

“Mother Jacobs’ Home Remedies,”  
Now with an Economics Flavour:  
*Tracking Jane Jacobs’ Influence using  
Bibliometric and Network Analysis*

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# Road Map

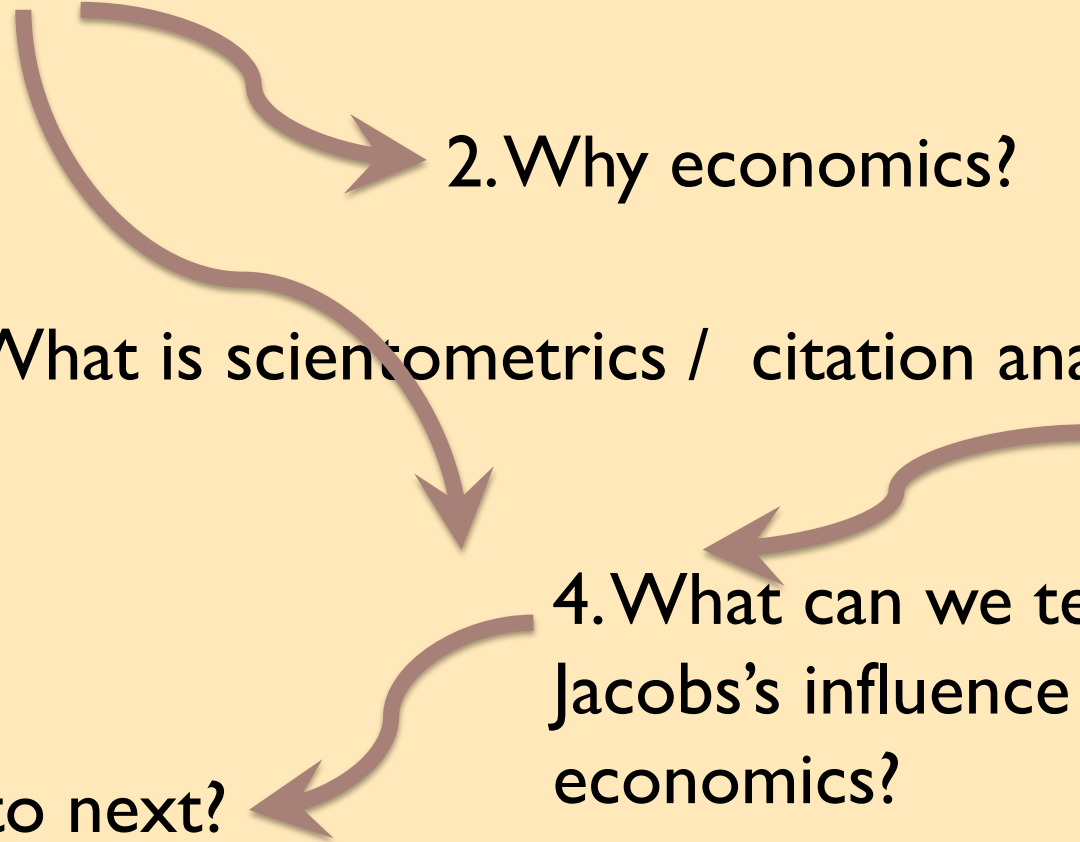
1. Why Jacobs?

2. Why economics?

3. What is scientometrics / citation analysis?

4. What can we tell about  
Jacobs's influence in  
economics?

5. Where to next?



# Jane Jacobs

# (1961)



“Mrs. Jane Jacobs, chairman of the Committee to save the West Village holds up documentary evidence at press conference at Lions Head Restaurant at Hudson & Charles Streets” (public domain)

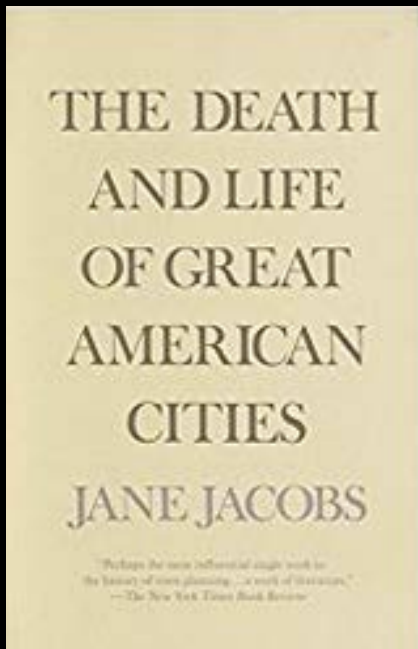
# Jane Jacobs (2004)



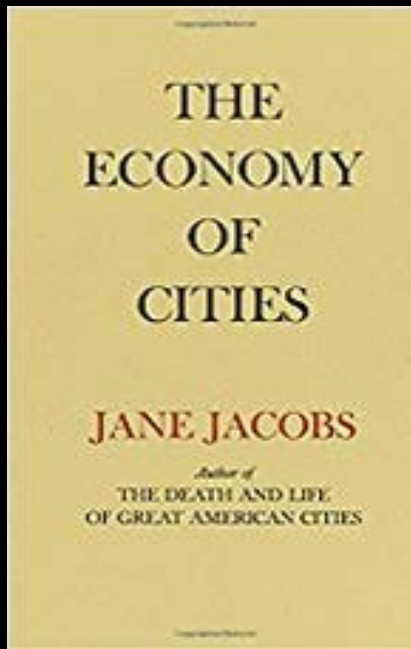
Mt. Hood and the Bull Run Watershed  
Portland's Water Supply

Jane Jacobs with environmentalist Spencer Beebe, 2004.  
In the background is a painting by Barbara Stafford.

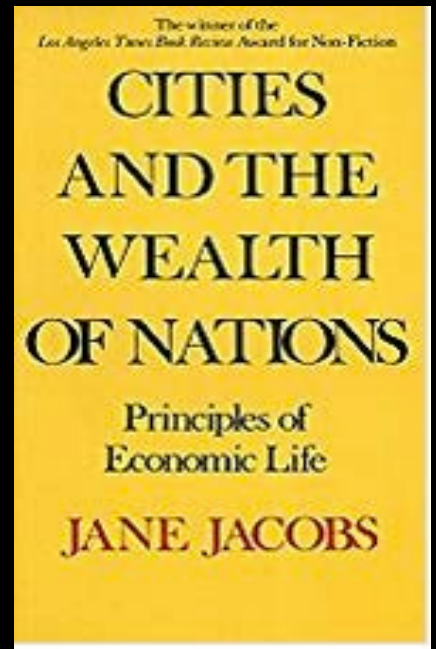
By Sam Beebe - originally posted to Flickr as Jane Jacobs and SBB, CC BY 2.0,



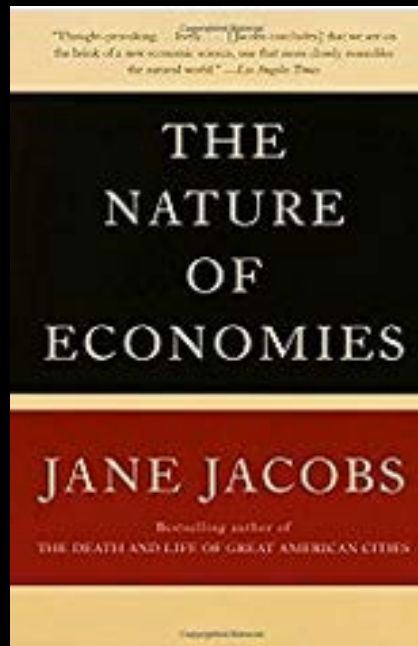
1961



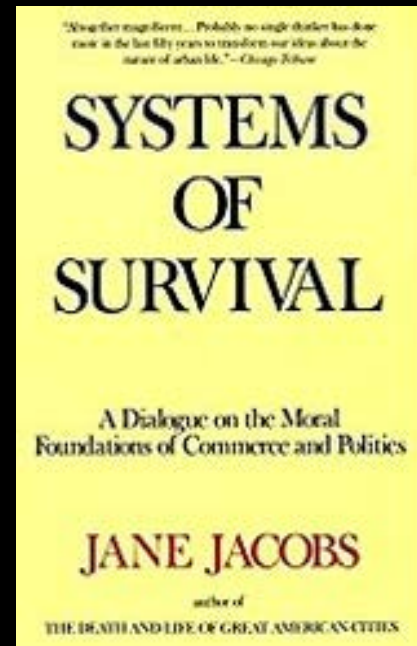
1969



1984



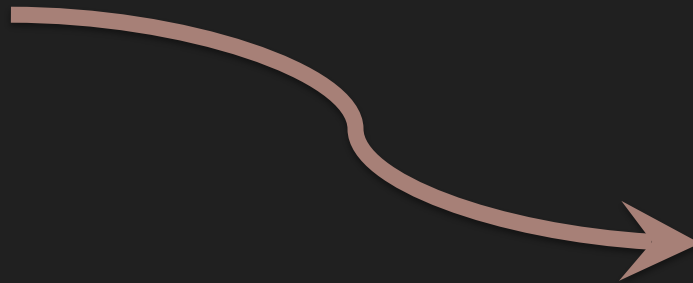
2000



1992

Part of my task is to identify (and harness) bibliometric analysis tools to construct a network of scholars influenced by Jacobs through citation.

Jane Jacobs (1969)



Robert Lucas (1988)

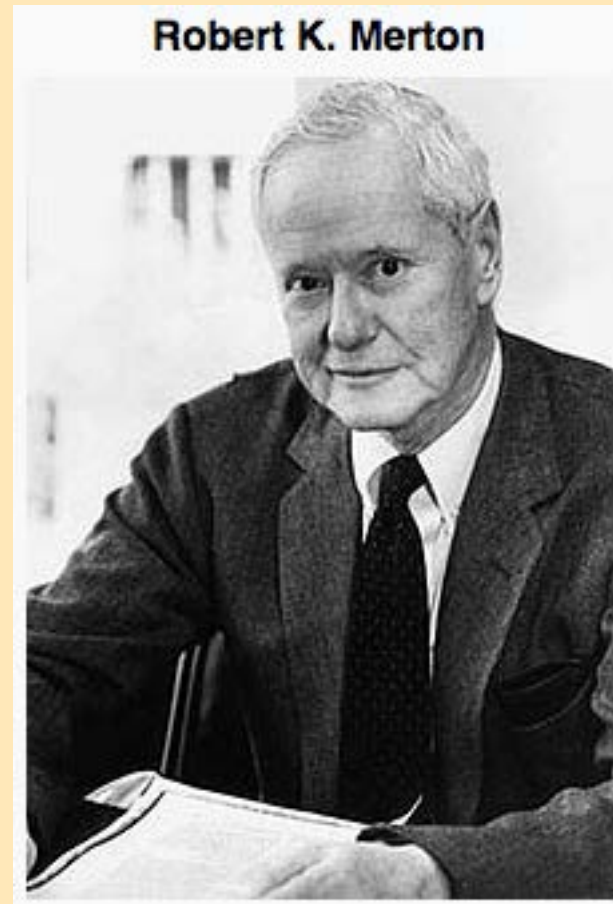


Image from "Robert E. Lucas Jr. - Biographical". *Nobelprize.org*. Nobel Media AB 2014. Web. 24 Apr 2018. <[http://www.nobelprize.org/nobel\\_prizes/economic-sciences/laureates/1995/lucas-bio.html](http://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/1995/lucas-bio.html)>

## **Normative (Mertonian) Regime:**

Understand the  
emergence, growth and  
decline of scientific  
specialties.

Map the diffusion of ideas.



(1910-2003)

Image from Merton's Wikipedia  
page

# Normative (Mertonian) Regime:

## Robert Merton (1942)

standards-based institutional sociology of science

## Eugene Garfield (1955)

- Citation Indexes for Science: A New Dimension in Documentation through Association of Ideas. Science
- Institute of Scientific Information (ISI) in Philadelphia

## Diana Crane (1972)

- Development of disciplines

## Derek de Solla Price (1960s, 1970s)

- Stratification
- Invisible College
- Co-citation and research fronts

Eugene Garfield



Eugene Garfield at the Heritage Day awards in 2007

J. de Solla Price



Derek de Solla Price with a model of the Antikythera mechanism



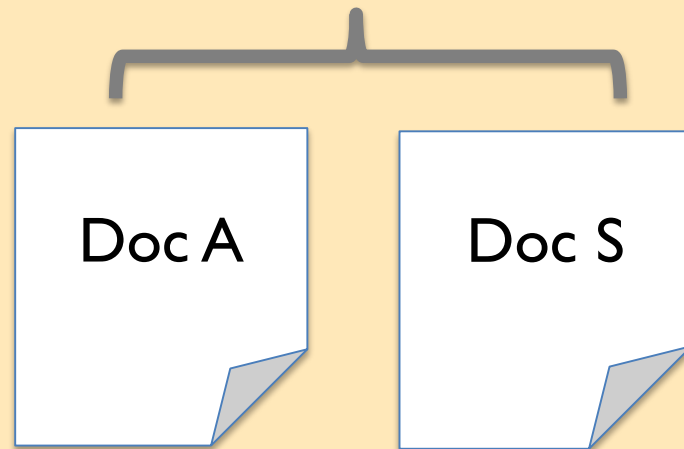
# Research Fronts and Citation Dynamics:

Research fronts absorb older literature by incorporation.

Price, Derek de Solla. 1965. "Networks of Scientific Papers. *Science* 149 (3683): 510-15.

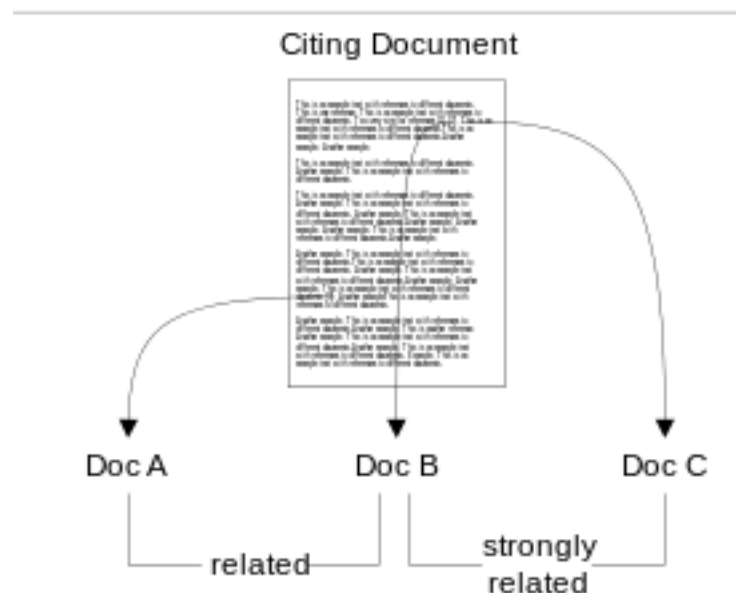
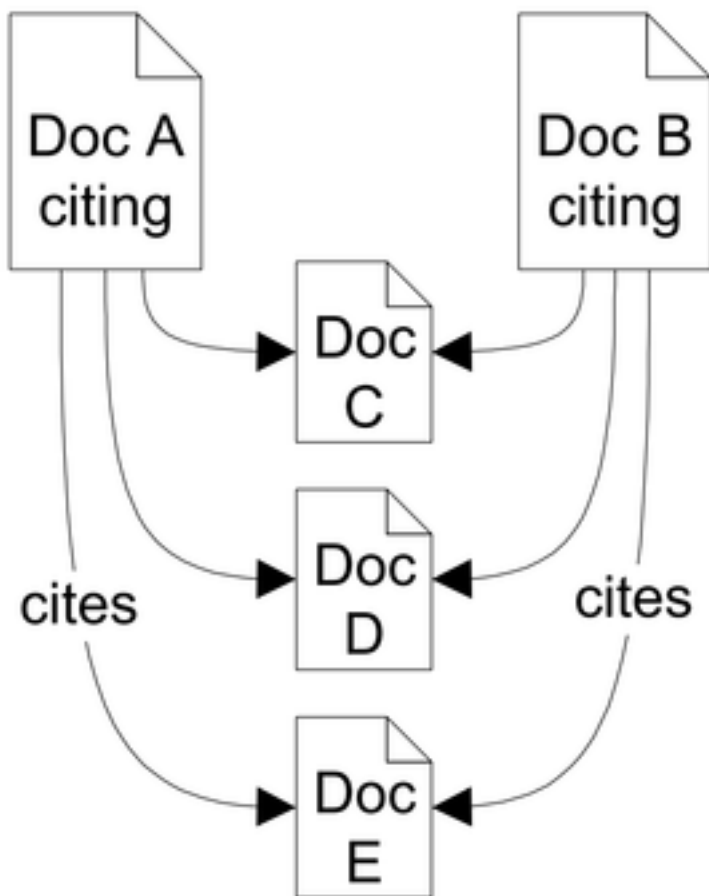
## Co-Citation Analysis:

Frequency of which two documents are cited together



Wyatt, Sally, Stasa Milojevic, Han Woo Park, and Loet Leydesdorff. 2017. "Intellectual and Practical Contributions of Scientometrics to STS." pp. 87-112. In Felt, Ulrike, Rayvon Fouche, Clark A. Miller and Laurel Smith-Doerr, eds., *The Handbook of Science and Technology Studies*. Cambridge, MA: The MIT Press. p. 94.

## Bibliographic Coupling vs. Citation Proximity Analysis (Gipp 2006)



B. Gipp and J. Beel, "Citation Proximity Analysis (CPA) – A new approach for identifying related work based on Co-Citation Analysis," in Proceedings of the 12th international conference on scientometrics and informetrics (issi'09), Rio de Janeiro (Brazil), 2009, pp. 571-575. Available at: <http://gipp.com/wp-content/papercite-data/pdf/gipp09a.pdf> Date of publication

## **Normative (Mertonian) Regime:**

Emergence, growth and decline of scientific specialties.

Mapping the diffusion of ideas.

## **Constructivist Regime:**

Focus on practices

Science as a community-based belief system driven by socio-epistemic interests

Citations are not just normative but also rhetorical

Performativity

# **Normative (Mertonian) Regime:**

**Robert Merton (1942)**

**Eugene Garfield (1955)**

**Diana Crane (1972)**

**Derek de Solla Price (1960s, 1970s)**

# **Constructivist Regime:**

**Barry Barnes (1970)**

reaction against Mertonian norms

**David Bloor / Strong Programme (1976)**

social context of science

**Harry Collins / EPoR (1980s-200s)**

micro-sociological processes

**Michael Mulkay (1980s)**

epistemic contexts of discovery vs validation

**Karin Knorr-Cetina (1999)**

science in the making and epistemic communities

**Steve Woolgar (1990s)**

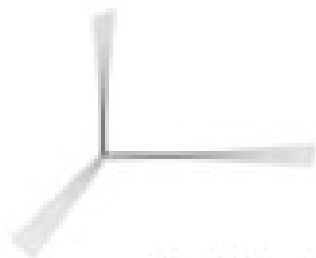
Mediation between the normative / institutional context and the epistemic community context.

# Loet Leydesdorff (1987, 2001, 2003, 2014) scientometrics and academic network analysis

Copyrighted Material

## The Challenge of Scientometrics

The Development,  
Measurement, and  
Self-Organization of  
Scientific Communications



Loet Leydesdorff

Copyrighted Material

2001

## A Sociological Theory of Communication

The Self-Organization of the  
Knowledge-Based Society



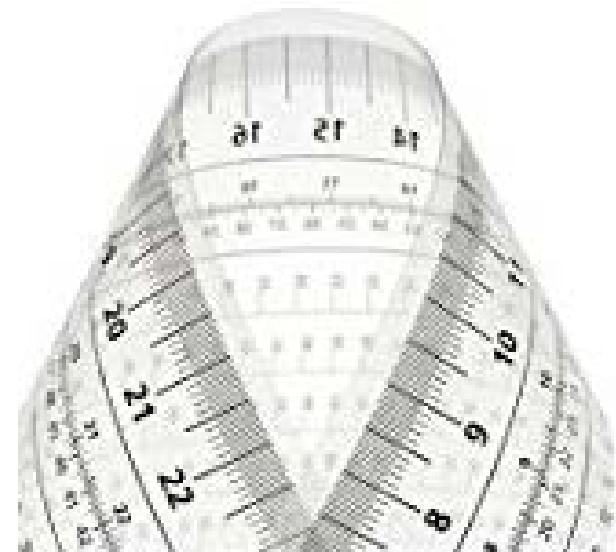
Loet Leydesdorff

2003

## BEYOND BIBLIOMETRICS

Harmonizing Multidimensional Indicators of Scholarly Impact

edited by BLAISE CRENNER and CASADY H. SUDHARTO



2014

# Scientometrics

The application of quantitative methods to study various aspects (semantic, formal, etc.) of the literature of science and social science as information and communication processes.

Wyatt, Sally, Stasa Milojevic, Han Woo Park, and Loet Leydesdorff. 2017. "Intellectual and Practical Contributions of Scientometrics to STS." pp. 87-112. In Felt, Ulrike, Rayvon Fouche, Clark A. Miller and Laurel Smith-Doerr, eds., *The Handbook of Science and Technology Studies*. Cambridge, MA: The MIT Press. p. 87.

# Distant Reading vs. Close Reading

Analyzing large quantities of text in order to identify trends, patterns, anomalies.

Wyatt, Sally, Stasa Milojevic, Han Woo Park, and Loet Leydesdorff. 2017. "Intellectual and Practical Contributions of Scientometrics to STS." pp. 87-112. In Felt, Ulrike, Rayvon Fouche, Clark A. Miller and Laurel Smith-Doerr, eds., *The Handbook of Science and Technology Studies*. Cambridge, MA: The MIT Press. p. 94.



# Co-Word Analysis

Capturing the frequency of pairs of words or phrases within documents and between documents.

Wyatt, Sally, Stasa Milojevic, Han Woo Park, and Loet Leydesdorff. 2017. "Intellectual and Practical Contributions of Scientometrics to STS." pp. 87-112. In Felt, Ulrike, Rayvon Fouche, Clark A. Miller and Laurel Smith-Doerr, eds., *The Handbook of Science and Technology Studies*. Cambridge, MA: The MIT Press. p. 92.

# Algorithmic Historiography

Clustering of citations along a timeline.

Wyatt, Sally, Stasa Milojevic, Han Woo Park, and Loet Leydesdorff. 2017. "Intellectual and Practical Contributions of Scientometrics to STS." pp. 87-112. In Felt, Ulrike, Rayvon Fouche, Clark A. Miller and Laurel Smith-Doerr, eds., *The Handbook of Science and Technology Studies*. Cambridge, MA: The MIT Press. p. 96.

**Tom Brughmans** (2013) has compared network analysis results with literature review results.

“The results indicate that a citation network analysis succeeds in quantitatively expressing the intuitive results drawn from the literature review.”

Brughmans, Tom. “Networks of networks: a citation network analysis of the adoption, use, and adaptation of formal network techniques in archaeology.” *Literary and Linguistic Computing*, Volume 28, Issue 4, 1 December 2013, Pages 538–562, <https://doi.org/10.1093/lc/fqt048>

# VOSViewer: a bibliometric mapping program

Leiden University's Centre for Science and Technology Studies  
(CWTS)

# CitNetExplorer: citation visualization software

Van Eck, Nees J., and Ludo Waltman. 2010. "Software Survey: VOSViewer, a Computer Program for Bibliometric Mapping." *Scientometrics* 84(2): 523-38.

Van Eck, Nees J., and Ludo Waltman. 2014. "CitNetExplorer: A New Software Tool for Analyzing and Visualizing Citation Networks." *Journal of Infometrics* 8(4): 802-23.

# VOSViewer: Citation Density Map



## Who cites Jane Jacobs?

Lucas, Robert (1988). "On the Mechanics of Economic Development". *Journal of Monetary Economics*. **22** (1): 3–42. [doi:10.1016/0304-3932\(88\)90168-7](https://doi.org/10.1016/0304-3932(88)90168-7)

Glaeser, E., Kallal, H., Scheinkman, J. and Shleifer, A. 1992. "Growth in Cities". *Journal of Political Economy*, 100(6): 1126-1152.

# Citation report for 958 results from Web of Science Core Collection between

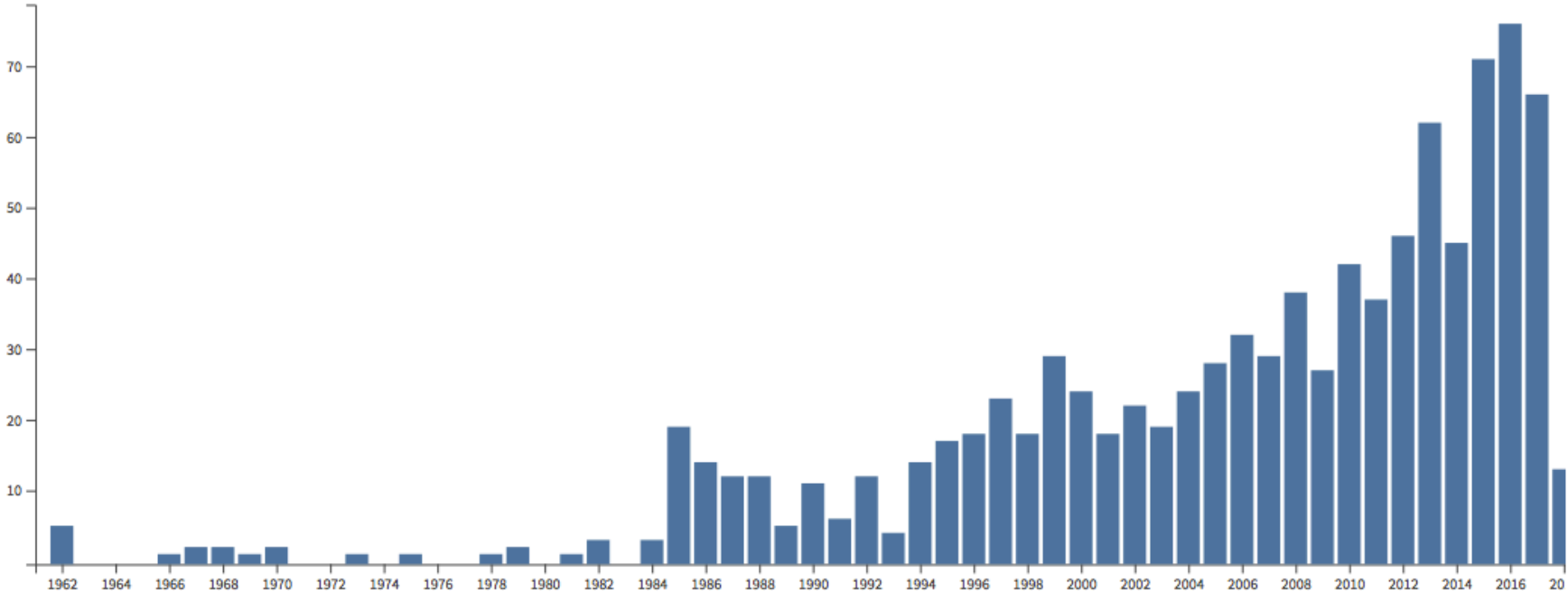
1960 and 2018

You searched for: CITED AUTHOR: (Jacobs, Jane OR JACOBS JANE)

Timespan: 1960-2018. Indexes: SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI.

Total Publications

# 958



*h*-index



**61**

Average citations per item



**25.29**

Sum of Times Cited



**24,232**

Without self citations



**23,867**

Citing articles



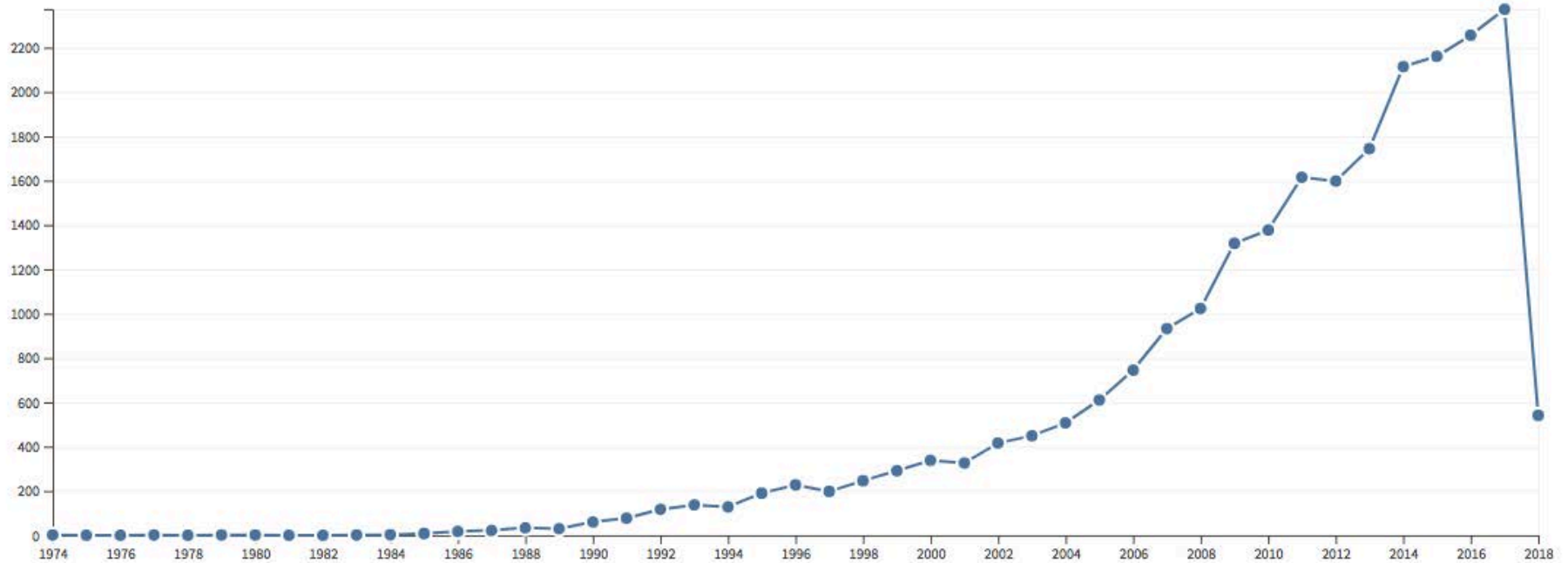
**21,567**

Without self citations



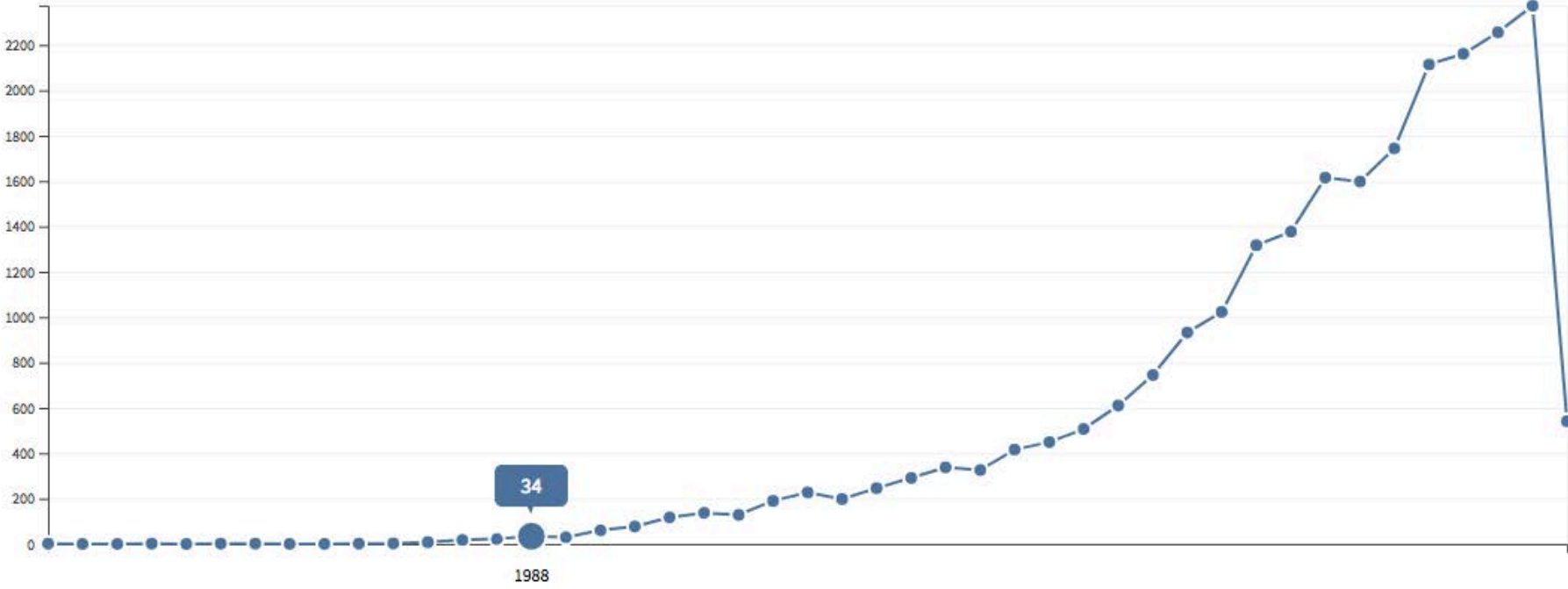
**21,321**

Sum of Times Cited per Year





Sum of Times Cited per Year



*h*-index



**13**

Average citations per item



**75.88**

Sum of Times Cited



**6,222**

Without self citations



**6,214**

Citing articles



**6,191**

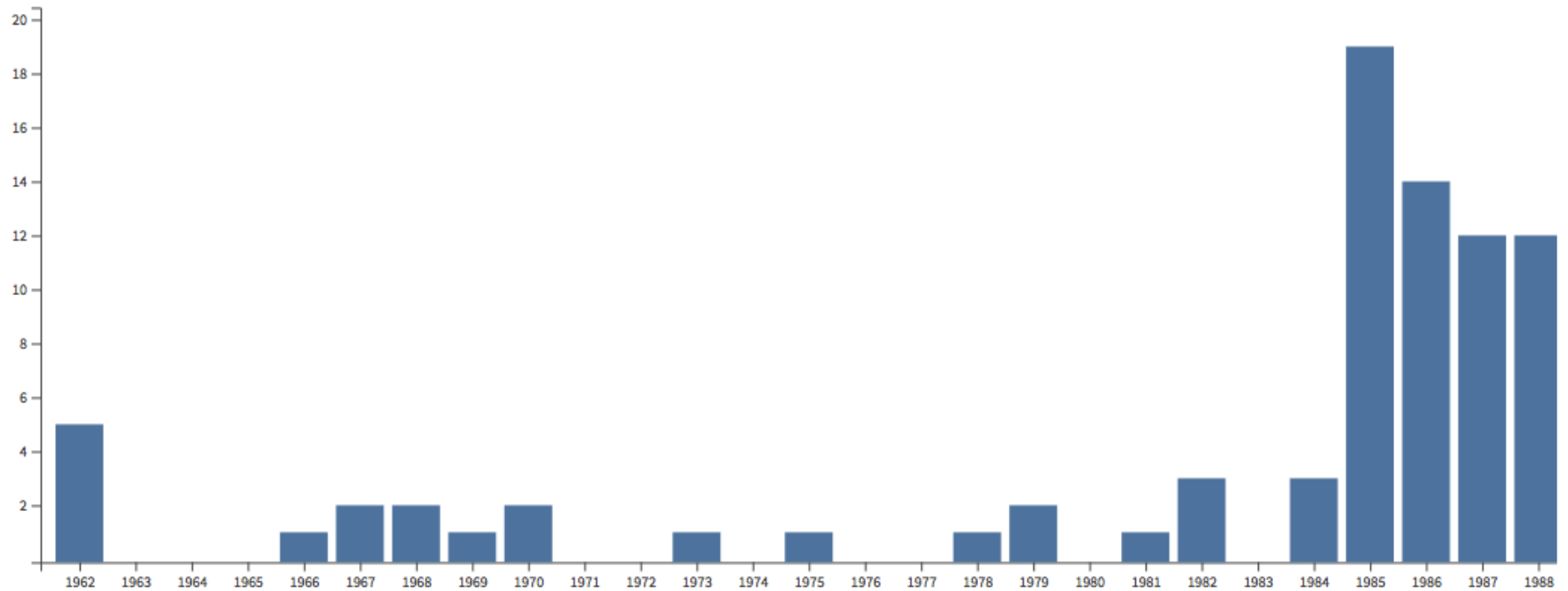
Without self citations



**6,185**

Total Publications

**82**



## Who cites Jane Jacobs?

Lucas, Robert (1988). "On the Mechanics of Economic Development". *Journal of Monetary Economics*. **22** (1): 3–42. [doi:10.1016/0304-3932\(88\)90168-7](https://doi.org/10.1016/0304-3932(88)90168-7)

Title	Authors	Source Title
ON THE MECHANICS OF ECONOMIC-DEVELOPMENT	LUCAS, RE	JOURNAL O
GROWTH IN CITIES	GLAESER, EL; KALLAL, HD; SCHEINKMAN, JA; SHLEIFER, A	JOURNAL O

Glaeser, E., Kallal, H., Scheinkman, J. and Shleifer, A. 1992. "Growth in Cities". *Journal of Political Economy*, 100(6): 1126-1152.

## References not already listed:

- Garfield, Eugene. "Citation Indexing for Studying Science." *Nature* 227 (1970): 659-71.
- Garfield, Sher, and Torpie. *The use of citation data in writing the history of science*. Philadelphia: ISI, 1964.
- Granovetter, Mark S. "The strength of weak ties." *American Journal of Sociology* 78(6) (1973): 1360–80.
- Kessler, M. M. "Bibliographic coupling between scientific papers." *American Documentation* 14(1) (1963): 10-15.
- Klavans, Richard, and Kevin W. Boyack. 2017. "Which Type of Citation Analysis Generates the Most Accurate Taxonomy of Scientific and Technical Knowledge?" *Journal of the Association for Information Science and Technology* 68: 984- 998. DOI: 10.1002/asi.23734
- Leydesdorff, Loet. "Various methods for the mapping of science." *Scientometrics* 11(5-6) (1987): 295-324.
- Callon, Michel, John Law and Arie Rip. "Qualitative Scientometrics." In *Mapping the Dynamics of Science and Technology: Sociology of Science in the Real World* edited by M. Callon, J. Law, and A. Rip, 103-123. London, Macmillan, 1986.
- Gingras, Yves. *Bibliometrics and Research Evaluation: Uses and Abuses*. Cambridge, MIT Press, 2016.