

# Scholarly Communication

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	Research Literature	Popular Literature
Where	Scholarly journals Conference proceedings	Magazines Newspapers
Who	Researchers (w/ name and affiliation); Expertise in the field	Journalists not always identified; not experts necessarily
Length	Long (5-40 pages)	Short (<2 pages)
Writing	Technical, abstract, precise References	Easy, concrete, vague Typically no references
Audience	Scholarly or professional	General
Review	Peer reviewed; often blind review	Editorial review
Layout	Conservative Very few advertisements	Varied, colorful Advertisements

# **Bibliometrics, Scientometrics, and Informetrics**

- Bibliometrics is the study of the quantitative aspects of the production, dissemination, and use of recorded information.
- Scientometrics is the study of the quantitative aspects of science as a discipline or economic activity.
- Informetrics is the study of the quantitative aspects of information in any form, not just records or bibliographies, and in any social group, not just scientists.

# Some examples of informetrics work

- statistical aspects of language, word, and phrase frequencies, in both natural language text and indexes, in both printed and electronic media;
- characteristics of authors-productivity measured by number of papers or other means, degree of collaboration;
- citation analysis: distribution over authors, papers, institutions, journals, countries; use in evaluation; co-citation-based mapping of disciplines;
- use of recorded information: library circulation and in-house book and journal use, database use.

# N-gram

- an ***n*-gram** is a contiguous sequence of  $n$  items from a given sample of text or speech
- Use the previous  $N-1$  words in a sequence to predict the next word
- Language Model (LM)
  - unigrams, bigrams, trigrams,...
- How do we train these models?
  - Very large corpora

# Eugene Garfield (1925-2017)

- Indexed journals
- Invented basic metrics
- Impact factor
- Proposed that who cites who and what is one way to analyze science

# First mention of Impact Factor

- Garfield suggests that each article is given a code and all works that cited that article would be linked to the original article.
- Garfield recommends keeping track of who cited the paper.

“In effect, the system would provide a complete listing, for the publications covered, of all the original articles that had referred to the article in question.” ... Such an “**impact factor**” may be much more indicative than an absolute count of a scientist's publications.”
- Here impact factor refers to the impact of the **article**.
- In the early 1960's Irving H. Sher and Eugene Garfield created the **Journal Impact Factor** to help select journals for *Science Citation Index (SCI)*.
- But these same ideas were quickly applied to journals and authors

# Journal Impact Factor Formula

The number of times articles published in (2 years) were  
cited by indexed journals

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Total number of citable items (2 years)



# H Factor or H Index

Index that attempts to measure both the productivity and impact of the published work of a **scientist or scholar**.

A scholar with an index of  $h$  has published  $h$  papers each of which has been cited by others at least  $h$  times.

Serves as an alternative to more traditional journal impact factor metrics in the evaluation of the impact of the work of a **particular researcher**

# Citation analysis can reveal patterns in science

- <http://cluster.cis.drexel.edu/~cchen/citespace/>

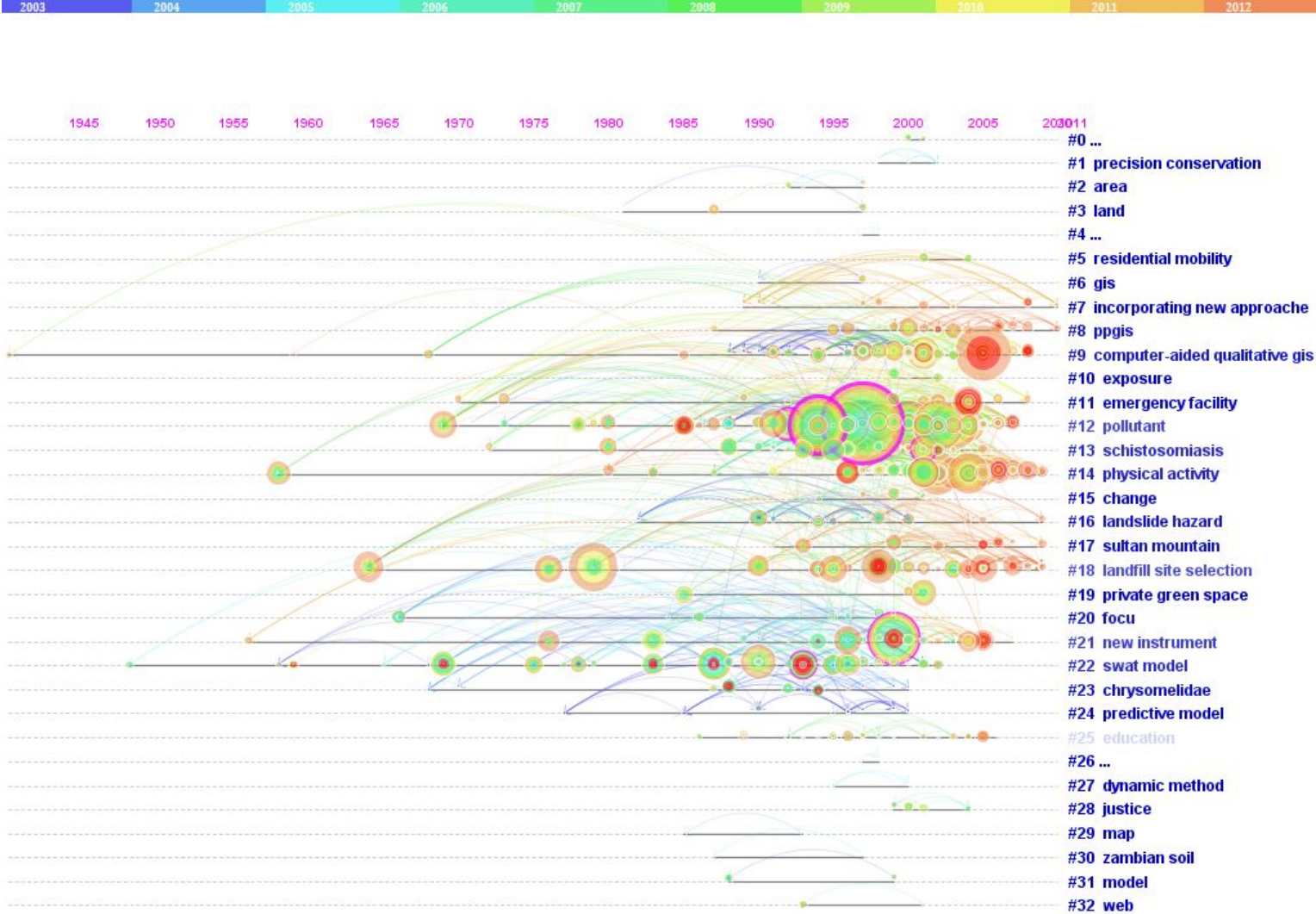


Image credit:  
 Wade Bishop  
 using CiteSpace

# Academic Genealogy matters

- Academic genealogy is valuable because it provides context, history and has the potential to predict future trends in a particular discipline or field.
- The MPACT Project (<http://www.ibiblio.org/mpact/>) is an academic genealogy project devoted to defining and assessing mentoring as a scholarly activity, examining the emergence and interaction of disciplines, and identifying patterns of knowledge diffusion.

