Fuelling and Transforming the Evidential Cultures of Research

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Seeding ideas and practices …

**data as a fundamentally collective, shared resource**

could have enormous impact.

- diverse data formats
- collecting and standardizing metadata
- middleware specifications

disciplinary cultures?
Disciplinary dependencies & differences

Adoption of e-resources

mutual dependence (Whitley 1984, Fry 2006)

socially shaped variation (Kling & McKim, 1999)


modes of information work

Meaning of data (Collins, 1998)

evidential cultures
Cultural differences within same field

Case of gravitational wave research in US and Italy

Evidential collectivism vs. individualism  -  open / closed cultures

What qualifies a publishable result  (“coincidence” or wave)

who takes responsibility for validity and meaning?

the lab, or international research community
Common culture across fields

geologists, geochemists, & microbiologists ...

Investigating questions ranging from origin of life on Earth to life on other planets

Dependent on field data from scientifically significant site

Yellowstone National Park
Site-Based Data Curation

Stakeholder workshop - Focus groups - Data inventories

Microbes - 53%
Geochemistry - 10%
Geology - 6%
Hydrology, water - 5%
Geomorphology - 4%
Atmosphere - 3%
Seismology - 3% ...

Curation processes and policies

- data units and descriptions
- series over time
- divisions and alignment of labor
Rapid shift and convergence on “responsibility”

**Validity** - documentation of *sampling events*

**Meaning** - organization of collective around *photos data*

Site-based collective value

**broader impacts** of data sharing

efficiencies, strategic science
Data sharing is about data producers
Data reuse is about data consumers

Data practices of 10 long-tail subdisciplines

complex sets vs. usable parts

version willing to release vs. best for reuse

Or level (i.e. NASA data levels)

Curation Profiles Project
Added value from reuse

As new evidential cultures invest in validity & meaning:

**Ocean modelers** - **richness & verification**

From complementary evidence for field campaign data

(weather during flight pattern, satellite serial numbers, irregularities in open sea moorings)

**Rainforest researchers** - **recalibration & feedback**

From recovered precision for sensor block temperatures

(instrument level calibrations fed back to original climate science group)
Putting socio-cultural into practice

In R & D
Rapid reporting framework
quick turnaround of key observation for infrastructure team

In the workforce
Data Practices & Curation Vocabulary (DPCVocab)

In data curation education
Data mentors and Science mentors for NCAR internships
Data Curation Education in Research Centers (DCERC)
In the contemporary context of e-science, where the aim is to re-shape scientific endeavours ...

goal of studying the detail of actual practice takes on a new significance.

(Hine, 2005)

Revolutionary science with high functioning data necessarily built on evidential cultures of “normal” science.
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