don't offer a platform for traditional note taking, much less for larger scale analysis, either quantitative or qualitative.



UCLA doctoral student in history, personal communication, June 8, 2009, used with permission

The Chronicle Review

From the issue dated April 3, 2009

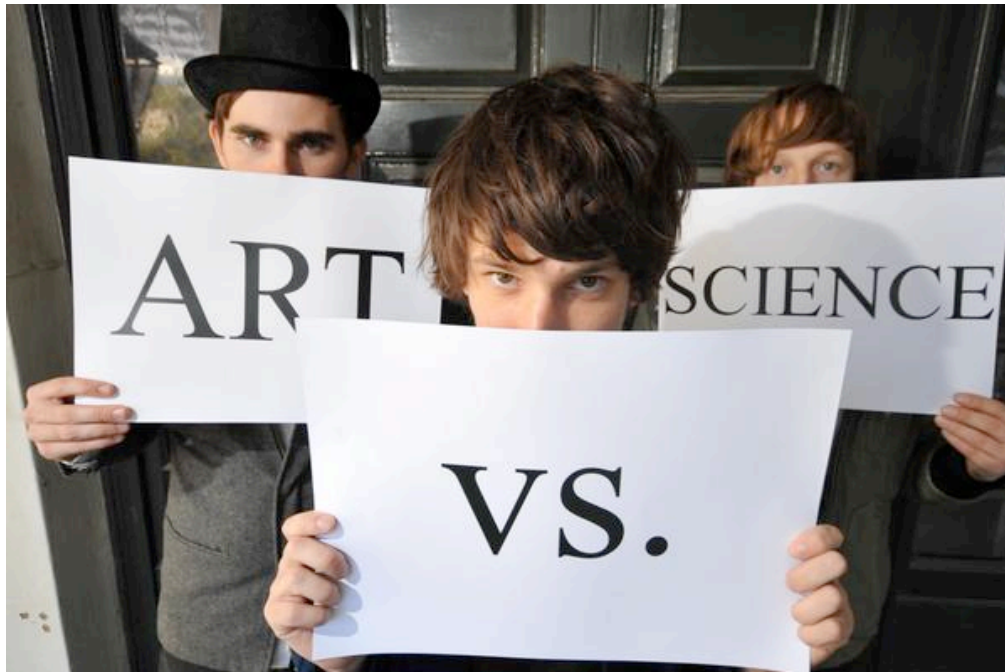
Blind Spots

Humanists must plan their digital future

By JOHANNA DRUCKER

We face a critical juncture. Leaving it to "them" is unfair, wrongheaded, and irresponsible. Them is us.

- Scholarly information infrastructure
- Science {and, or, vs} humanities



- Publication practices
- Data
- Research methods
- Collaboration
- Incentives

- Call to Action

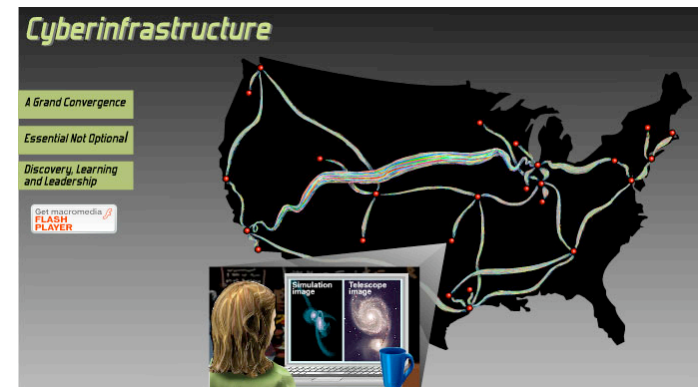
Infrastructure



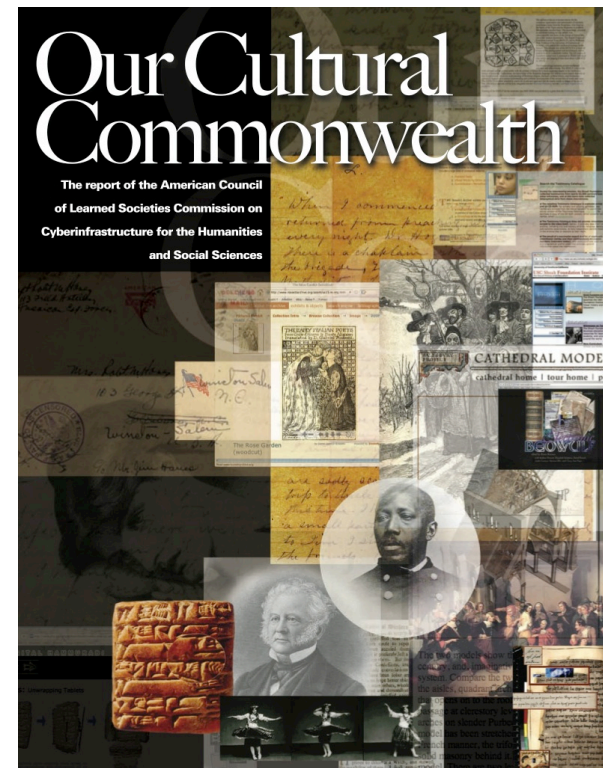
[http://www.warwickshire.gov.uk/Web/corporate/pages.nsf/Links/5C513189873EB0B180257122003E3FB3/\\$file/28_04_06+071.jpg](http://www.warwickshire.gov.uk/Web/corporate/pages.nsf/Links/5C513189873EB0B180257122003E3FB3/$file/28_04_06+071.jpg)

Scholarly Information Infrastructure

- Cyberinfrastructure, eScience, eSocial Science, eHumanities, ...eResearch
- Goal: enable new forms of scholarship that are
 - information-intensive
 - data-intensive
 - distributed
 - collaborative
 - multi-disciplinary



http://www.nsf.gov/news/special_reports/cyber/images/noflashintro.jpg



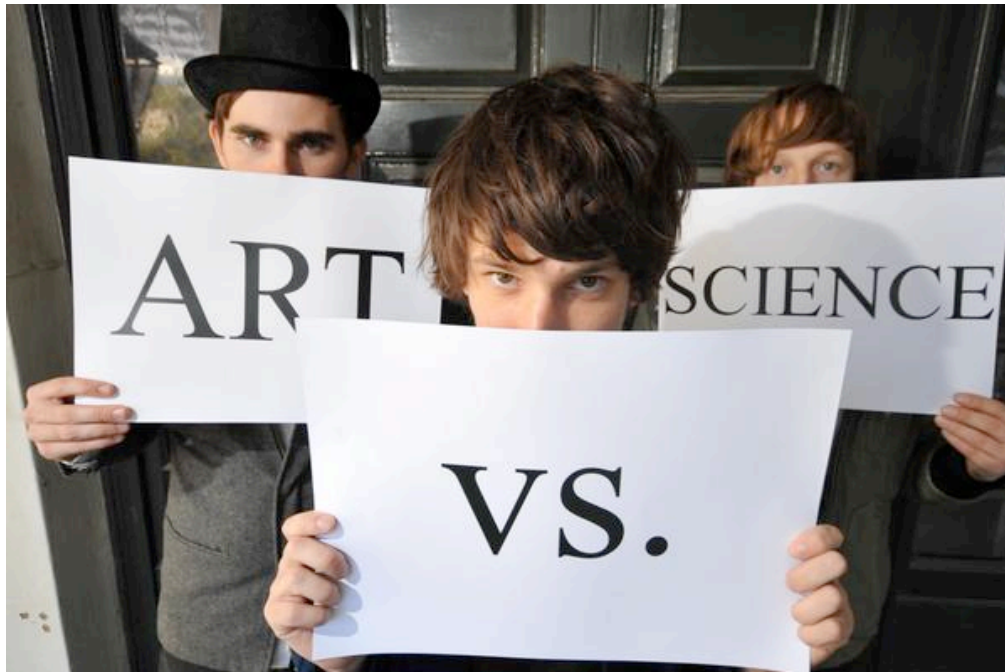
Asking Questions and Building a Research Agenda for Digital Scholarship

Amy Friedlander

- Scale
- Language and communication
- Space and time
- Social networking

Friedlander, A. (2009). Asking Questions and Building a Research Agenda for Digital Scholarship. In *Working Together or Apart: Promoting the Next Generation of Digital Scholarship*. Washington, DC, Council on Library and Information Resources. CLIR Publication No. 145: 1-15. <http://www.clir.org>

- Scholarly information infrastructure
- Science {and, or, vs.} humanities



- *Publication practices*
- Data
- Research methods
- Collaboration
- Incentives

- Call to Action

The Scholarly Journal, 1665-2010

PHILOSOPHICAL
TRANSACTIONS:
GIVING SOME
ACCOMPT
OF THE PRESENT
Undertakings, Studies, and Labours
OF THE
INGENIOUS
IN MANY
CONSIDERABLE PARTS
OF THE
WORLD

Vol I.
For Anno 1665, and 1666.

In the SAVOY,
Printed by T. N. for John Martyn at the Bell, a little with-
out Temple-Bar, and James Allestry in Duck-Lane,
Printers to the Royal Society.

THE ROYAL
SOCIETY

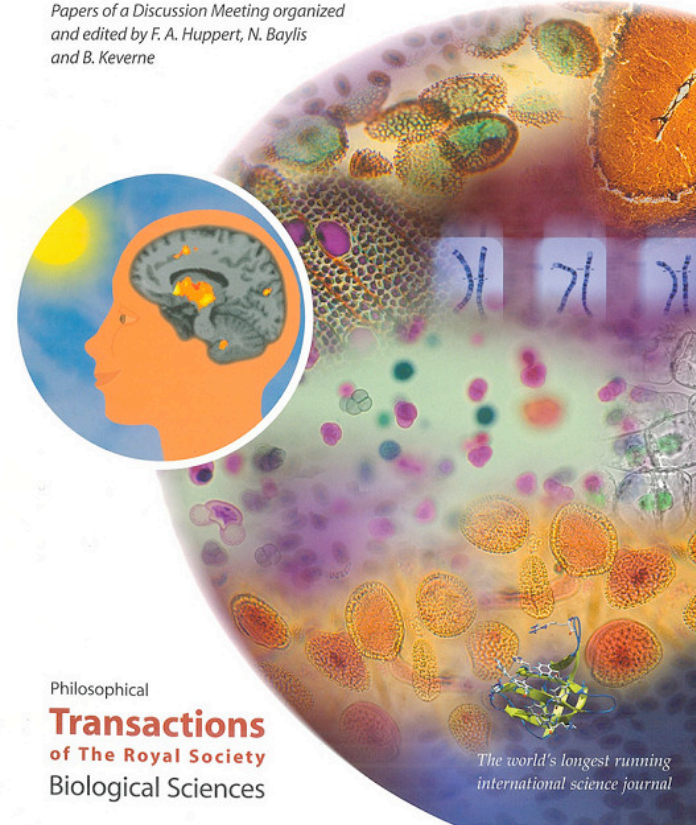
ISSN 0962-8436

IN THIS ISSUE

***The science of well-being:
integrating neurobiology, psychology
and social science***

29 September 2004
volume 359
number 1449
pages 1329-1451

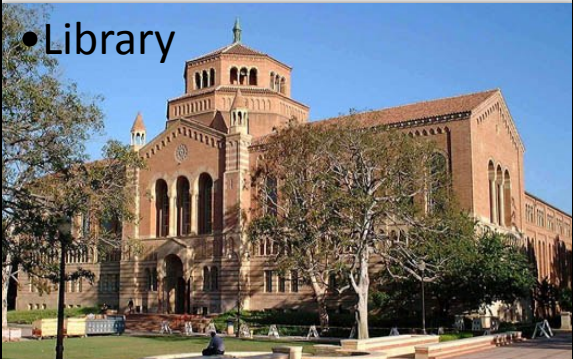
*Papers of a Discussion Meeting organized
and edited by F. A. Huppert, N. Baylis
and B. Keverne*



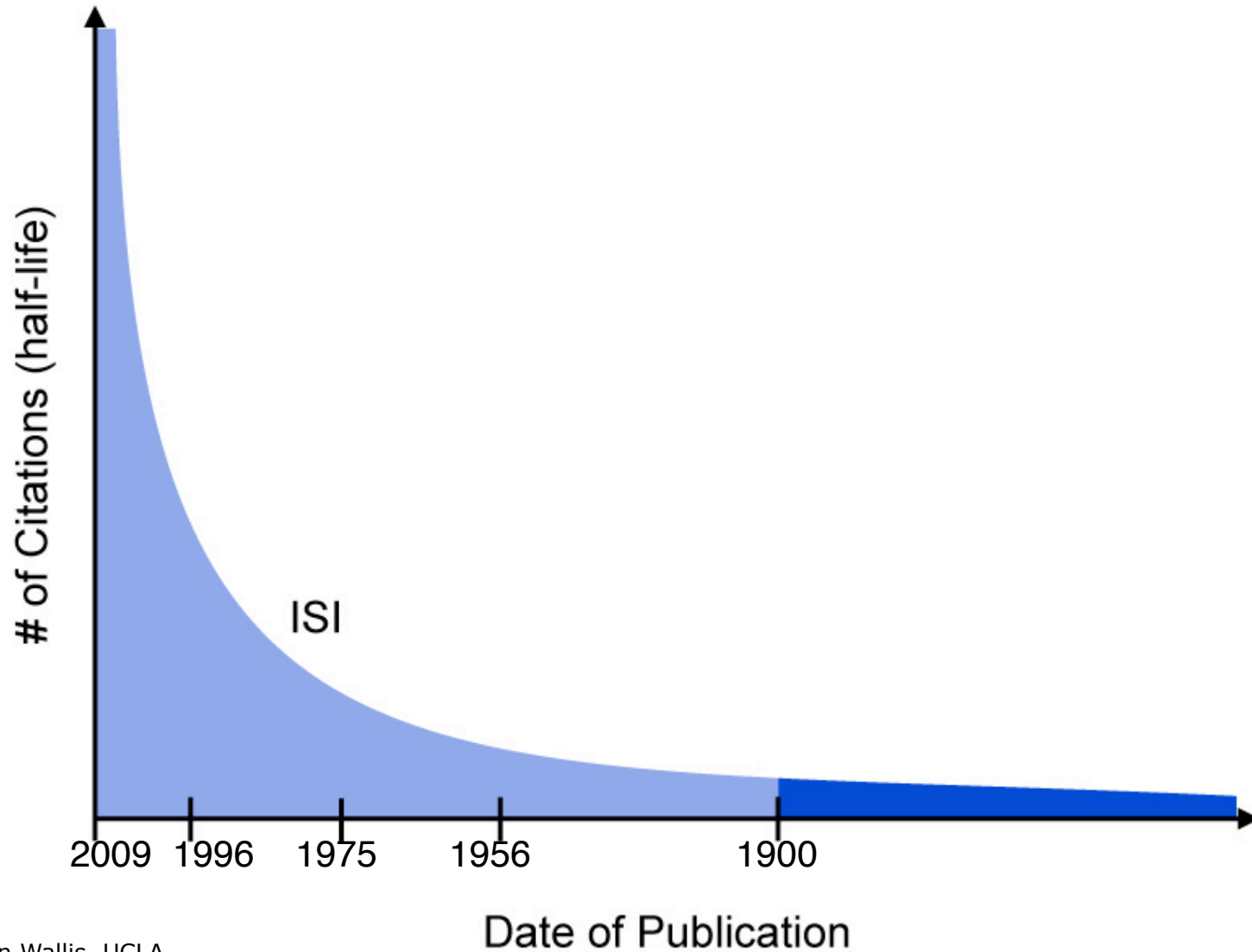
Philosophical
Transactions
of The Royal Society
Biological Sciences

*The world's longest running
international science journal*

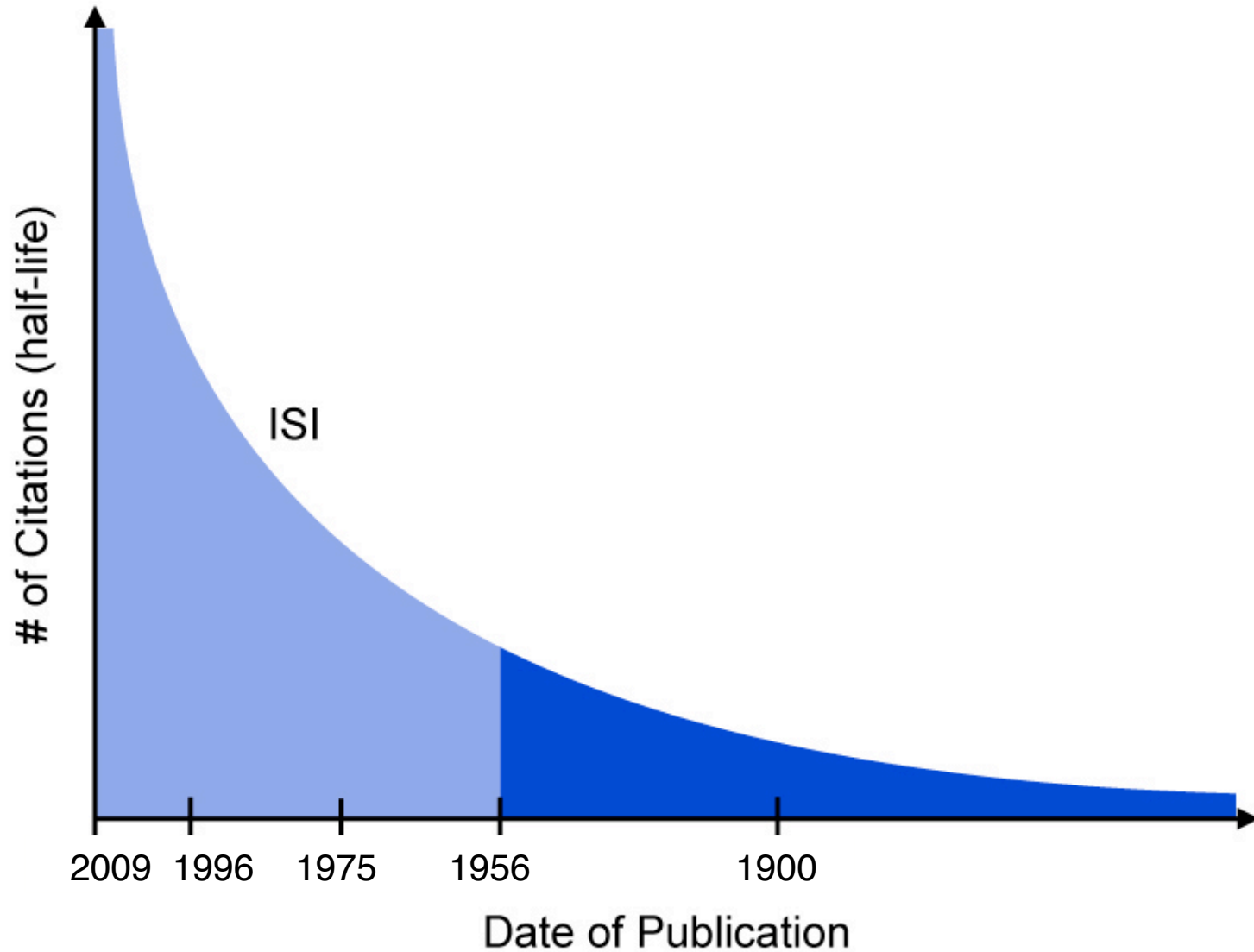
Why do scholars publish?

| Function | Print | Digital |
|--|---|---|
| Legitimization Authority, quality, priority, trustworthiness | <ul style="list-style-type: none">•Peer review | <ul style="list-style-type: none">•Peer review |
| Dissemination Awareness, diffusion, publicity | <ul style="list-style-type: none">•Publisher•Pre-print distribution<ul style="list-style-type: none">•Copy•Mail | <ul style="list-style-type: none">•Publisher•Pre-print distribution<ul style="list-style-type: none">•Post on Web•Deposit |
| Access, preservation, curation Availability, discovery, retrieval, persistence | <ul style="list-style-type: none">•Library  | <ul style="list-style-type: none">•Library•Publisher•Repository•Homepage |

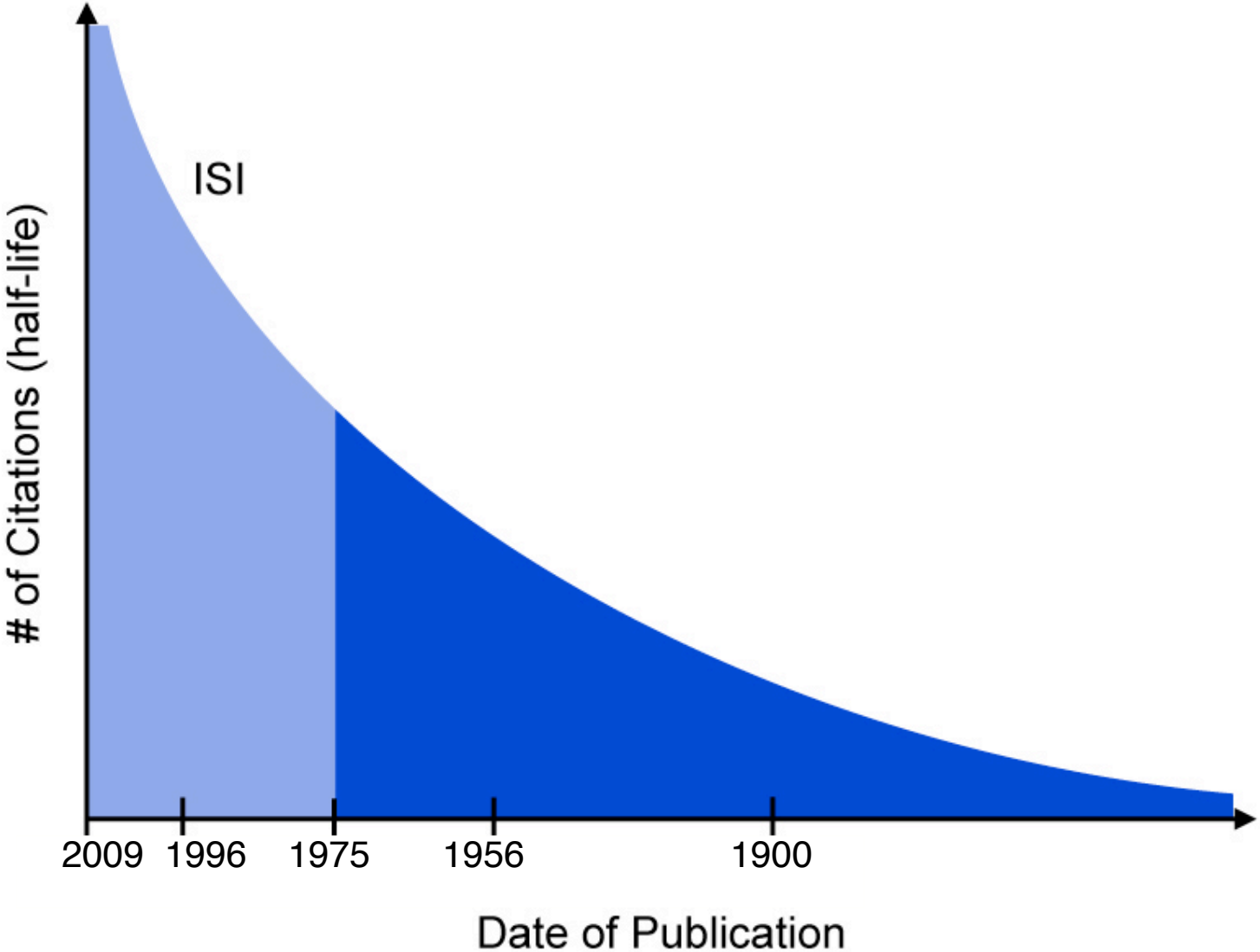
Citation distribution of scientific literature



Citation distribution of social scientific literature



Citation distribution of humanities literature





Open access to 544,057 e-prints in Physics, Mathematics, Computer Science, Quantitative Biology, Quantitative Finance and Statistics

Subject search and browse:

8 Apr 2009: [Added public author identifiers, Facebook interaction, myarticles widget, and personal Atom feeds](#)

31 Mar 2009: [Quantum Gases \(cond-mat.quant-gas\) subject area added](#)

See cumulative "What's New" pages.

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Physics

- **Astrophysics** ([astro-ph new](#), [recent](#), [find](#))
includes: [Cosmology and Extragalactic Astrophysics](#); [Earth and Planetary Astrophysics](#); [Galaxy Astrophysics](#); [High Energy Astrophysical Phenomena](#); [Instrumentation and Methods for Astrophysics](#); [Solar and Stellar Astrophysics](#)
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- **General Relativity and Quantum Cosmology** ([gr-qc new](#), [recent](#), [find](#))
- **High Energy Physics – Experiment** ([hep-ex new](#), [recent](#), [find](#))
- **High Energy Physics – Lattice** ([hep-lat new](#), [recent](#), [find](#))
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- **High Energy Physics – Theory** ([hep-th new](#), [recent](#), [find](#))
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- **Nuclear Experiment** ([nucl-ex new](#), [recent](#), [find](#))
- **Nuclear Theory** ([nucl-th new](#), [recent](#), [find](#))
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includes: [Accelerator Physics](#); [Atmospheric and Oceanic Physics](#); [Atomic Physics](#); [Atomic and Molecular Clusters](#); [Biological Physics](#); [Chemical Physics](#); [Classical Physics](#); [Computational Physics](#); [Data Analysis, Statistics and Probability](#); [Fluid Dynamics](#); [General Physics](#); [Geophysics](#); [History of Physics](#); [Instrumentation and Detectors](#); [Medical Physics](#); [Optics](#); [Physics Education](#); [Physics and Society](#); [Plasma Physics](#); [Popular Physics](#); [Space Physics](#)
- **Quantum Physics** ([quant-ph new](#), [recent](#), [find](#))

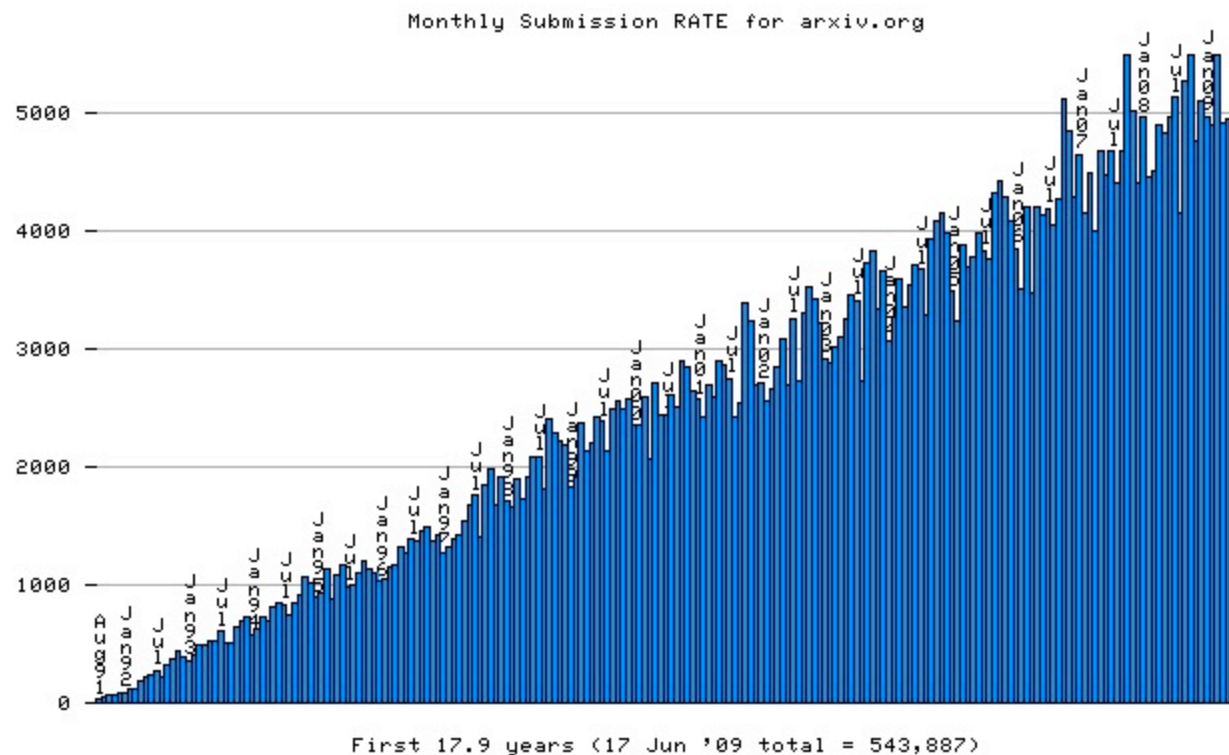
Mathematics

- **Mathematics** ([math new](#), [recent](#), [find](#))
includes (see [detailed description](#)): [Algebraic Geometry](#); [Algebraic Topology](#); [Analysis of PDEs](#); [Category Theory](#); [Classical Analysis and ODEs](#); [Combinatorics](#); [Commutative Algebra](#); [Complex Variables](#); [Differential Geometry](#); [Dynamical Systems](#); [Functional Analysis](#); [General Mathematics](#); [General Topology](#); [Geometric Topology](#); [Group Theory](#); [History and Overview](#); [Information Theory](#); [K-Theory and Homology](#); [Logic](#); [Mathematical Physics](#); [Metric Geometry](#); [Number Theory](#); [Numerical Analysis](#); [Operator Algebras](#); [Optimization and Control](#); [Probability](#); [Quantum Algebra](#); [Representation Theory](#); [Rings and Algebras](#); [Spectral Theory](#); [Statistics](#); [Symplectic Geometry](#)

Nonlinear Sciences

- **Nonlinear Sciences** ([nlin new](#), [recent](#), [find](#))
includes (see [detailed description](#)): [Adaptation and Self-Organizing Systems](#); [Cellular Automata and Lattice Gases](#); [Chaotic Dynamics](#); [Exactly Solvable and Integrable Systems](#); [Pattern Formation and Solitons](#)

arXiv monthly submission rate statistics



Blue – Number of new submissions received during each month since Aug '91

Statistics of submissions to and use of arXiv:

- monthly submission totals
- monthly submission totals [sorted](#) by subject areas (updated 31 Dec '08)
- [today's usage](#) (this server only)

arXiv web server usage for 18 Jun '09 (arxiv.org site only)

Hour_Total_Connections

| | | |
|----|----------|-------|
| 00 | _48509_ | 48509 |
| 01 | _98140_ | 49631 |
| 02 | _157279_ | 59139 |
| 03 | _227310_ | 70031 |
| 04 | _293128_ | 65818 |
| 05 | _357551_ | 64423 |
| 06 | _417405_ | 59854 |
| 07 | _477425_ | 60020 |
| 08 | _541911_ | 64486 |
| 09 | _608406_ | 66495 |
| 10 | _676708_ | 68302 |
| 11 | _739280_ | 62572 |
| 12 | _794698_ | 55418 |
| 13 | _845346_ | 50648 |
| 14 | _892398_ | 47052 |
| 15 | _939723_ | 47325 |
| 16 | _985571_ | 45848 |
| 17 | 1022859_ | 37288 |
| 18 | 1051466_ | 28607 |
| 19 | 1069747_ | 18281 |

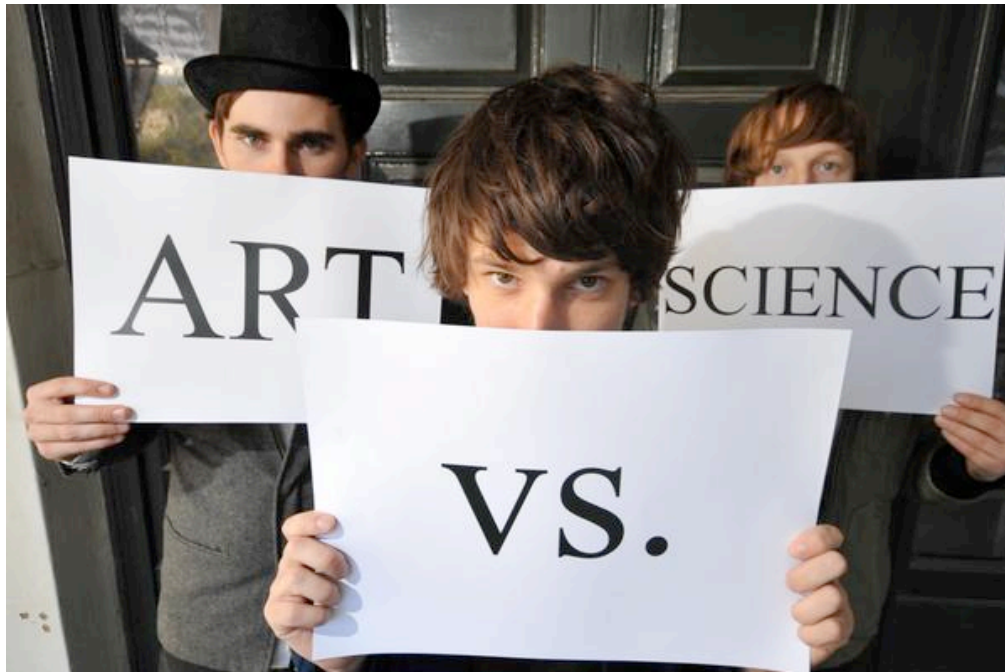
Total number of connections = 1069747 (+93 local & administrative connections)

Current local time is *Thu, 18 Jun 09 19:38:43 EDT*

Statistics of submissions to and use of arXiv:

- [monthly submission totals](#)
- [monthly submission totals sorted](#) by subject areas (updated 31 Dec '08)
- today's usage (this server only)

- Scholarly information infrastructure
- Science {and, or, vs} humanities

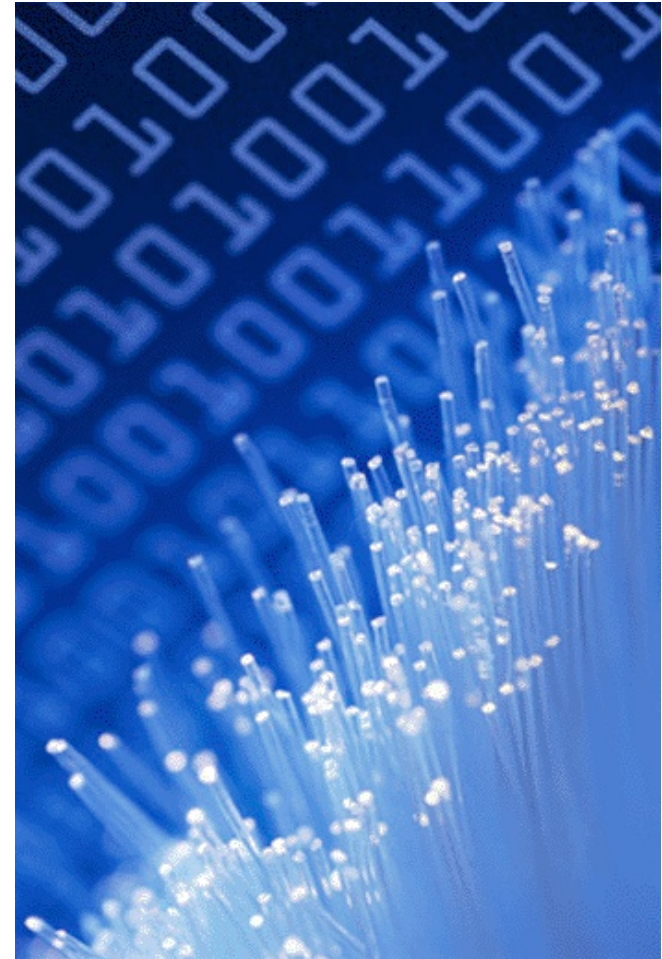


- Publication practices
- ***Data***
- Research methods
- Collaboration
- Incentives
- Learning

- Call to Action

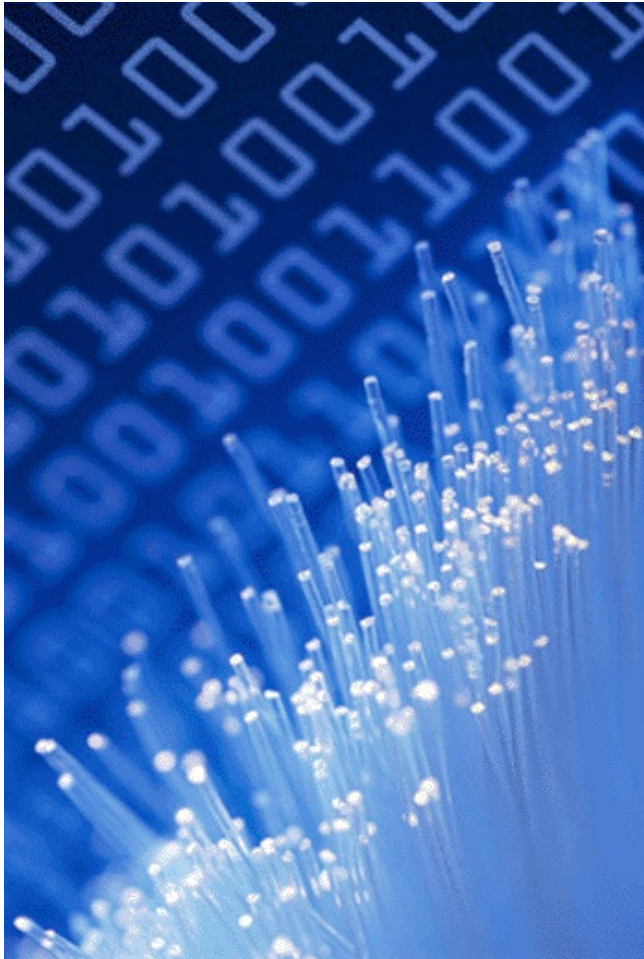
Data in digital scholarship

- Scholarly capital
 - Human capital
 - Instrumentation
 - Data
- Leverage research investments
 - Replicate, verify research findings
 - Ask new questions with extant data
 - Computational biology, chemistry
 - Longitudinal and comparative research
 - Mining large bodies of text and observations
- Collaborative research
 - Data creation
 - Data sharing, reuse



http://datalib.ed.ac.uk/GRAPHICS/blue_data.gif

What are data?



http://datalib.ed.ac.uk/GRAPHICS/blue_data.gif

Categories of data*

- Observational
- Computational
- Experimental
- Records

Objective or subjective?

- Facts
- “alleged evidence” (Buckland, 2006)

*Long-Lived Data, NSF, 2005

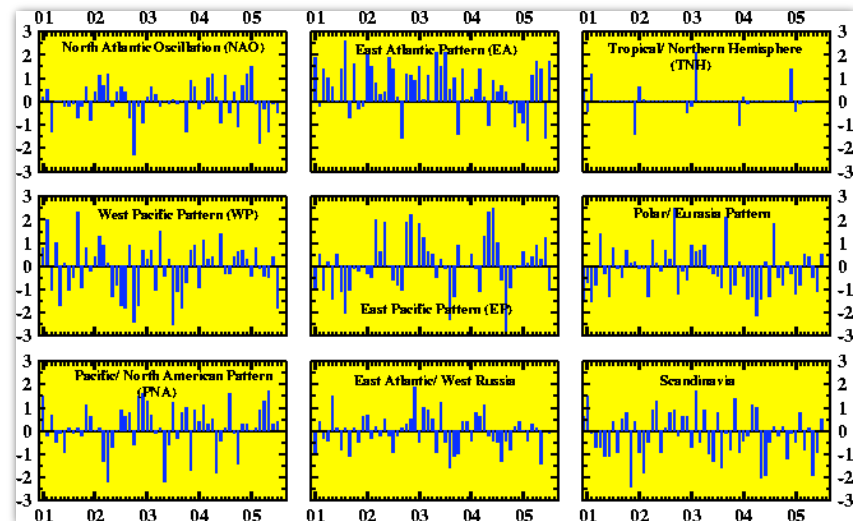
Scientific Data

- Examples

- Ecology: weather, ground water, sensor readings, historical record
- Medicine: xrays
- Chemistry: protein structures
- Astronomy: spectral surveys
- Biology: specimens
- Physics: events, objects
- Documentation: Lab and field notebooks, spreadsheets

- Sources

- Generate own data
- Acquire from collaborators, other scientists
- Data repository



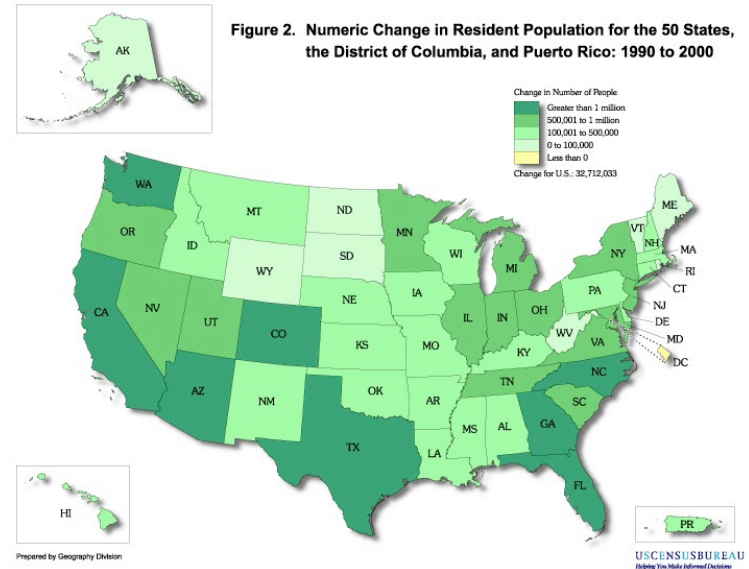
Social Scientific Data

- Examples

- Opinion polls
- Surveys, interviews
- Mass media
- Laboratory experiments
- Field experiments
- Demographic records
- Census records
- Voting records
- Economic indicators

- Sources

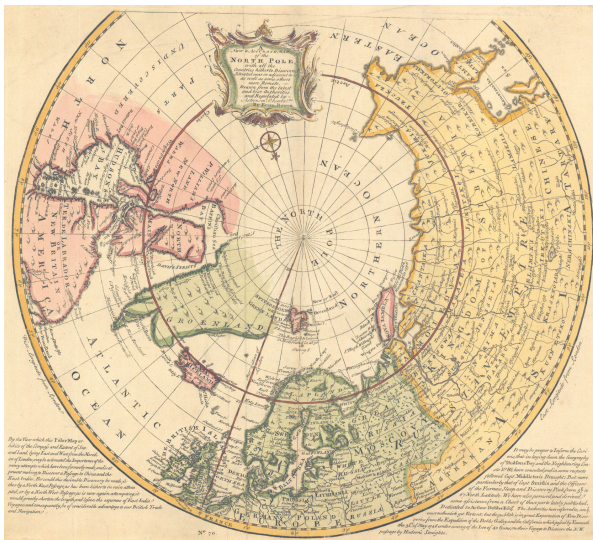
- Generate own data
- Acquire from other scholars
- Data repositories: Social Surveys
- Government records
- Corporate records



Humanities and arts data

• Examples

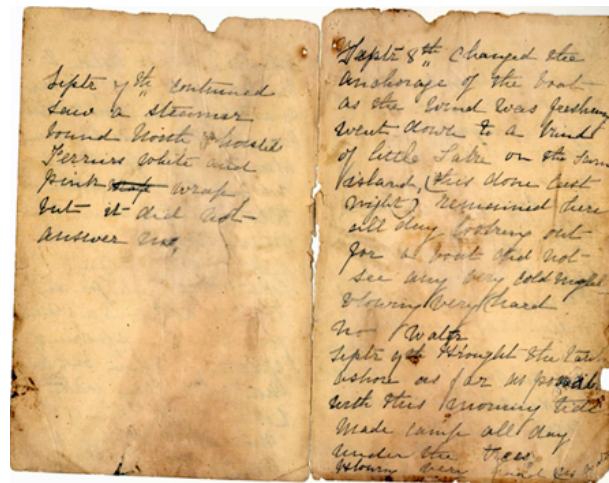
- Newspapers
- Photographs
- Letters
- Diaries
- Books, articles
- Birth, death, marriage records
- Church records
- Court records
- School and college yearbooks
- Maps...



http://libweb5.princeton.edu/visual_materials/maps/websites/northwest-passage/arctic1747-full.jpg

• Sources

- Libraries, archives, museums
- Public records
- Corporate records, mass media
- Acquire from other scholars
- Data repositories: Beazley, Arts & Humanities Data Service (UK)



http://recollections.nma.gov.au/ejournal_library/images/vol_1_no_1/national_treasures_watson_diary_w450/files/13015/National%20Treasures%20-%20WatsonDiary.jpg



Rev. Charles Lutwidge Dodgson [Lewis Carroll]
Xie Kitchin
ca. 1875
Albumen print
15.7 x 12.7 cm

<http://www.hrc.utexas.edu/collections/photography/>

WIRED MAGAZINE: 16.07

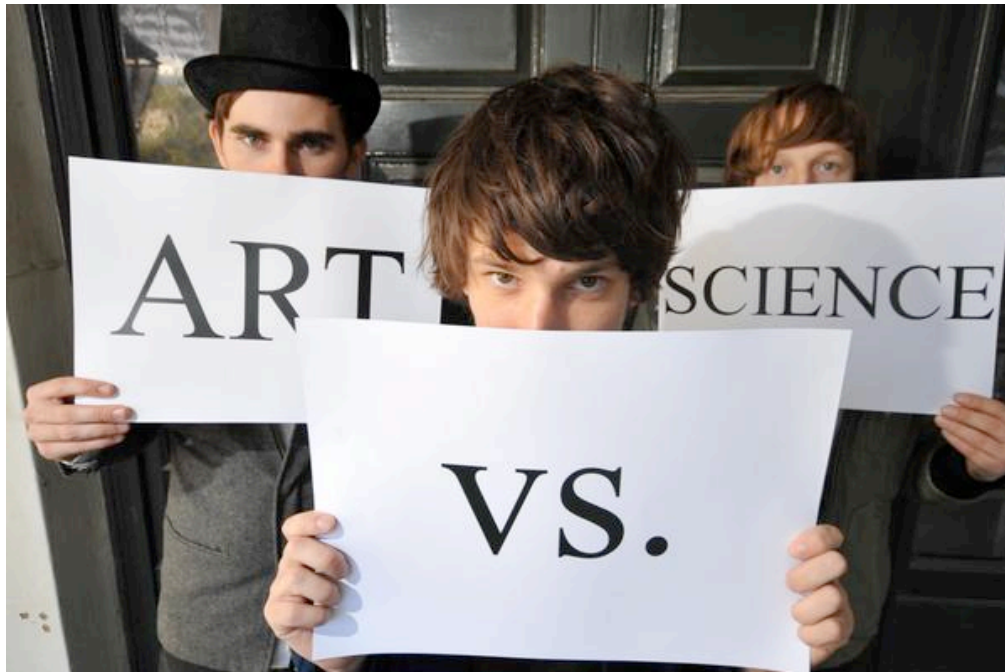
SCIENCE : DISCOVERIES 

The End of Theory: The Data Deluge Makes the Scientific Method Obsolete

By Chris Anderson  06.23.08



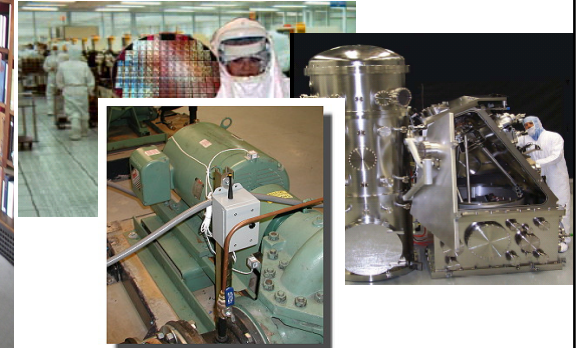
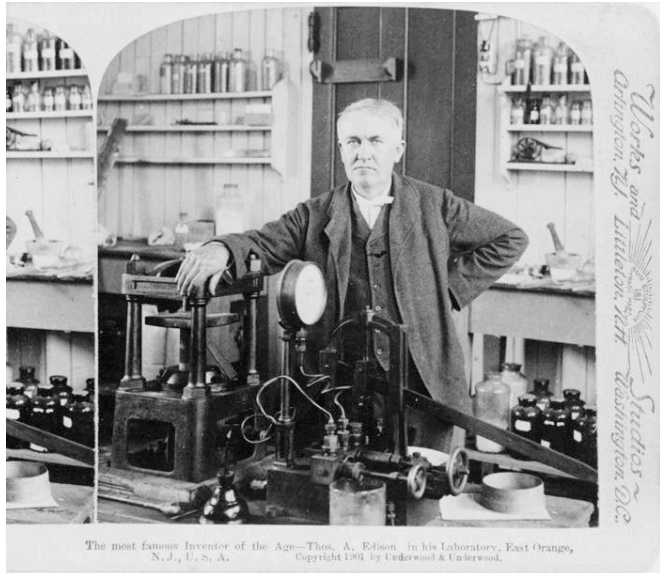
- Scholarly information infrastructure
- Science {and, or, vs} humanities



- Publication practices
- Data
- ***Research methods***
- Collaboration
- Incentives

- Call to Action

Research laboratories



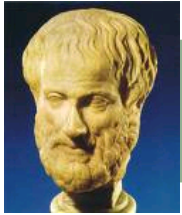
<http://dcc2.bumc.bu.edu/grcweb/T%202010c-%20Core%20laboratory.JPG>

<http://www.una.edu/compcenter/img/computerlab.jpg>

http://www.americaslibrary.gov/assets/aa/edison/aa_edison_subj_e.jpg

<http://student.some.ox.ac.uk/mcr/images/library%20interior.jpg>

New problem solving methods



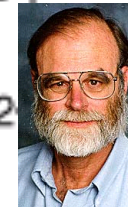
Empirical



Theory



Simulation



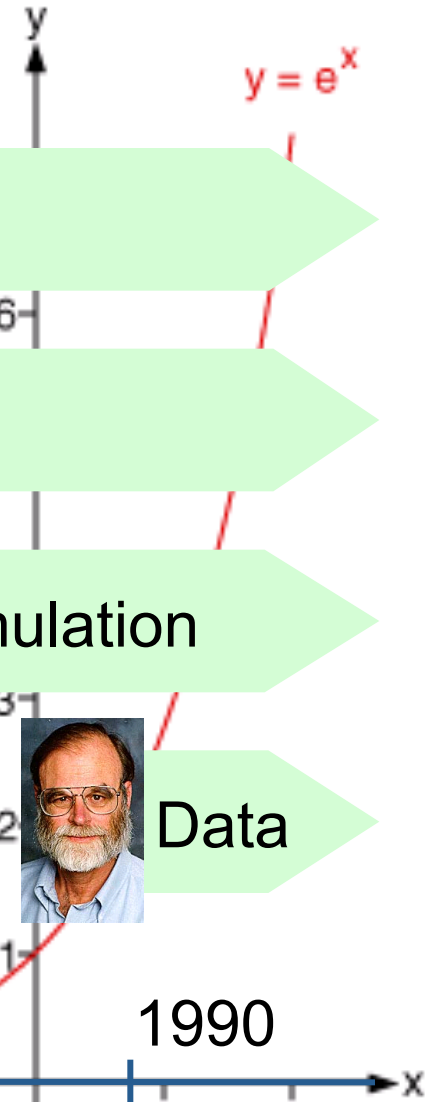
Data

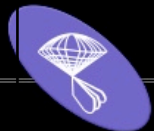
“Applied computer science is now playing the role that mathematics did from the 17th through the 20th centuries: providing an orderly, formal framework and exploratory apparatus for other sciences”

– G. Djorgovski

1950

1990





Sloan Digital Sky Survey

Mapping the Universe

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Scientific and Technical Publications

[Scientific papers](#) are based on analyses of, or presentations of, the SDSS data. [Data Release papers](#) describe the specific process for each data release. [Technical papers](#) describe the SDSS instrumentation, calibration, software, strategy, and targeting algorithms. Technical papers may include some SDSS data for illustrative purposes. This list represents the definitive list of SDSS papers submitted to peer-reviewed journals. [Other Publications Based on SDSS Data](#) is a list of publications in journals and astro-ph which use public SDSS data.

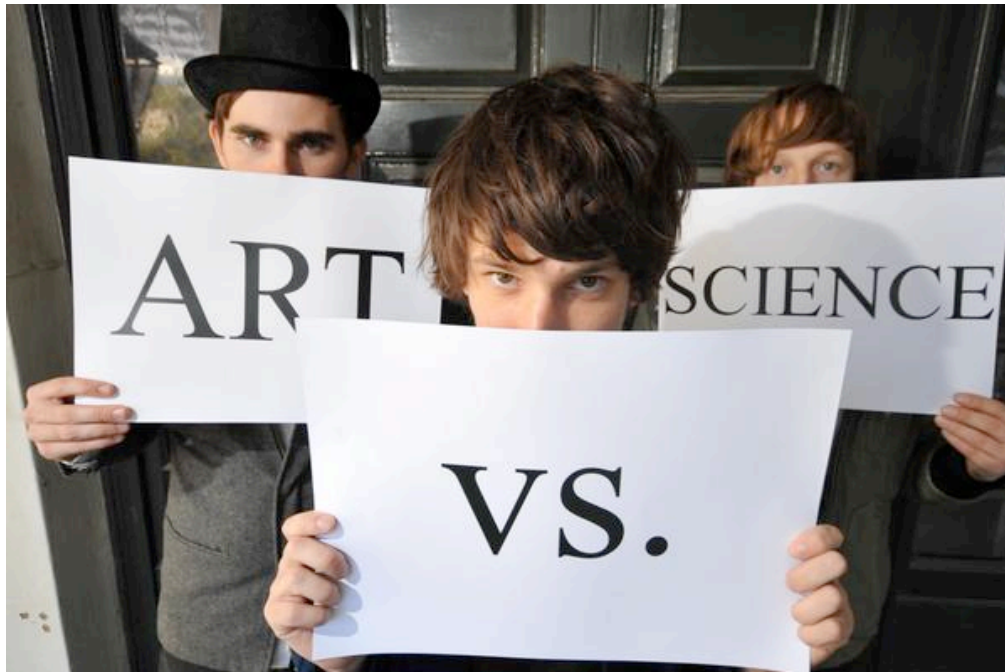
Scientific Publications

| Title | First Author | astro-ph | Journal |
|---|----------------|----------|---------------------|
| A MaxBCG Catalog of 12,875 Galaxy Clusters from the Sloan Digital Sky Survey | B. Koester | 0701268 | ApJ accepted |
| Luminosity dependence of the spatial and velocity distributions of galaxies: Semi-analytic models versus the Sloan Digital Sky Survey | C. Li | 0701218 | MNRAS submitted |
| Clustering Analyses of 300,000 Photometrically Classified Quasars--II. The Excess on Very Small Scales | A. Myers | 0612191 | ApJ accepted |
| Clustering Analyses of 300,000 Photometrically Classified Quasars--I. Luminosity and Redshift Evolution in Quasar Bias | A. Myers | 0612190 | ApJ accepted |
| Environment-Dependence of Properties of Galaxies in the Sloan Digital Sky Survey | C. Park | 0611610 | ApJ accepted |
| Internal and Collective Properties of Galaxies in the Sloan Digital Sky Survey | Y. Choi | 0611607 | ApJ accepted |
| The UV Properties of SDSS Selected Quasars | G. Trammell | 0611549 | AJ accepted |
| The Peculiar SN 2005hk: Do Some Type Ia Supernovae Explode as Deflagrations? | M. M. Phillips | 0611295 | PASP submitted |
| SDSS J1029+2623: A Gravitationally Lensed Quasar with an Image Separation of 22.5 Arcseconds | N. Inada | 0611275 | ApJL 653:97 (2006) |
| Topology of Structure in the Sloan Digital Sky Survey: Model Testing | J. Gott | 0610762 | ApJ submitted |
| Broad Absorption Line Variability in Repeat Quasar Observations from the SDSS | B. Lundgren | 0610656 | ApJ submitted |
| Low-Mass Dwarf Template Spectra from the SDSS | J. Bochanski | 0610639 | AJ 133:531 (2007) |
| The Clustering of Galaxy Groups: Dependence on Mass and other Properties | A. Berlind | 0610524 | ApJ submitted |
| 3.6-7.9 um Photometry of L and T Dwarfs and the Prevalence of Vertical Mixing in their Atmospheres | S. Leggett | 0610214 | ApJ accepted |
| Galaxy Colour, Morphology, and Environment in the Sloan Digital Sky Survey | N. Ball | 0610171 | MNRAS submitted |
| A New Survey for Giant Arcs | J. Hennawi | 0610061 | AJ submitted |
| Using the Galactic Dynamics of M7 Dwarfs to Infer the Evolution of their Magnetic Activity | A. West | 0609001 | AJ 132:2507 (2006) |
| Model Atmosphere Analysis of the Weakly Magnetic DZ White Dwarf G165-7 | P. Dufour | 0608065 | ApJ 651:1112 (2006) |
| Cluster Lensing in the SDSS I: Weak Lensing Profiles | E. Sheldon | | ApJ submitted |



Roman Forum, Western End, ca. 400AD, copyright Regents of the University of California

- Scholarly information infrastructure
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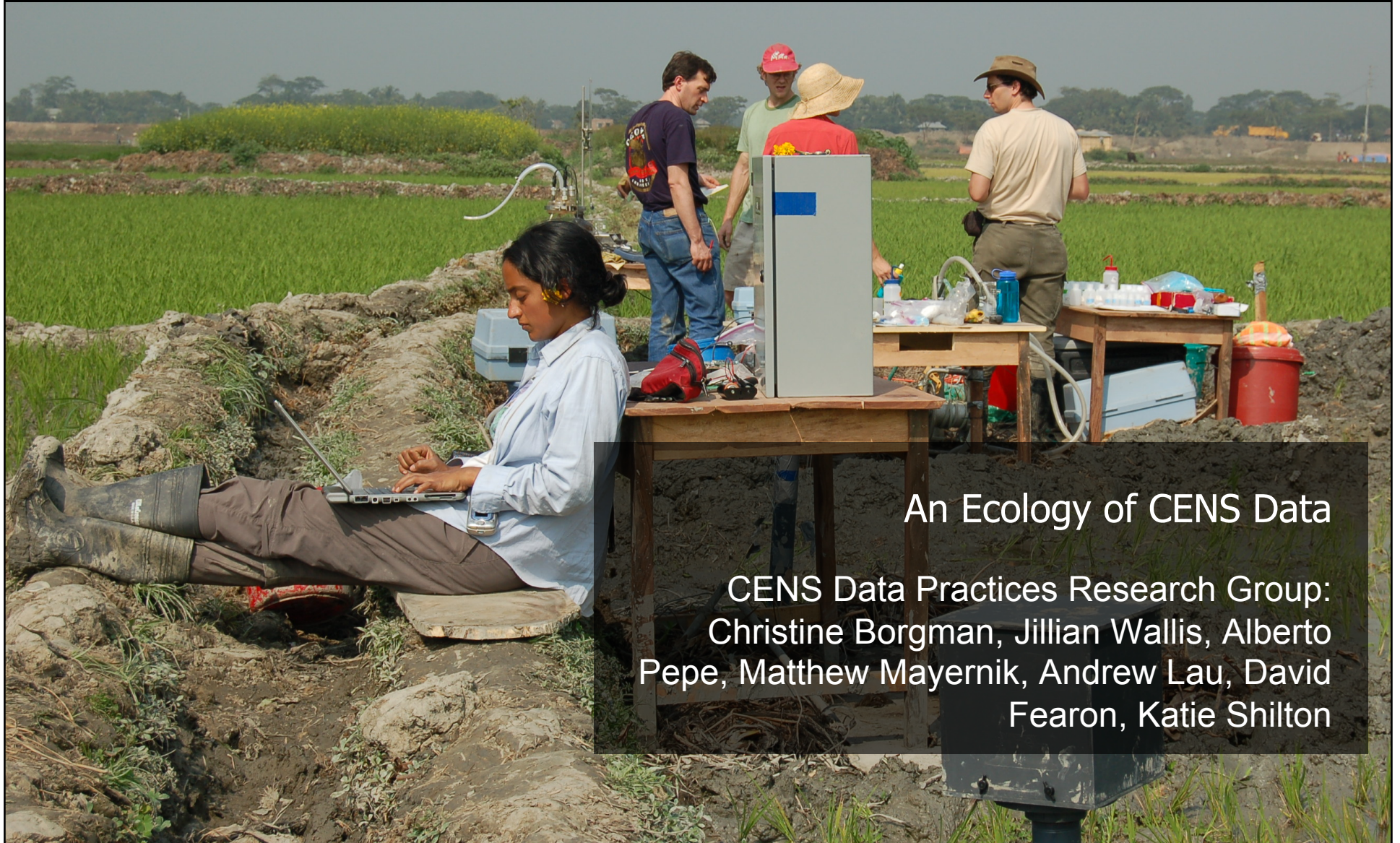
http://farm2.static.flickr.com/1207/707625876_46aa44851f_o.jpg





CENTER FOR EMBEDDED NETWORKED SENSING

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An Ecology of CENS Data

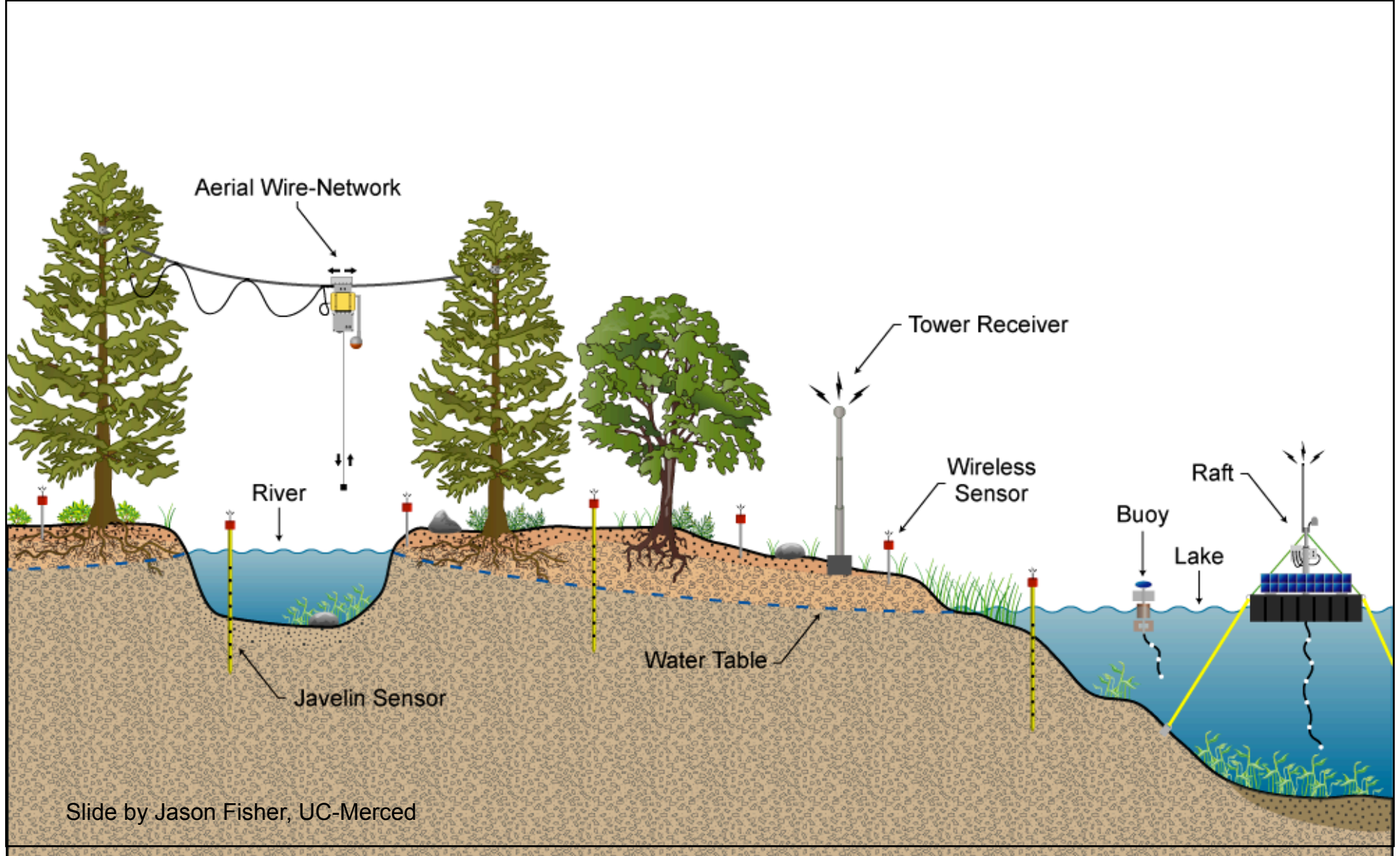
CENS Data Practices Research Group:
Christine Borgman, Jillian Wallis, Alberto
Pepe, Matthew Mayernik, Andrew Lau, David
Fearon, Katie Shilton



Field Deployment of Embedded Sensor Networks

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Slide by Jason Fisher, UC-Merced



Sharing CENS research data

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- **Research questions:**
 - What are CENS data?
 - When, how, and with whom will they share data?
 - What contextual information is necessary to interpret the data?
 - What resources exist to provide metadata?
- **Application of results:**
 - Architecture to capture, manage, and provide access to CENS data
 - Leverage data resources for research and learning



Documenting Data for Interpretation

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- ***“Temperature is temperature.”***
- ***“There are hundreds of ways to measure temperature. ‘The temperature is 98’ is low-value compared to, ‘the temperature of the surface, measured by the infrared thermopile, model number XYZ, is 98.’ That means it is measuring a proxy for a temperature, rather than being in contact with a probe, and it is measuring from a distance. The accuracy is plus or minus .05 of a degree. I [also] want to know that it was taken outside versus inside a controlled environment, how long it had been in place, and the last time it was calibrated, which might tell me whether it has drifted..”***



What are CENS Data?

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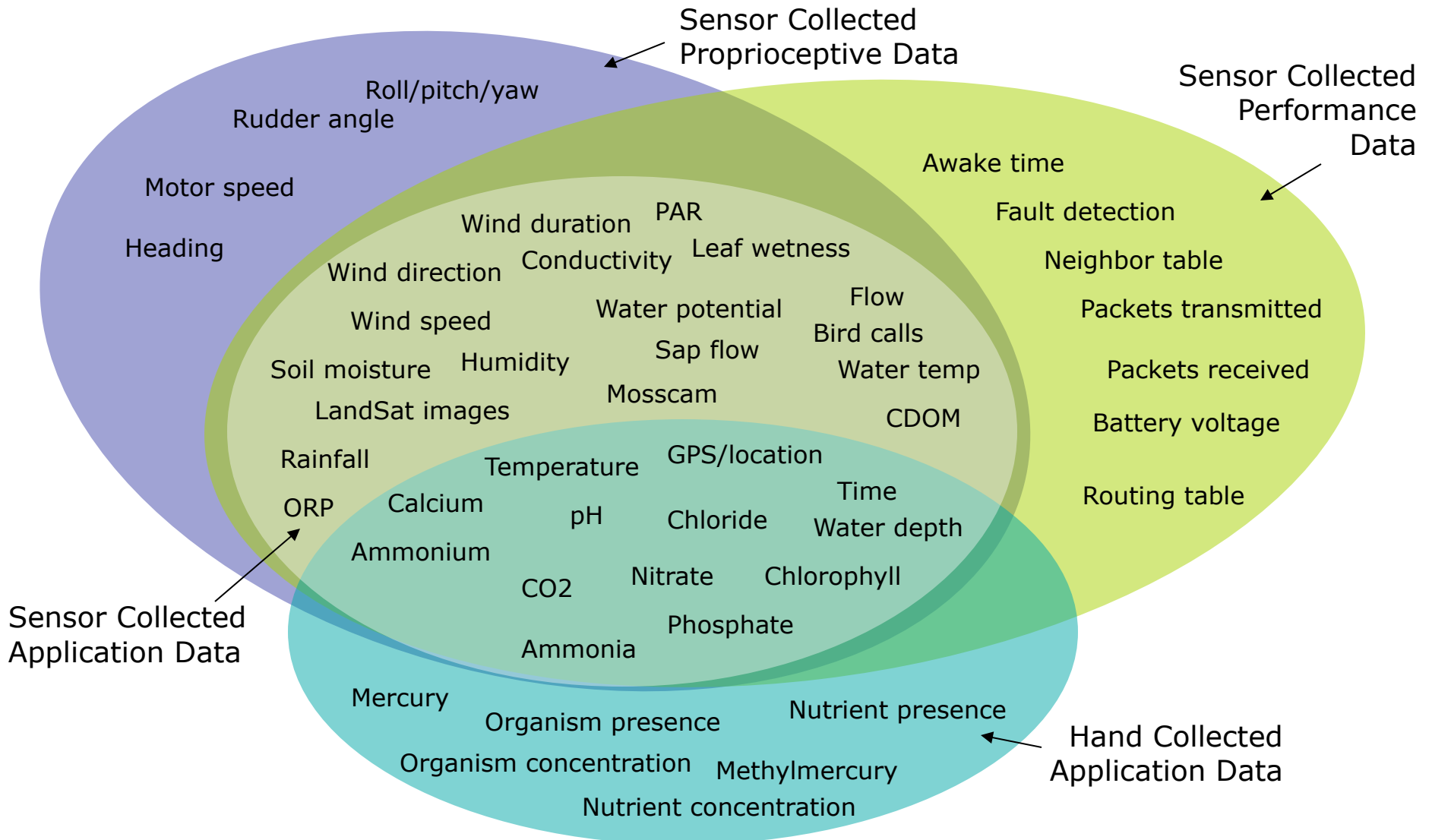


Figure by Jillian Wallis, UCLA



Artifacts and the Scientific Life Cycle

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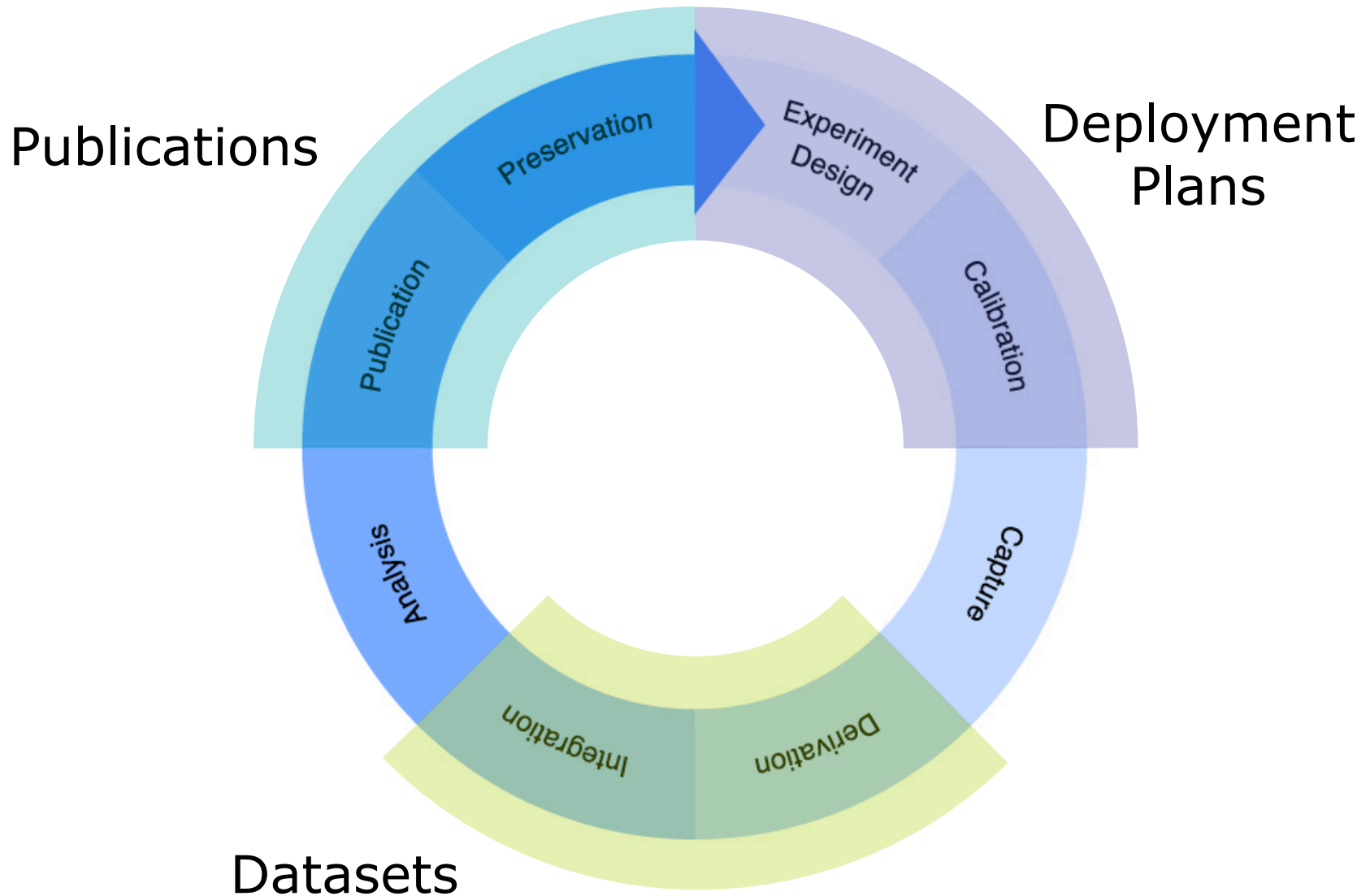
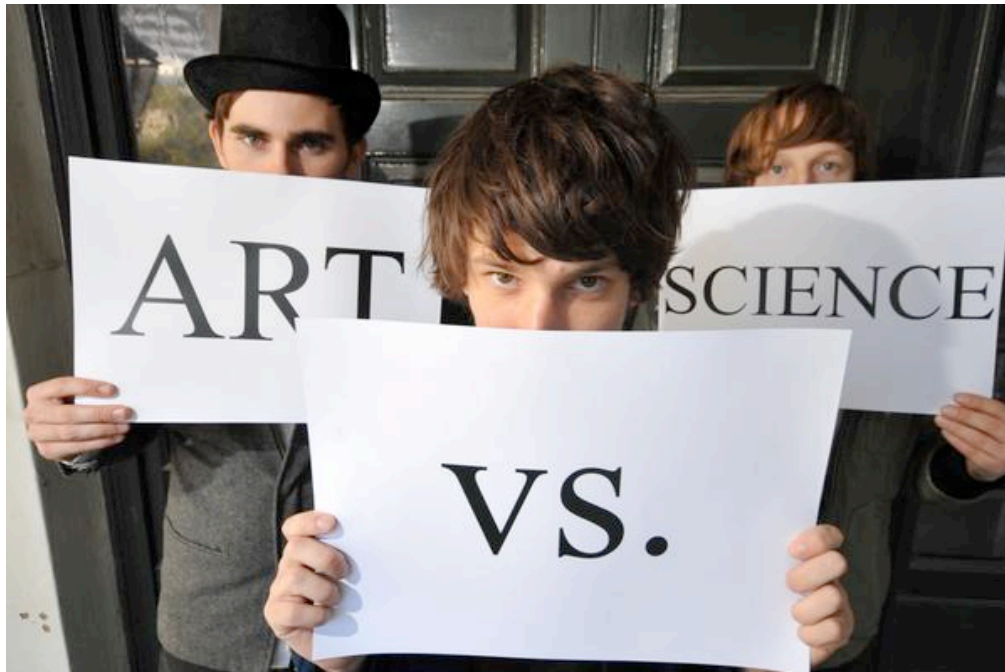


Figure by Jillian Wallis, UCLA

- Scholarly information infrastructure
- Science {and, or, vs} humanities



- Publication practices
- Data
- Research methods
- Collaboration
- *Incentives*

- Call to Action

Scholars' incentives to share

- Open science, scholarship
- Recognition
- Collaboration
- Reciprocity
- Coercion



Image source:
[www.buffaloworks.us/ images/sharing%20orangs.jpg](http://www.buffaloworks.us/images/sharing%20orangs.jpg)

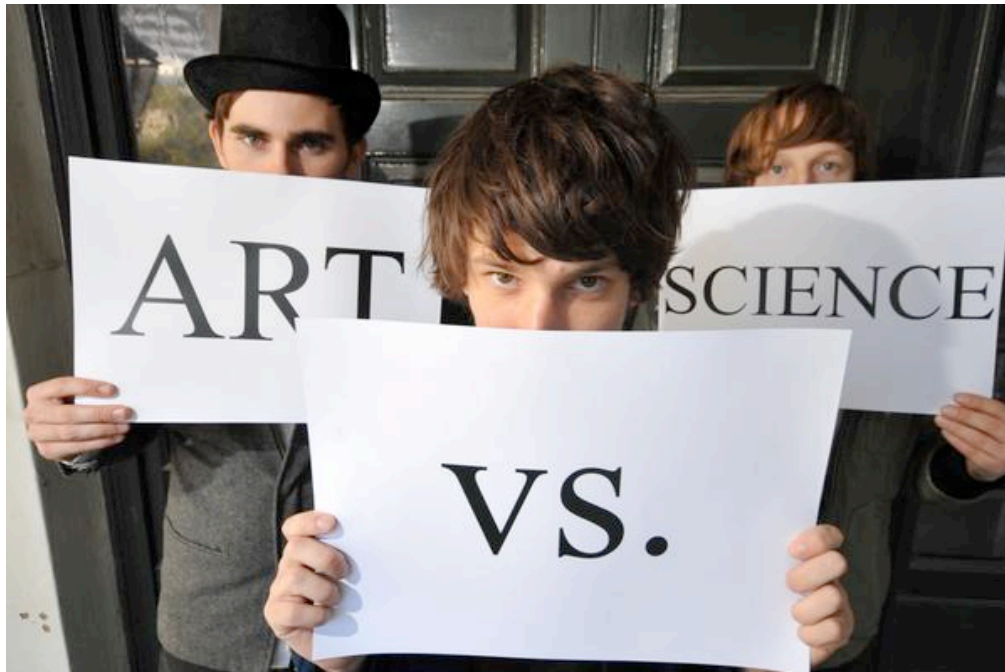
Incentives *not* to share



Image source: www.buildingsrus.co.uk/.../target1.htm

- Rewards for publication
- Effort to document data
- Competition, priority of claims
- Intellectual property
 - Control over data and sources
 - Access to data and sources
 - Definitions of data

- Scholarly information infrastructure
- Science {and, or, vs} humanities



- Publication practices
- Data
- Research methods
- Collaboration
- Incentives

- ***Call to Action***

I'm finding that something as simple as constructing my maps of related concepts are not easily applied to primary sources in digital libraries.

So what use are the digital libraries, if all they do is put digitally unusable information on the web? The digital libraries don't offer a platform for traditional note taking, much less for larger scale analysis, either quantitative or qualitative.



Call to Action: Lessons from Science

- Publication practices: *Increase speed and scope of dissemination through online publishing and open access*
- Data: *Define, capture, manage, share, and reuse data*
- Research methods: *Adapt practices to ask new questions, at scale, with a deluge of data*
- Collaboration: *Find partners whose expertise complements yours, listen closely, and learn*
- Incentives: *Identify best practices for documenting, sharing, and licensing humanities content*
- Generally: *Err toward openness, reusability, and generalizability*

Call to Action: Research questions / problems

- What are data?
- What are the infrastructure requirements?
- Where are the social studies of digital humanities?
- What is the humanities laboratory of the 21st century?
- What is the value proposition for digital humanities in an era of declining budgets?



Borgman, C. L. (2009). The digital future is now: A call to action for the humanities. *Digital Humanities Quarterly*, 3(4). <http://digitalhumanities.org/dhq/vol/3/4/000077/000077.html> on 14 April 2010.



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UCLA Dress Rehearsal

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