



Relative Visibility

Methodological Considerations on a New Scientometric Indicator
based upon Personal Publication Lists

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Metrics 2017

Introduction

Visibility



What is visibility?

Introduction

Visibility

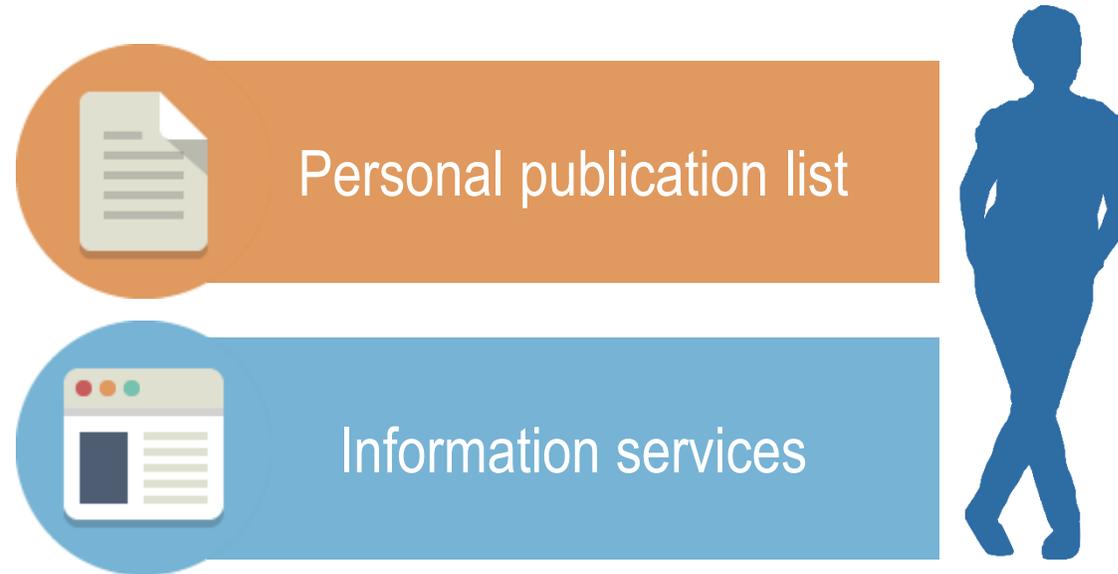
There exist a variety of visibility definitions ...

- An indicator that “characterizes the men being looked at”
Defines “how well known” a scientist is (Cole & Cole, 1968, p. 398)
- States “how avidly published work is received by the academic or scientific community”
(Miguel, 2011, p.1130).
- Absolut number of publications in an information service (Ingwersen, 2000; Schlögl, 2013)

Introduction

Visibility

Relative visibility



Introduction

Visibility

Relative visibility

- Shows how visible an author, institution, etc. in a certain database or service is
- A relative value depending on the considered information service
- Based on an author's:
 - *d*: total number of publications within the **information service**
 - *r*: total number of publications in his ideally complete **personal publication list**

$$\text{Relative Visibility}(IS) = \left(\frac{d}{r} \right) * 100$$

Introduction

Relative Visibility Case Studies

- Up to today: 2 case studies for relative visibility
- 1. Case Study about the researchers B. Cronin and W. G. Stock
 - Personal publication lists were requested from the authors
 - *List limitation: only formally published scientific publications*
 - *Personal publication list: Cronin N = 167; Stock N = 152*
 - *10 information services considered for relative visibility*
- 2. 9 authors of the ISSI committee: J. Bar-Ilan, K. Börner, L. Bornmann, L. Egghe, S. Haustein, P. Ingwersen, L. Leydesdorff, C. Schlögl, C. Sugimoto
 - *Personal publication lists from website*
 - *Web of Science, Scopus, Google Scholar as considered information services for relative visibility*

Introduction

Relative Visibility Case Studies

Relative visibility of Cronin and Stock in selected information services

Information service	Search argument		Publication count		Visibility	
	Cronin	Stock	Cronin	Stock	Cronin (%)	Stock (%)
ACM Guide to Computing Literature	(+Blaise +Cronin)	(+Wolfgang +G. +Stock)	45	12	26.9	7.9
ECONIS	Cronin, Blaise	Stock, Wolfgang G.	0	9	0	5.9
Google Scholar	Blaise Cronin (User profile)	Wolfgang G. Stock (User profile)	119	83	71.3	54.6
IEEE Xplore	Blaise, Cronin	Wolfgang G., Stock	1	2	0.6	1.3
Infodata eDepot	Cronin	Stock, Wolfgang G.	0	49	0	32.2
LISTA	Cronin, Blaise	Stock, Wolfgang G.	69	16	41.3	10.5
Mendeley	“Blaise Cronin”	“Stock W G” “Wolfgang G Stock”	51	46	30.5	30.3
ResearchGate	Blaise Cronin	Wolfgang G. Stock	40	49	24.0	32.2
Scopus	Cronin, B Author IDs: 24351054500 55605719900 57093355600	Stock, Wolfgang G. Author ID: 8658221400	98	51	58.7	33.6
Web of Science (Core collection)	Cronin B*	Stock WG	115	20	68.9	13.2

$N = 167$ (Cronin) and $N = 152$ (Stock) publications;

* Truncation *Publications published between: 01/01/2001 – 31/12/2015*

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Relative visibility of Cronin and Stock in selected information services

How reliable are analyses based solely on data from WoS/Scopus?

$N = 167$ (Cronin) and $N = 152$ (Stock) publications;

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Parameters of Visibility

Relative Visibility: Investigation of Practical Application

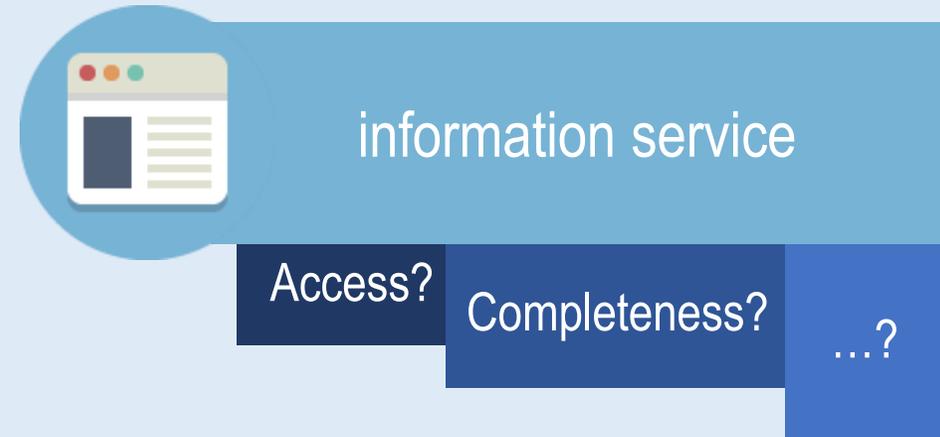
What has to be considered for the application of the relative visibility indicator?

Are there any methodological problems or pitfalls?

Parameters of Visibility

Relative Visibility: Investigation of Practical Application

Multidimensional parameters

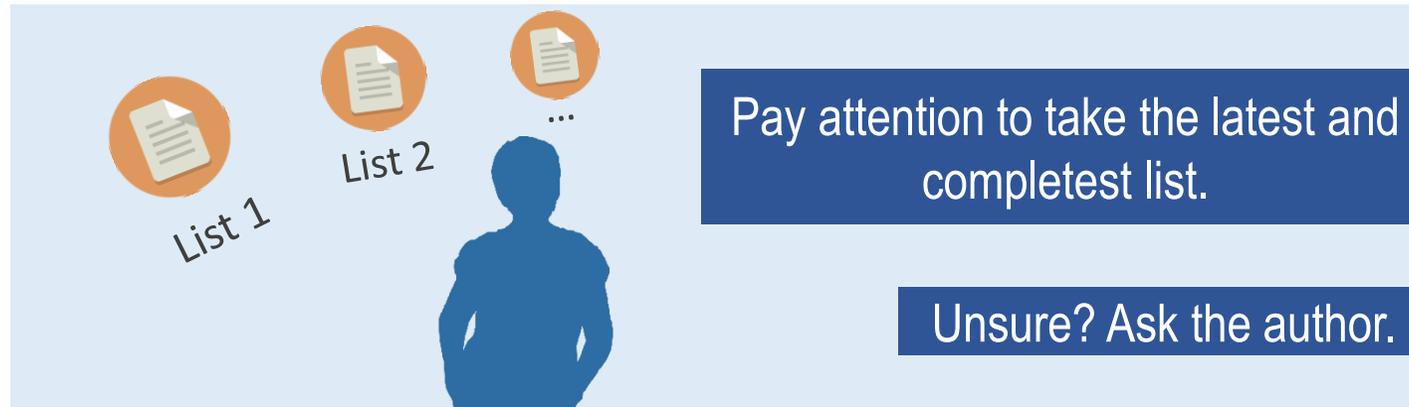


Parameters of Visibility

Relative Visibility: Investigation of Practical Application

Personal publication list

- Where can I receive the list?
 - Personal/institutional websites
 - Author request



Parameters of Visibility

Relative Visibility: Investigation of Practical Application

Personal publication list

- Structure: Minimally needed information from the lists
 - Publication title
 - Author name(s)
 - Publishing year
 - Publication language
 - Document type
 - Source, Volume, Page

- Notes (if necessary)

Parameters of Visibility

Relative Visibility: Investigation of Practical Application

Personal publication list

- Is the list complete and up-to-date for the investigated time period?
→ *The publication list has to be **complete**, since it is the basis for all further analysis*
- Does it contain all scientific publications?
- It is necessary to define exactly what is
 - a publication,
 - a scientific publication,
 - one scientific publication,
 - the weight of one/a publication
- Should there be a restriction for some document types?
 - newspaper articles?
 - social media posts?
 - white papers, reports?

Parameters of Visibility

Relative Visibility: Investigation of Practical Application

Personal publication list

Personal publication lists are not standardized

Authors may **include** publications in their personal publication lists which are **not relevant** for the analysis

Authors may **exclude** publications in their personal publication lists which are **relevant** for the analysis

Parameters of Visibility

Relative Visibility: Investigation of Practical Application

Personal publication list

Inclusion/exclusion examples from the case studies:

- Personal publication list Cronin
 - X Self-published novels included
- Personal publication list Stock
 - One missing publication
- Personal publication lists of selected ISSI committee authors
 - Work in progress papers, “published” in repositories like arXiv
 - In-press/online first



Only a small
amount of
publications

Parameters of Visibility

Relative Visibility: Investigation of Practical Application

Personal publication list

- If one considers these aspects, personal publication lists serve the possibility to cover the **majority** of an author's publications

<i>Author</i>	<i>All (100%)*</i>	<i>Personal Publication List</i>
Judit Bar-Ilan	124	88.7 %
Katy Börner	100	91.0 %
Lutz Bornmann	271	95.2 %
Leo Egghe	107	99.1 %
Stefanie Haustein	72	97.2 %
Peter Ingwersen	71	83.1 %
Loet Leydesdorff	304	90.5 %
Christian Schlögl	65	96.9 %
Cassidy Sugimoto	129	91.5 %

* Publications from 2007 to 2016.

Parameters of Visibility

Relative Visibility: Investigation of Practical Application

Author's publication list within the information service

- Does there exist an author profile or are there several profiles which have to be merged?
- Search by
 - Author name
 - Author profile
 - Title terms

→ *Mind: Special characters, variations within the author name, several author profiles for one author, homonyms*
- Are there problems concerning homonymy or synonymy of authors' names?

Scopus

Cronin, B
Author IDs:
24351054500
55605719900
57093355600

Mendeley

“Stock W G”
“Wolfgang G Stock”

Google Scholar

Blaise Cronin
(User profile)
Wolfgang G. Stock
(User profile)

WoS

Cronin B*
Stock WG

WoS

AU=(Schlogl C* OR Schlögl C* OR Schloegl C*)

Parameters of Visibility

Relative Visibility: Investigation of Practical Application

Author's publication list within the information service

- Do the scientometricians have access to the entire database or only to some segments (e.g., in WoS with or without Book Citation Index)?
 - Case Studies: WoS Core Collection
- Does the retrieved publication list contain false information?
 - False publication dates
 - Publications covered several times (especially in Google Scholar)
 - Publications assigned to the wrong author
 - Editor activity was not denoted as such, but rather every contribution (28 publications)

Parameters of Visibility

Relative Visibility: Investigation of Practical Application – Outlook

- What about authors publishing in **multiple disciplines**?
 - Some information services only cover a certain research field
→ Values in these databases could be low, since the used personal publication list is multidisciplinary
- Solution: Discipline-specific relative visibility
- Example:
 - W. G. Stock → Disciplines: Information science, philosophy
 - Personal publication list: 304 publications
→ 21 publications (Philosophy; fuzzy boundaries)

$$\text{Discipline-specific relative Visibility(Philosopher's Index)} = \left(\frac{9}{21}\right) * 100 = 42.86\%$$

$$\text{Relative Visibility(Philosopher's Index)} = \left(\frac{9}{304}\right) * 100 = 2.96\%$$

Discussion

Relative Visibility

- Introduced relative visibility indicator enables the measurement of an authors' online visibility in information services
 - **Personal publication lists** → inclusion of ideally all author publications for the analysis
 - Some methodical aspects have to be considered carefully
 - Access?
 - Completeness?
 - ...
- *Time effort: Analyses solely based on information services are currently faster*

Discussion

Relative Visibility

- Relative visibility: There are a lots of indicators, why one more?
- Could it be a new, helpful (?) indicator for measuring the database-specific visibility of researchers?



Thank you for
your attention!



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Metrics 2017: Workshop on Informetric and Scientometric Research
Crystal City, Washington, October 27 2017

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