

Have we Changed the Way we do Research in Response to the Availability of Online Information?

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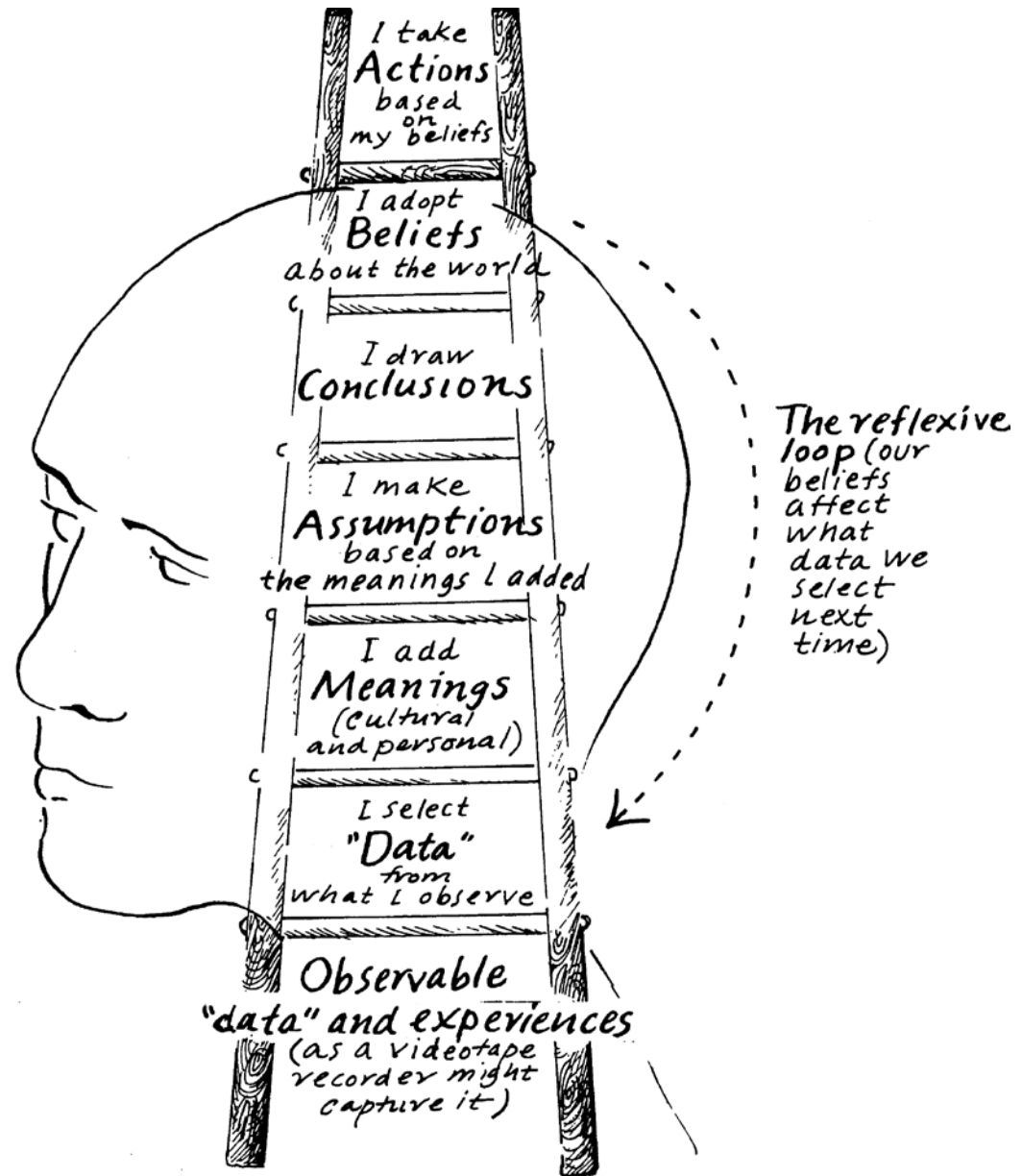
Have you heard this line before?



How do I limit
my search to
full-text only?

Could you
show me
how to find a
full-text
article on-
line?

The Ladder of Inference



- From "The Fifth Discipline Fieldbook" by Peter Senge

Purpose of our Research



- Examine the citation patterns of articles to see if citing patterns are affected by online formats
- Document a baseline of information regarding citation patterns in one engineering discipline

Literature Review

- [The effect of the Web on undergraduate citation behavior: a 2000 update.](#) Author: Davis, Philip M. Source: College & Research Libraries v. 63 no1 (Jan. 2002) p. 53-60
- Lawrence, S., F. Coetzee, E. Glover, D. Pennock, G. Flake, F. Nielsen, R. Krovetz, A. Kruger, C. L. Giles. **Persistence of Web References in Scientific Research**, IEEE Computer, Volume 34, Number 2, pp. 26–31, 2001.
- **Should Auld Acquaintance Be Forgotten: Possible Influence of Computer Databases on Citation Patterns in the Biological Literature.** (Statistical Data Included) JAN A. PECHENIK, J. MICHAEL REED, MELISSA RUSS. **BioScience** July 2001 v51 i7 p583
- [Student citation practices in an Information Science Department.](#) By: Oppenheim, Charles; Smith, Richard. **Education for Information**, 2001, Vol. 19 Issue 4, p299, 25p
- [The effect of the Web on undergraduate citation behavior 1996-1999](#)
Philip M Davis, Suzanne A Cohen. **Journal of the American Society for Information Science and Technology.** Hoboken: Feb 15, 2001. Vol. 52, Iss. 4; p. 309
- [Indirect-collective referencing \(ICR\) in the elite journal literature of physics. I. A literature science study on the journal level](#)
Endre Szava-Kovats. **Journal of the American Society for Information Science and Technology.** Hoboken: Feb 1, 2001. Vol. 52, Iss. 3; p. 201
- **ISI's impact factor as misnomer: A proposed new measure to assess journal impact**
Journal of the American Society for Information Science
Volume 48, Issue 12, Date: December 1997, Pages: 1146-1148
Stephen P. Harter, Thomas E. Nisonger

Methodology Used

- We examine literature citations for the top twenty chemical engineering journals over the last 10 years
 - ISI Journal Citation Report (JCR)
- Quantify number of citations and correlate with online availability

Why we selected top 20 cited journals

Wanted to investigate statistically significant data - needed many references

Selected Impact Factor to classify top 20 journals in chemical engineering

Example: 2001 top 20

J CATAL

AICHE J

J MEMBRANE SCI

POLYM ENG SCI

J CHEM ENG DATA

FLUID PHASE EQUILIBR

COMBUST SCI TECHNOL

CAN J CHEM ENG

ENERG FUEL

SEPAR SCI TECHNOL

CHEM ENG SCI

IND ENG CHEM RES

CATAL TODAY

COMBUST FLAME

FUEL

COMPUT CHEM ENG

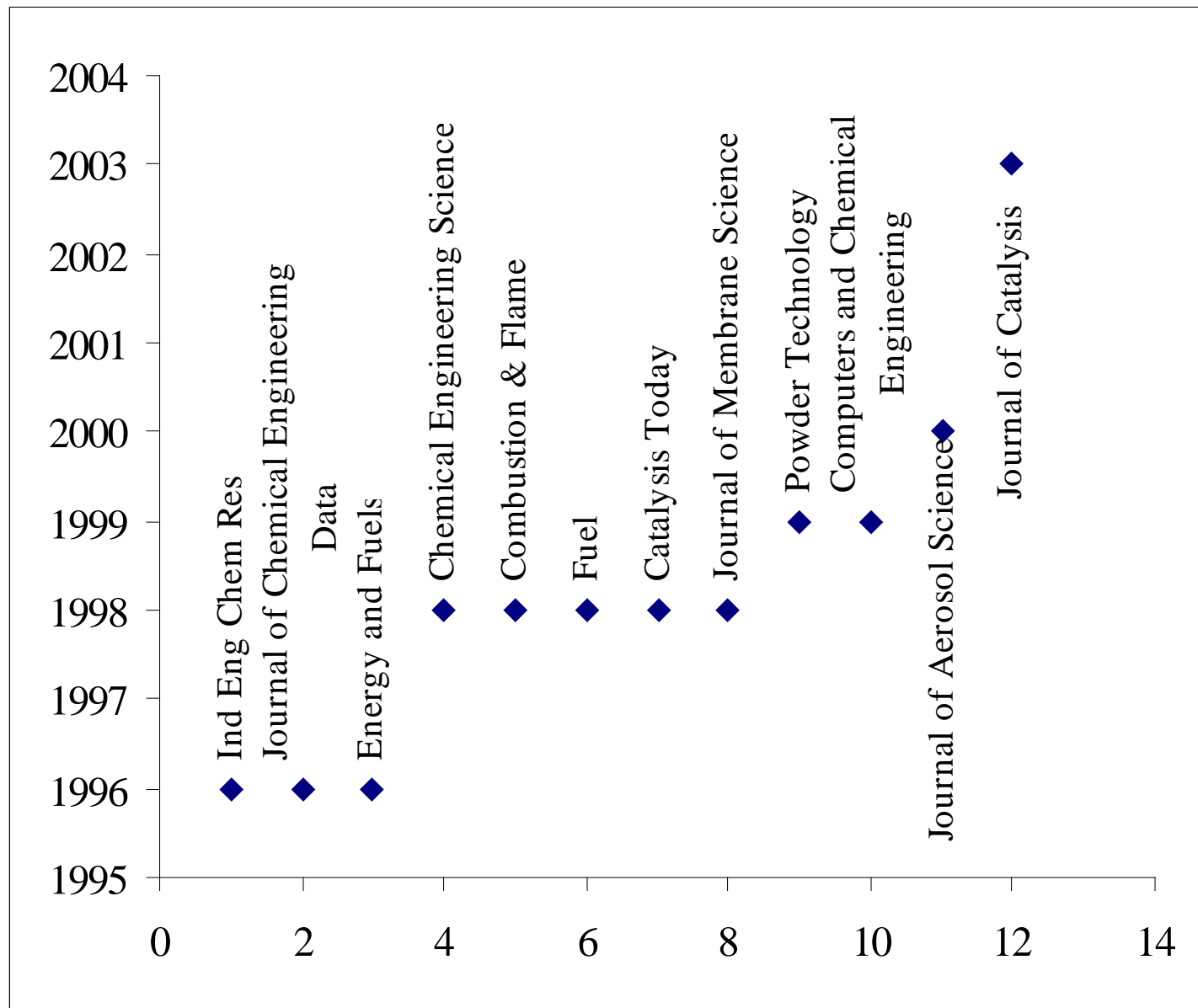
POWDER TECHNOL

J CHEM TECHNOL BIOT

J AEROSOL SCI

J CHEM ENG JPN

When print journals became available online

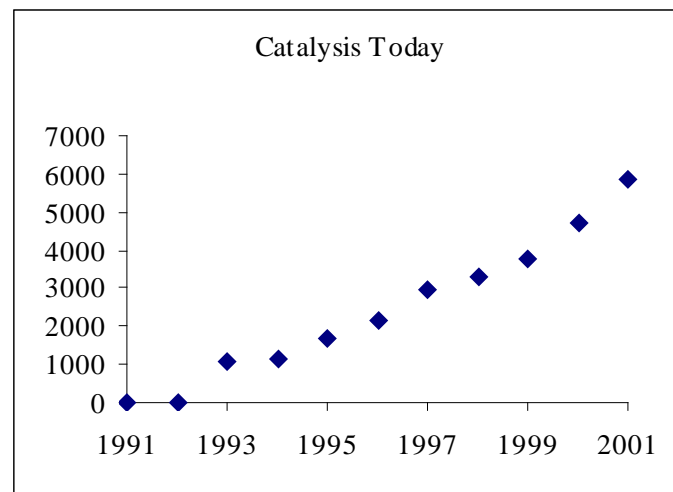
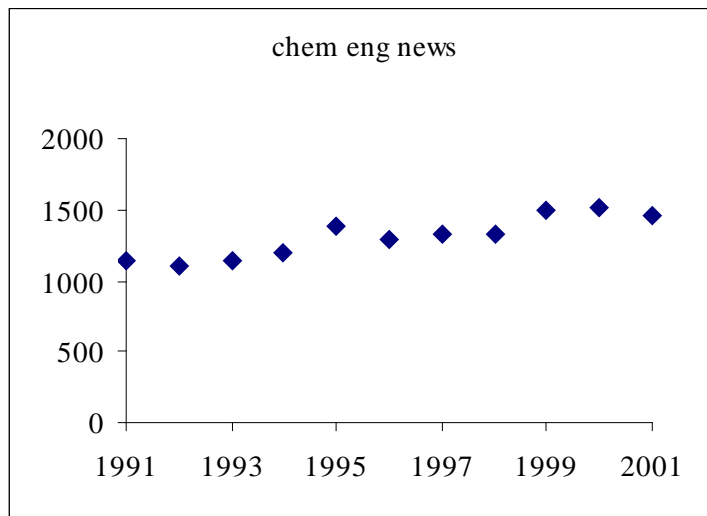


TRUE OR FALSE

- The availability of full text databases is influencing information-seeking behavior
- As more full text online articles become available, a shift in citation patterns has emerged
- Information seekers are limiting their research to online full text articles
- There is a noted decline in the citation of journals that are available only in hardcopy when other on-line subject-related titles become available
- There appears to be less referencing of online journals that are “prohibitively” expensive, implying that research published in them may not be widely disseminated even though the materials are available online
- The shift to online referencing at the exclusion of print resources has implications in guiding how cutting edge research is developed in science and engineering

TRUE

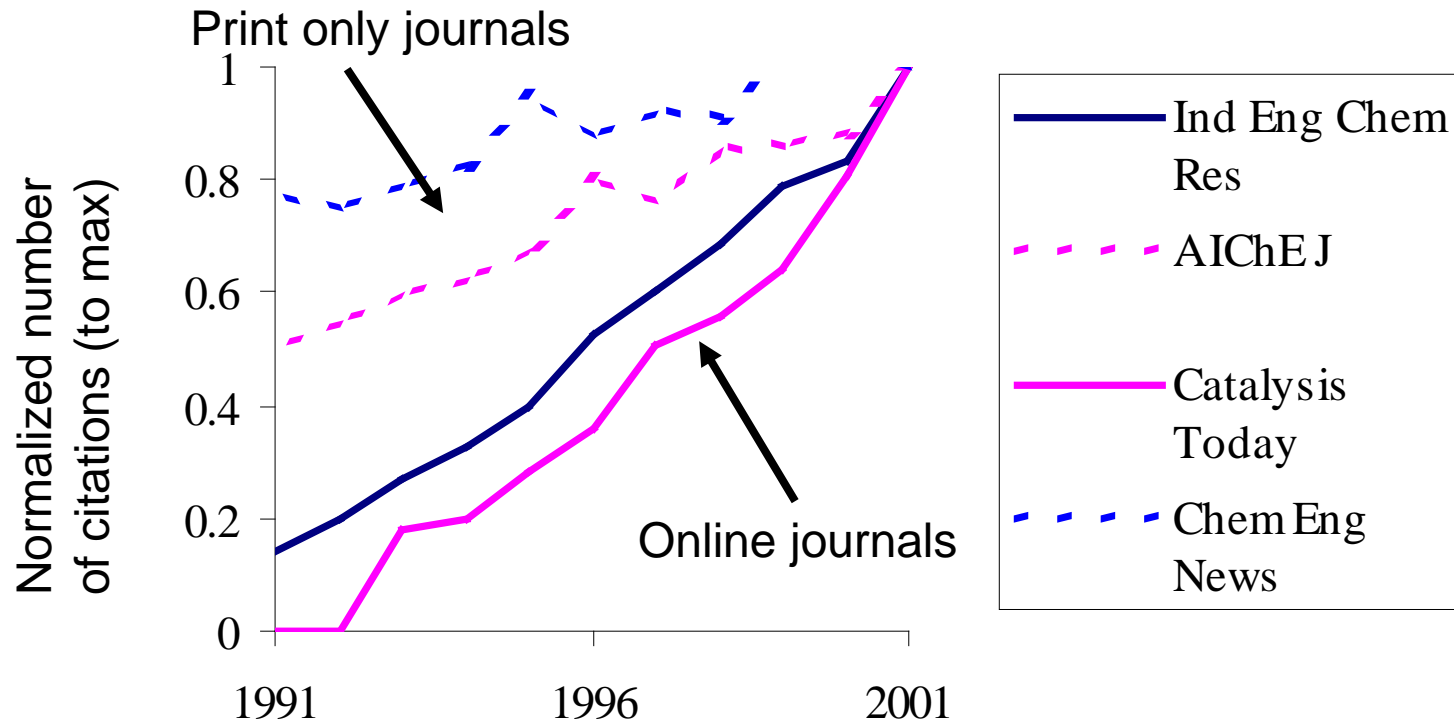
The availability of full-text databases is influencing information-seeking behavior



For journals that didn't become available online, average increase of citations per year was **7.9%** while journals online for some part of the time covered by the analysis had citation growth of **13.4%**.

TRUE

As more full-text online articles become available, a shift in citation patterns has emerged

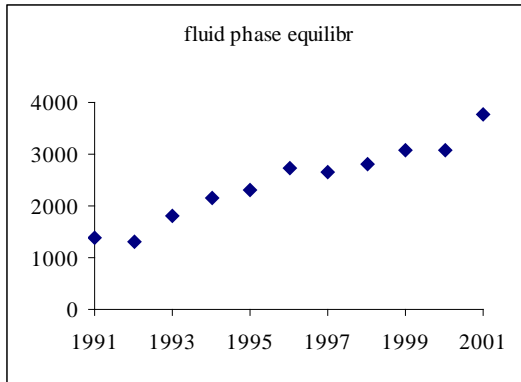


Online journals show rapidly increasing citation rates while journals available only in print are leveling off.

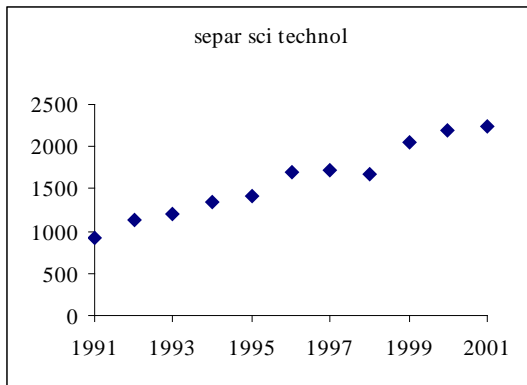
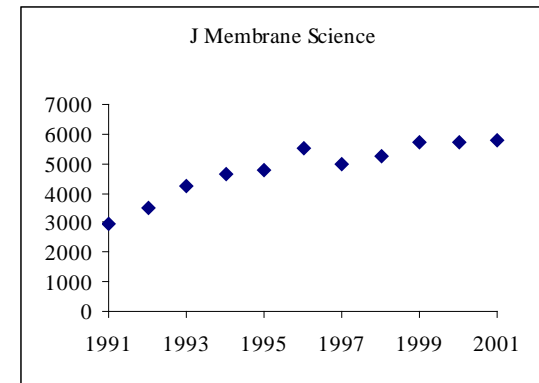
UNCLEAR

Information seekers are limiting their research to online full-text articles

Print Only Journals



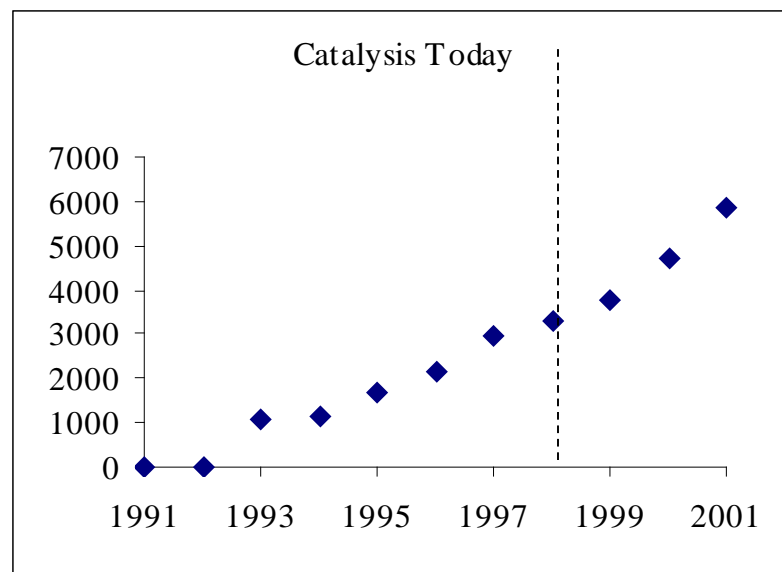
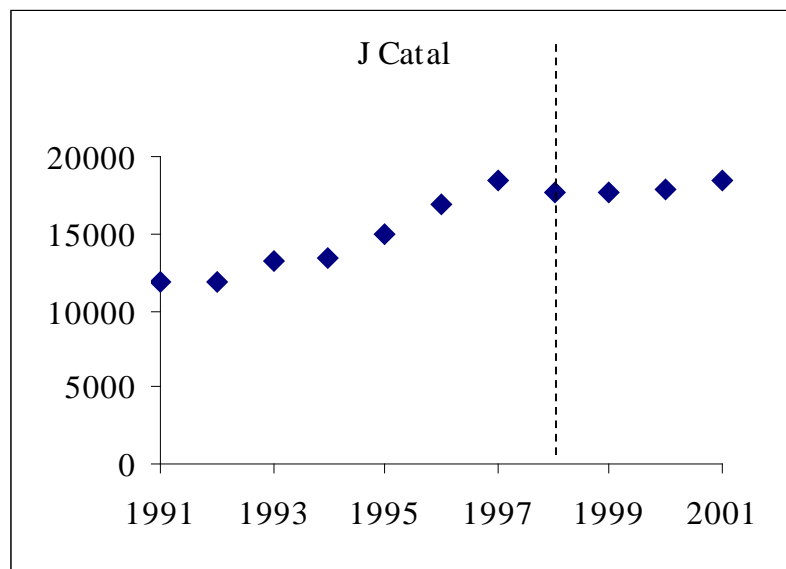
Full Text Journals



- Explosive growth of research in the recent past hides trends

TRUE

There is a noted decline in the citation of journals that are available only in print when other on-line subject-related titles become available



Catalysis today went online in 1998. Journal of Catalysis leveled off then.

TRUE

There appears to be less referencing of online journals that are “prohibitively” expensive, implying that research published in them may not be widely disseminated even though the materials are available on-line?

TRUE

The shift to on-line referencing at the exclusion of print resources has implications in guiding how cutting edge research is developed in science and engineering

May end up with second class science/engineering citizens that don't have access to new information through expensive databases

Science may ignore important work published in print-only formats

The fundamental functions of libraries and research support facilities will change over time - libraries become less print oriented

Other?

DISCOVERIES



- Purchasing electronic backfiles
 - Historical data
- Subject specific resources

What happens next?

