Characterizing journals using advanced bibliometrics: Area-Based Connectedness (ABC) to society

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Take away
(in case I am stopped by the moderator ;)

Non-scientific impacts of science actors (incl. journals) can be measured by Area-Based Connectedness (ABC) to society

Data:
- Web of Science (CWTS version)
- Publication level classification
- Altmetrics data
Assessing journals
Why?

- Library management
- Assessing output
- Index selection (Web of Science, Scopus, …)
- OA > APC > predatory journals
How?

- Journal impact factor (IF)
- Eigen factor
- Source Normalized Impact per Paper (SNIP)
- Scimago Journal Rank (SJR)
- Cite Score
- MNJS
- …
What about other impact/ features?

• Societal impact
• Socio-economic impact
• Professional impact
• Cultural impact
• ‘Appliedness’
Societal impact
How does science impact society?

- Process unclear;
- Process divers;
- Is there any science that does not impact society?
Introducing ‘productive interactions’ in social impact assessment

Jack Spaapen and Leonie van Drooge

Productive interactions:

Societal impact => connectedness to society
How to measure connectedness?

• Through signals between science and society;
• Signals from both sides;
• Each signal represents a certain link/ connection/ interaction.
Signals (through the lens of research)

- Papers (co-)authored by industry;
- Papers published in local languages;
- Papers cited by patents;
- Papers mention on twitter (or other social media);
- Papers mentioned in policy documents;
- Papers mentioned in news;
- ...
How to measure these signals:
Area-based connectedness
Should we measure these signals at the level of actors?

- Should we consider the amount of papers in a journal mentioned in twitter as societal connectedness?
- Should we count the number of co-authored papers with industry of an organization to measure societal impact?
- Is an institute from which papers are mentioned in policy document more societal relevant?
- Is a journal from which papers are cited in patents, more applied?
If the answer is no, how should we then measure it?

- Research is a collaborative effort;
- It’s a community that has impact/ is connected, not the individual actor;
- Therefore, we should measure the interactions at the level of research areas;
- This has the advantage of making it less sensitive to manipulation/ gaming.
Research areas and their connectedness
Consider the map of all sciences (publication based classification, 4000 clusters)
About each cluster (research area) we know:

• All info covered by its publications (journals, authors, affiliations, keywords, etc);
• Total volume (number of P whole period);
• Volume per year (trend);
• Other average stats (n authors, refs, affiliations, share International collaboration, ...);
• Impact (overall and per year)
• Interdisciplinarity?
• Internal coverage (proxy for database coverage)
• ...
What else do we know about the clusters?

- The percentage of papers (co-authored) by industry;
- The percentage of papers not published in English;
- The percentage of papers being cited by patents;
- The percentage of papers being tweeted;
- The percentage of papers mentioned in news items;
- The percentage of papers mentioned in policy documents;
- The percentage of papers in OA
- ...
Consider the map of all sciences (publication based classification, 4000 clusters)

- Social Sci & Hum.
- Maths & CompSci
- Life & Earth
- Biomedical & Health
- Physical Sci & Engin.
Share (co-)authored by industry

Social Sci & Hum.

Maths & CompSci

Life & Earth

Biomedical & Health

Physical Sci & Engin.
Share of papers not in English
Share of papers cited by patents
Share of papers mentioned on Twitter

Social Sci & Hum.

Life & Earth

Biomedical & Health

Maths & CompSci

Physical Sci & Engin.
Share of papers mentioned in News

Social Sci & Hum.

Life & Earth

Maths & CompSci

Biomedical & Health

Physical Sci & Engin.
Share of papers mentioned in policy documents

Social Sci & Hum.

Biomedical & Health

Life & Earth

Maths & CompSci

Physical Sci & Engin.
Case study
The case of the Chinese journal of cancer research
The case of the Chinese journal of cancer research
Twitter connectedness of areas of the Chinese journal of cancer research

Social Sci & Hum.

Maths & CompSci

Life & Earth

Biomedical & Health

Physical Sci & Engin.
Policy connectedness of areas of the Chinese journal of cancer research
Some other examples
Connectedness of the JOURNAL OF THE CHINESE CHEMICAL SOCIETY
Connectedness of
the CHINESE JOURNAL OF GEOPHYSICS
(Chinese edition)
Conclusions
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• Societal impact of research should be framed as productive interactions or connectedness to society;

• There is variety of signals representing different dimensions;

• The connectedness of actors should be measured at the level of the areas in which they are active: ABC to society.
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