Developments in Education for Information: Will "Data" Trigger the Next Wave of Curriculum Changes in LIS Schools?

Yaşar Tonta
Hacettepe University
Department of Information Management
06800 Beytepe, Ankara, Turkey
yunus.hacettepe.edu.tr/~tonta/tonta.html
yasartonta@gmail.com
@yasartonta

ICIML 2015, November 10-13, 2015, University of the Punjab, Lahore, Pakistan

Plan

- Introduction
- Education for Information (1887--)
- Data (science, analytics, mining, curation . . .)
- Data-centric curriculum changes in LIS education
- Conclusions

Introduction

- Information
- Data deluge
- Big data
- Information science: bridge between Math & Computer Engineering
- Bioinformatics, ecoinformatics, genomics. . .
- Scientomics ("the living existence is *informational*" (Del Moral et al., 2011)

Education for Information (1887--)

First period: 1887-1963

- Columbia U. School of Library Economy (1887)
- ALA (1876), DDC (1876), LC (1897), LCSH (1909)
- Chicago U. School of Library Economy (1926) offering Ph.D. for the first time
- Library education was largely based on "apprenticeship"
- Focus was on **Information**
  - Courses on cataloging, classification and indexing
  - Technology was limited

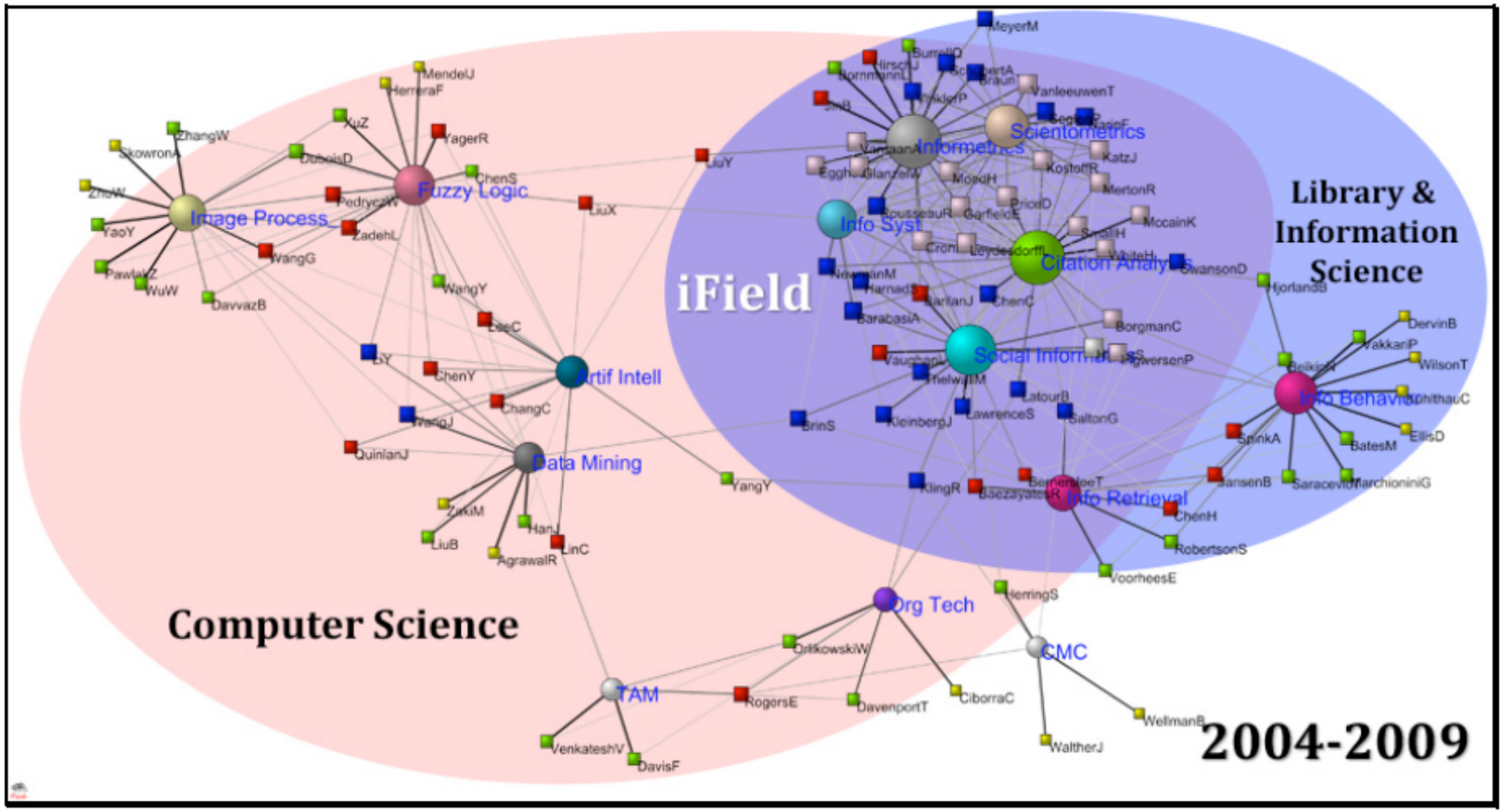
Second period: 1964-1993

- Information explosion following WWII
- Computers, bibliographic databases, MARC
- Focus was on **Information + Technology**
  - Courses on programming languages, DBMS, information retrieval, etc.
- Name changes: UPitt LS became LIS (1964)
- ADI (1935) became ASIS (1968)
- Survival period (25% of LS/LIS schools closed in this period)
- "Pandra syndrome" (Van House & Sutton, 1996)

Third period: 1994--

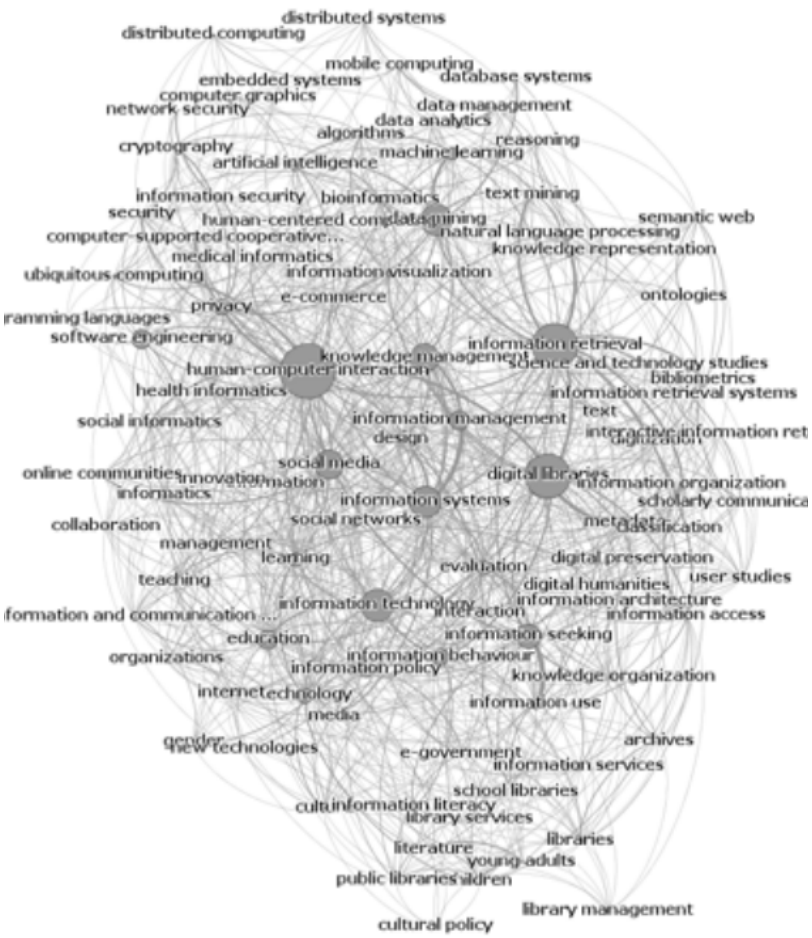
- Internet, WWW, Google, mobile, digital natives, personalization
- Focus is on **Information + Technology + People**
  - Courses on social media, information seeking models, personalization (e.g., sharing, tagging, rating, etc.)
- Dropping "L" word (UC Berkeley SIMS, 1994; UMich SI, 1996)
- iSchools (2005--)
  - Research on "the relationship between information, technology and people"
  - "learning and understanding the role of information in human endeavors"
  - "I-dentity crisis" (Cronin, 2005)

“iField”



Co-citation map of LIS and CS. *Source*: Yu and Baeg (2012, p. 549).

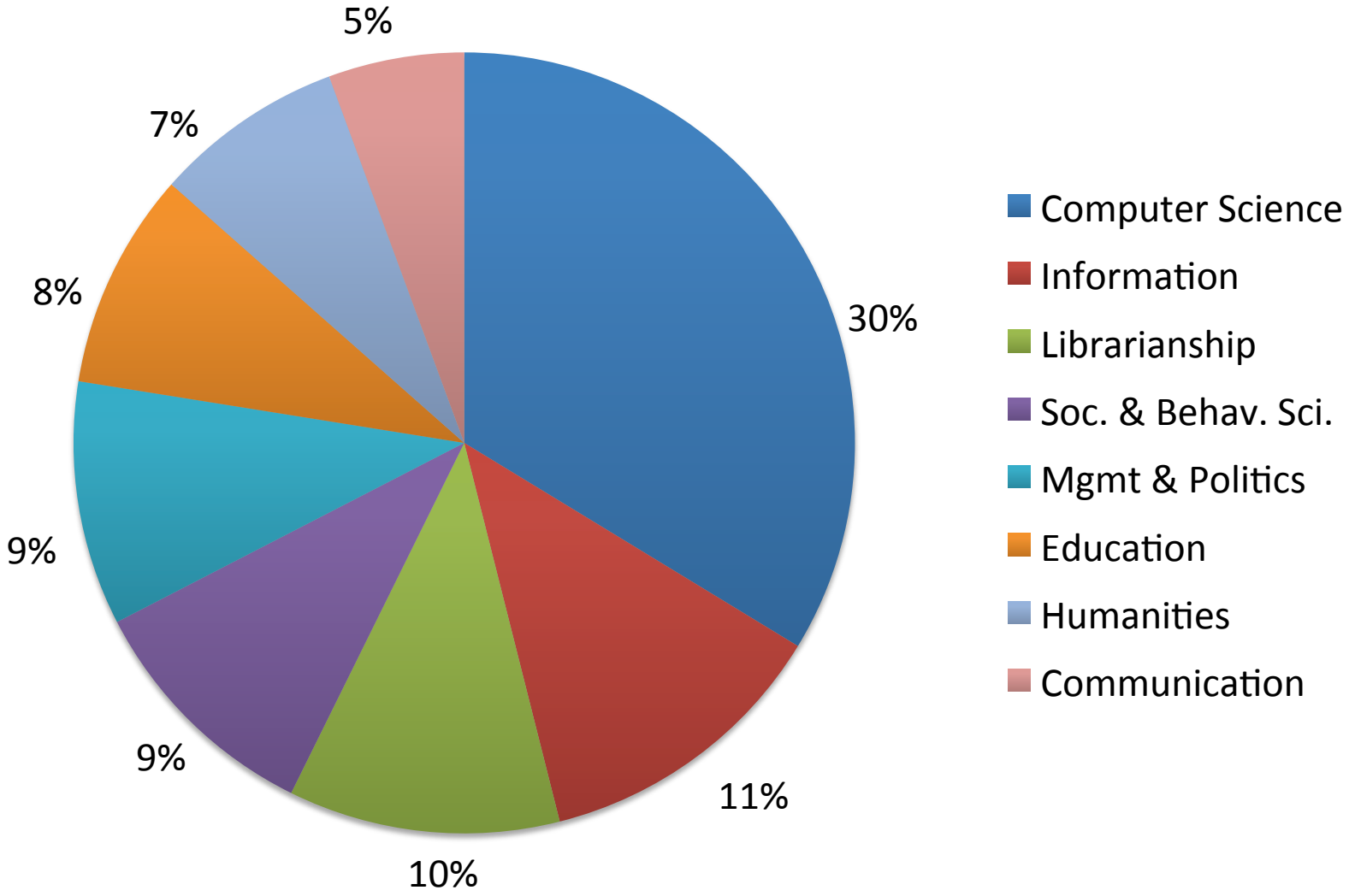
Research interests at iSchools



Co-word map of the research interests at iSchools.
Source: Holmberg, Tsou and Sugimoto (2013)

- computer information (incl. HCI & computing information, e.g., informatics);
- information retrieval and data mining;
- social media and information systems;
- education and information technology;
- information seeking and digital libraries;
- libraries and library services;
- data analytics and computing

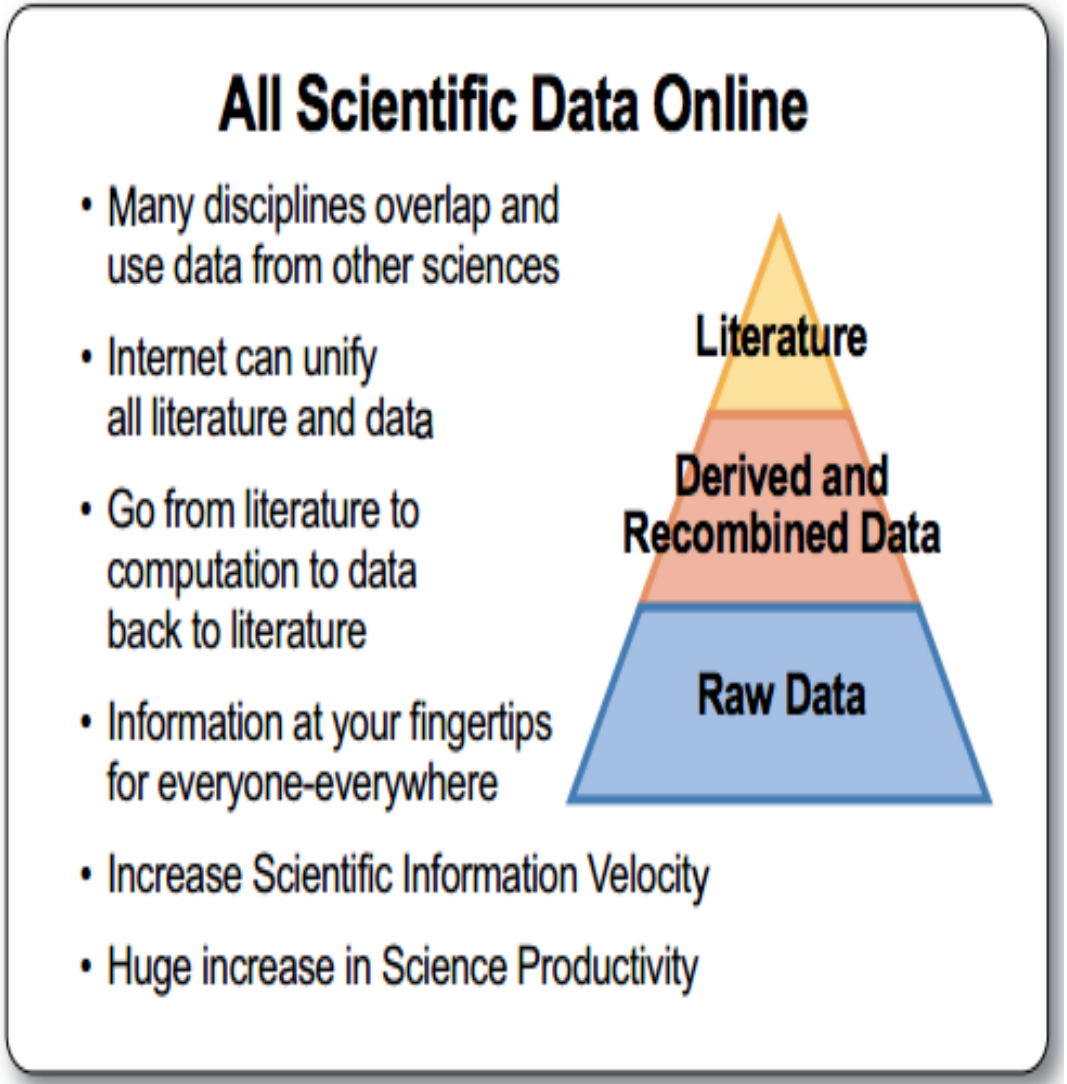
iSchools Faculty PhDs (*N*=769)



Source: Wiggins and Sawyer (2012, p. 13; chart is based on figures in the first column of Table 3)

Next . . .

- Internet of Things (IoT)
- Cloud computing
- "Industry 4.0": "a collective term for technologies and concepts of value chain organization" which draws together Cyber-Physical systems, IoT, and cloud computing (https://en.wikipedia.org/wiki/Industry_4.0)



Data pyramid. *Source*: Gray (2009, p. xxvi)

Next . . . (2)

- Data intensive science (SKA generates 700TB of data per second)
- Big data: "high-volume, high-velocity and/or high-variety information assets that demand cost-effective, innovative forms of processing that enable enhanced insight, decision-making, and process automation" (http://www.gartner.com/it-glossary/big-data)
- Merger of digital archives and science-computing facilities (Mattmann, 2013, p. 474)

Data X

- Data science: "*the transformation of data using mathematics and statistics into valuable insights, decisions, and products*" (Foreman, 2014, p. xiv)
- Data analytics
- Data mining
- Data curation
- . . .

Research Data Management (RDM): "a wicked problem"?

- ". . . is one that is unique and highly complex whose definition itself is disputed by those involved, and whose solution is likely to remain unclear" (Cox, Pinfield & Smith, 2014, p. 2).
- open data and open science, big data, disciplinary data diversity (Lyon & Brenner, 2015, p. 112).
- Need for data scientists, data curators, data miners . . .
- Yet, few LIS schools have data science/data curation programs/courses (UofAZ, UCB, UIUC, UNC-CH, SJSU)

Conclusions

- So, will “data” trigger curricular changes in LIS schools?
- Yes, it already has: One third of LIS schools offer data curation courses
- iSchools specialize in information retrieval and data mining, data analytics and computing, and informatics
- Data science, big data analytics and data mining programs exist mostly in non-LIS schools
- Too early to say if the “D” word (Data Science) will be added to the LIS schools’ names

Source: http://www.informationweek.com/big-data/big-data-analytics/big-data-analytics-masters-degrees-20-top-programs/d/d-id/1108042?

References

- Cox, A.M., Pinfield, S. & Smith, J. (2014). Moving a brick building: UK libraries coping with research data management as a 'wicked' problem. *Journal of Librarianship and Information Science*, 1–15. http://lis.sagepub.com/content/early/2014/05/13/0961000614533717.full.pdf+html.
- Cronin, B. (2005). An I-dentity crisis? The information schools movement. *International Journal of Information Management,* 25*,* 363–365.
- Del Moral, R., González, M., Navarro, J. & Marijuán, P.C. (2011). From genomics to scientomics: expanding the bioinformation paradigm. *Information*, 2(4): 651-671, DOI: 10.3390/info2040651.
- Foreman, J.W. (2014). *Data smart: Using data science to transform information into insight*. Indianapolis, IN: Wiley.
- Gray, J. (2009). Jim Gray on eScience: A transformed scientific method. In T. Hey, S. Tansley & K. Tolle (Eds.). *The fourth paradigm: Data intensive scientific discovery* (pp. xix-xxxii). Redmond, WA: Microsoft Research. http://research.microsoft.com/en-us/collaboration/fourthparadigm/4th_paradigm_book_jim_gray_transcript.pdf.
- Holmberg, K., Tsou, A. & Sugimoto, C.R. (2013). The conceptual landscape of iSchools: examining current research interests of faculty members. *Information Research*, **18**(3) paper C32. http://InformationR.net/ir/18-3/colis/paperC32.html.
- Lyon, L. & Brenner, A. (2015). Bridging the data talent gap: Positioning the iSchool as an agent for change. *International Journal of Digital Curation*, 10(1): 111-122.
- Mattmann, C.A. (2013, January 24). A vision for data science. *Nature*, 493: 473-475.
- Van House, N.A. & Sutton, S.A. (1996). The Panda Syndrome: An ecology of LIS education. *Journal of Education for Library and Information Science*, 37, 131-147. http://faculty.washington.edu/sasutton/panda.htm.
- Wiggins, A. & Sawyer, S. (2012). Intellectual diversity and the faculty composition of iSchools. *Journal of the American Society for Information Science and Technology, 63, 8-21.*
- Yu, C. & Baeg, J.H. (2012). The evolution of a discipline: A fractal representation of information science. In *Proceedings of iConference 2012 February 7–10, 2012, Toronto, Ontario, Canada* (pp. 548-549). New York: ACM.

Developments in Education for Information: Will "Data" Trigger the Next Wave of Curriculum Changes in LIS Schools?

Yaşar Tonta
Hacettepe University
Department of Information Management
06800 Beytepe, Ankara, Turkey
yunus.hacettepe.edu.tr/~tonta/tonta.html
yasartonta@gmail.com
@yasartonta

ICIML 2015, November 10-13, 2015, University of the Punjab, Lahore, Pakistan