

Connecting Knowledge: A Vision for Inclusive and Empowered Bibliometrics

Dr Barbara S. Lancho Barrantes

Senior Lecturer in Data Science and Analytics
School of Architecture, Technology and Engineering
University of Brighton, United Kingdom

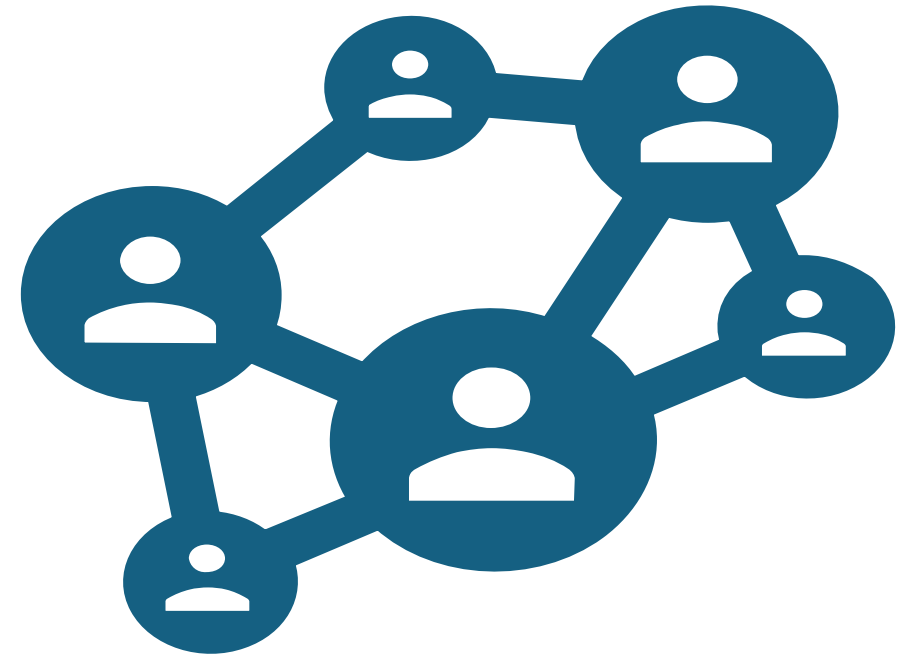
b.lanchobarrantes@brighton.ac.uk

Chair, LIS Bibliometrics Committee

Online event | 19 November 2025



**Eugene Garfield Centenary Celebration:
Past, Present and Future of Scientometrics**



Association of Ideas

The concept of citation indexing, introduced by Dr Eugene Garfield, strongly demonstrates how an idea continues to transform and shape the world for decades to come.

Source: Yesterday's findings fuel today's research breakthroughs – Clarivate

<https://clarivate.com/academia-government/blog/sleeping-beauties-yesterdays-findings-fuel-todays-research-breakthroughs/>



Citations as the Architecture of Scientific Knowledge

- Create explicit links between current research and prior work.
- Serve as intellectual transactions — acknowledgments of intellectual debt (Merton & Kochen)
- Demonstrate the value and applicability of established theories, methods, or data
- Form a network of knowledge showing how science progresses through cumulative discovery

Source: Eugene Garfield- [The concept of citation indexing: A unique and innovative tool for navigating the research literature](#)



Quantifying Scientific Flows

Scientometrics was first defined by Nalimov (1971) as developing **“the quantitative methods of the research on the development of science as an informational process”**. It can be considered as the study of the quantitative aspects of science and technology seen as a process of communication.

Nalimov, V. V., & Mulchenko, Z. M. (1971). Measurement of Science. Study of the Development of Science as an Information Process.



The Evolving Lineage of Knowledge



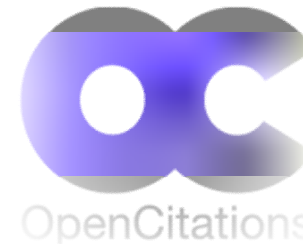
Early systems mapped
how ideas built on
each other



Today's data
environment multiplies
those connections



Context is key to
meaning



Three Pillars of the Future: Inclusive, Interconnected, Equipped

Inclusive

Knowledge for everyone; every voice matters, regardless of geography, language, or institution.

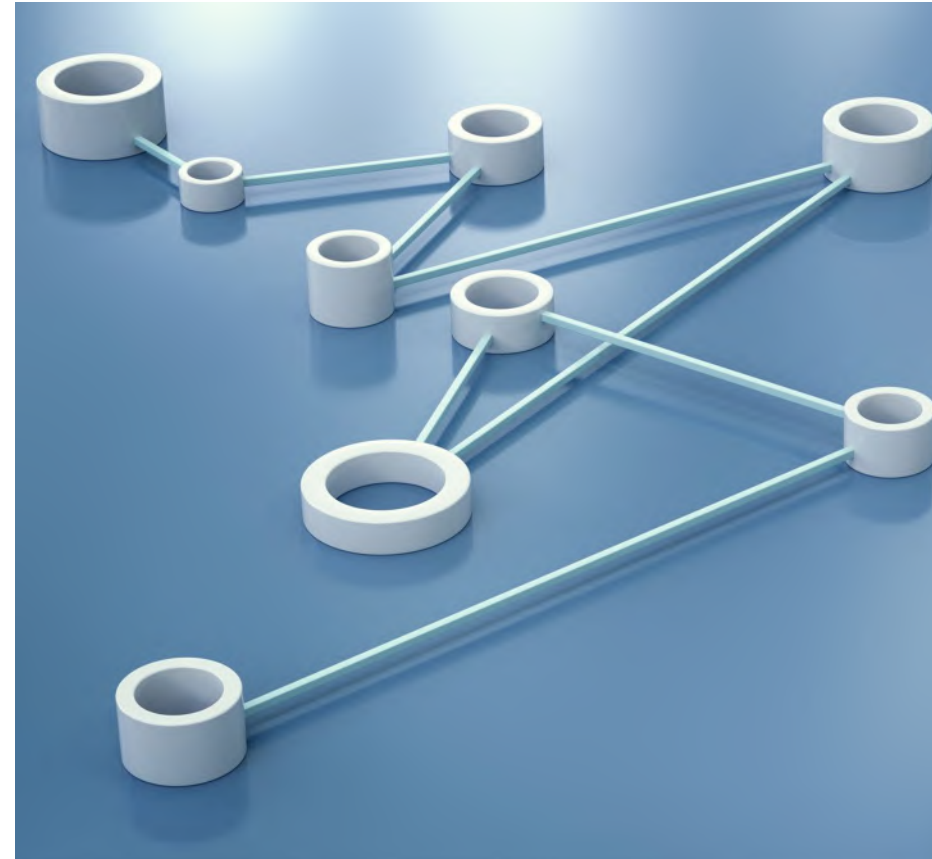
Interconnected

Research systems that work in harmony, enabling collaboration and free flow of ideas.

Equipped

Practitioners with the skills, training, and tools to apply bibliometrics effectively in a growing, evolving ecosystem.

The future of Scientometrics is about purpose.



Rethinking How We Value Knowledge

- **Knowledge flows**— no longer produced by a single country, institution, or researcher; The discovery offers a way to connect people across many settings.
- **Global challenges demand collective action** — we must expand capabilities, share resources, and unite as a scientific community.
- **Scientometrics must evolve** — bibliometric methods should reflect the nature of modern and current research.
- **Traditional indicators may unintentionally perpetuate inequality**— i.e. eurocentric frameworks dominate, marginalising diverse ways of knowing and creating epistemic injustice.
- **A call for transformation** — a new Scientometrics is needed. It can become a tool that strengthens inclusive global science and serves society as a whole.

AI as a Knowledge Integrator

The Hidden Majority

When knowledge circulates in perfect harmony, scientometrics can help illuminate this underlying elegance.

- Most knowledge never enters traditional bibliometric systems
grey literature, datasets, code, indigenous knowledge, practitioner expertise.
- AI can finally make the invisible visible: synthesising across all knowledge forms.
- From measuring what's published to mapping what's actually known

Better- equipped practitioners

- Untrained practitioners entering bibliometrics.
- Superficial analyses that risk accuracy.
- Limited expertise threatening research integrity.
- Lack of context leading to flawed conclusions.

The New Competencies Model for Bibliometrics

Barbara S. Lancho Barrantes, Andrew Cox, Hannelore Vanhaverbeke, Sabrina Petersohn, Silvia Dobre

Purpose:

- Identify skills gaps
- Support career progression for bibliometrics practitioners
- Prepare job descriptions aligned with career stages

Three Career Levels:

- Entry
- Advanced
- Expert

Model Structure:

- Knowledge in the Field
- Responsibilities & Tasks
- Technical Skills
- (Professional Integrity is a cross-sectional requirement at all levels.)

Assessing Training Needs in the Global Bibliometrics Community

Barbara S. Lancho Barrantes, Michelle O'Hara, and Behrooz Rasuli

- Critical need for structured and accessible bibliometrics training.
- Forty percent of respondents require introductory-level training, revealing a basic skills gap.
- Current learning is fragmented without a formal education framework.
- LIS Bibliometrics Committee to develop a global training initiative with clear pathways and potential accreditation.

Work presented at the 29th Annual International Conference on Science and Technology
Indicators

Reconciliation of research and measurement
University of Bristol 3-5 September 2025

The isolation of practitioners in bibliometrics: Observed challenges

Barbara S. Lancho Barrantes, Sheila Craft-Morgan, Madelaine Hare, Naomi Richards,
Emily Mazure, & Jeffrey Demaine

Challenges:

- Siloing within institutions
- Feelings of inadequacy
- Technological shifts
- Role-policy misalignment

Pathways Forward:

- Embed bibliometrics across services (library, research support, strategy)
- Promote ongoing training, peer networking, and community participation

Source: [The isolation of practitioners in bibliometrics: Observed challenges – The Bibliomagician](#) 27 October 2025

Final remarks



Scientometrics needs to evolve



Move beyond “cut and paste” or simplistic metric use



Focus on skilled professionals, not just the metrics themselves



AI will help to take Scientometrics to the next level



Interconnect analysis: integrating data from multiple bibliometric databases.

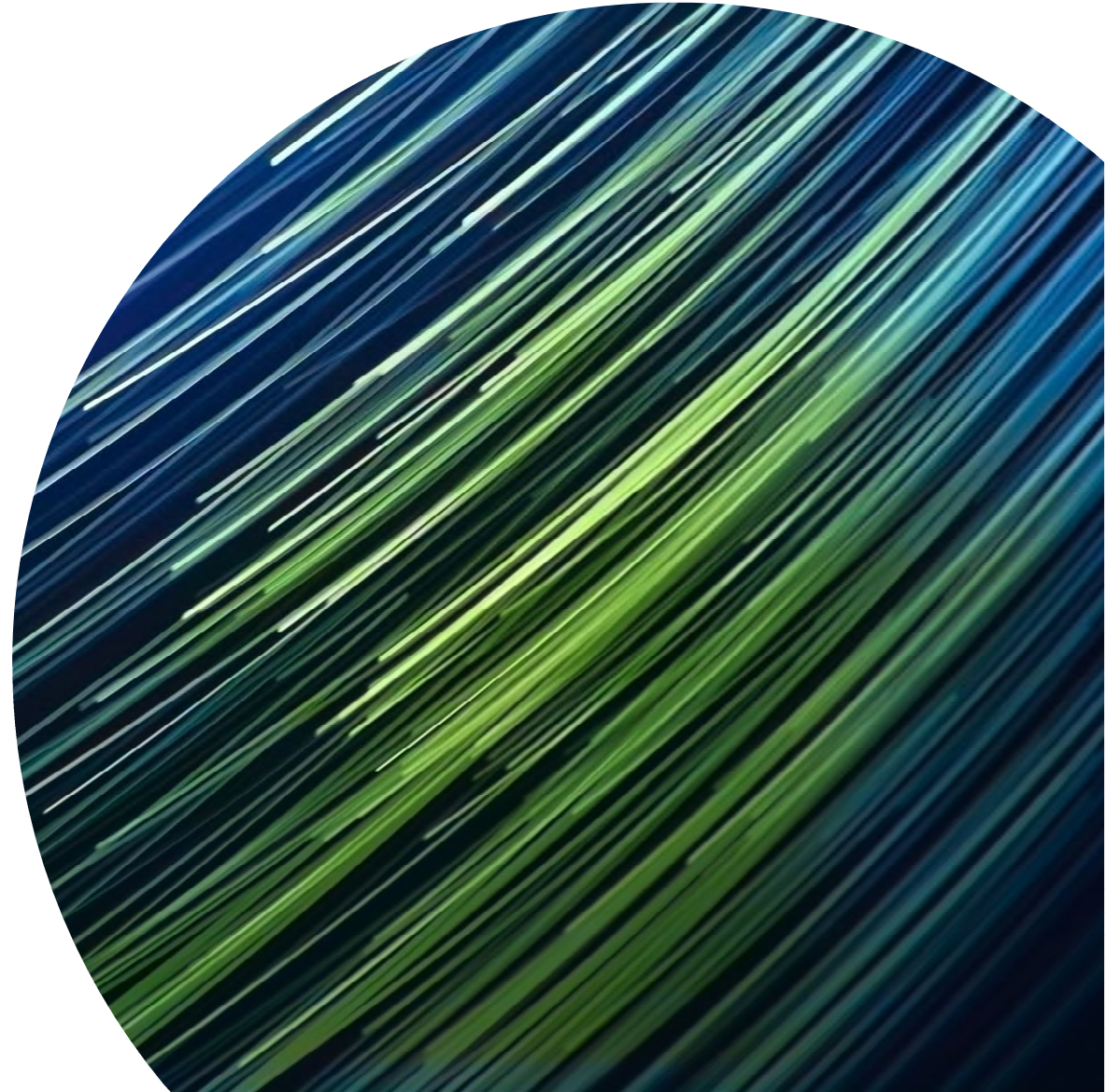


Disconnect between evaluators and evaluated reduces effectiveness

CALL for NEW GENERATION OF INDICATORS

Indicators for Contemporary Research

- Capture the diversity of modern scholarship
- Reflect the complexity of research practices
- Adapt to the evolving research landscape



Thank you so much for your attention

Dr Barbara S. Lancho Barrantes

Senior Lecturer in Data Science and Analytics
School of Architecture, Technology and
Engineering

University of Brighton, United Kingdom

b.lanchobarrantes@brighton.ac.uk

Chair, LIS Bibliometrics Committee

“

FRANZ KAFKA

“...they had so much
to worry about at
present that they had
lost sight of any
thought for the
future.”

The Metamorphosis

”