

# Academic Journals in Open Science: A Functional Approach

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# *“The long-standing discussion about an academic journal replacement” (Björn Brembs)*

- “The broken and destructive academic journal system”
- “A trinity of failures: reliability, affordability, functionality”
  - “The focus of the ex-publishers on user data, of researchers on publications and of institutions on cash flow and rankings led to a functionality crisis in which some of the most basic digital functionalities remain out of reach for research objects”
- “We can now switch at any time”
- “It can work without slaughter”

Source: <http://bjoern.brembs.net/2021/10/trinity-of-failures/>  
(October 8, 2021)

# Reasons for criticism and scepticism

## **Weakness**

- Lack of reliability
  - Selection, replication crisis
- Journal crisis (subscription)
  - Too expensive
  - Too slow
  - Limited dissemination
- Article crisis (APC)
  - Predatory publishing
  - Open divide

## **Threat**

- Open repositories
- Preprint servers
- Mega-journals
- Data subseding journals (?)

# Slaying the journals?

- *Journals will disappear*
- *Journals should (must) disappear*
- However, so far no mass extinction of academic journals

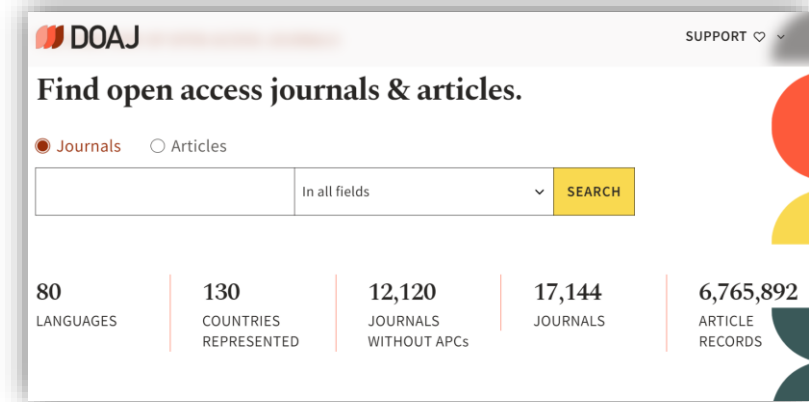


Fig.14

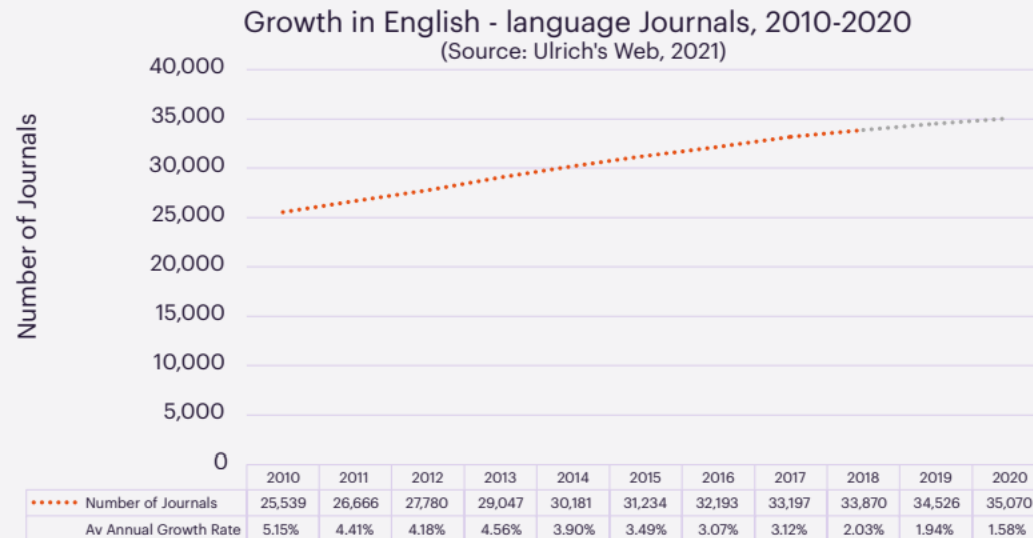
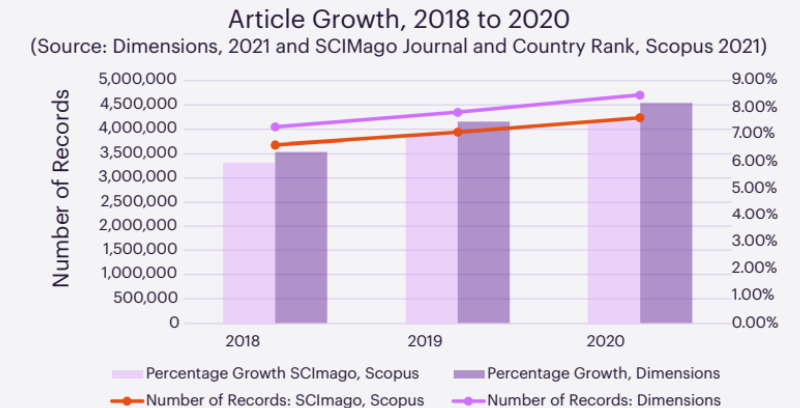


Fig.16



Source: STM Report – STM Global Brief 2021  
<https://www.stm-assoc.org/>

# A functional approach

- Useful for something (somebody)?
  - Historical functions
  - New functions?
- *“An activity is functional, if it serves the perpetuation of the complex structured unity of a system”* (Luhmann)
- Other reasons: flexibility, diversity, adaptability (technology, business model)
- *“It is not the strongest of the species that survives, nor the most intelligent; it is the one most adaptable to change”* (Darwin)

# Oldenburg's shadow: still there, but...

- Observations (but no systematic analysis so far):
  - Registration (but: science as a common good)
  - Certification (but: predatory publishing, open peer review)
  - Dissemination (but: creation of other channels)
  - Archiving (but: problems with OA journals)
- Will open science subvert academic journal publishing?

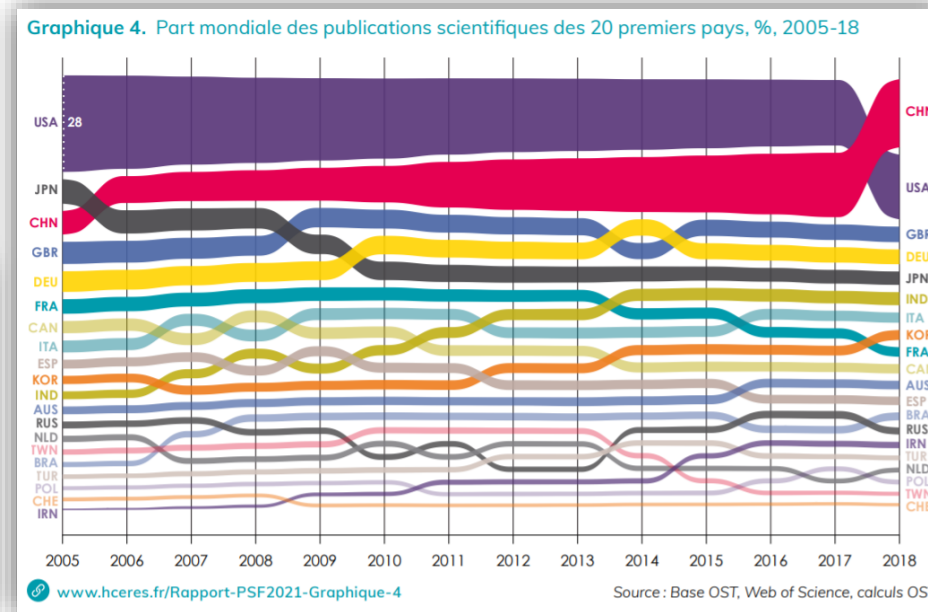
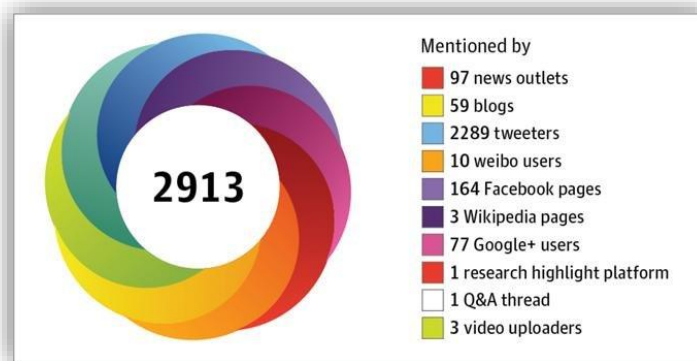
# New functions

- Three new functions
  - Political (ranking)
  - Economical (revenues)
  - Technological (data)
- May explain the resilience\* of academic journal publishing
  - *\*“the ability of a system to withstand changes in its environment and still function”*



# Political function

- Academic journals play a significant role within the functioning of evaluation and monitoring systems
- Shanghai ranking: 60%
- THE ranking: 36%





# Economical function

Transformation, not disruption: *“there is enough money already circulating in the global market”*  
(Schimmer et al., 2015)

- Academic journals play a significant role within the economic functioning of publishers, aggregators, agencies, etc.
- They represent 39% (2019) of the total global STM market value
  - \$10.81 billion revenues from journals (2019)
  - 36% in 2020 (expected to regain pre-pandemic value by 2023)

Fig.1 Total STM Market Value (Source: Outsell, Inc. 2021)

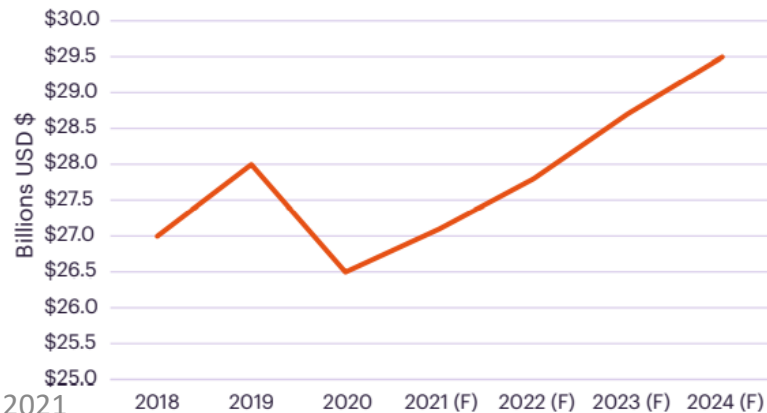


Fig.2 STM Global Market by Format, 2018 to 2021 (F) (Source: Outsell, Inc. 2021)



(F) - Forecast

# Technological (big data) function

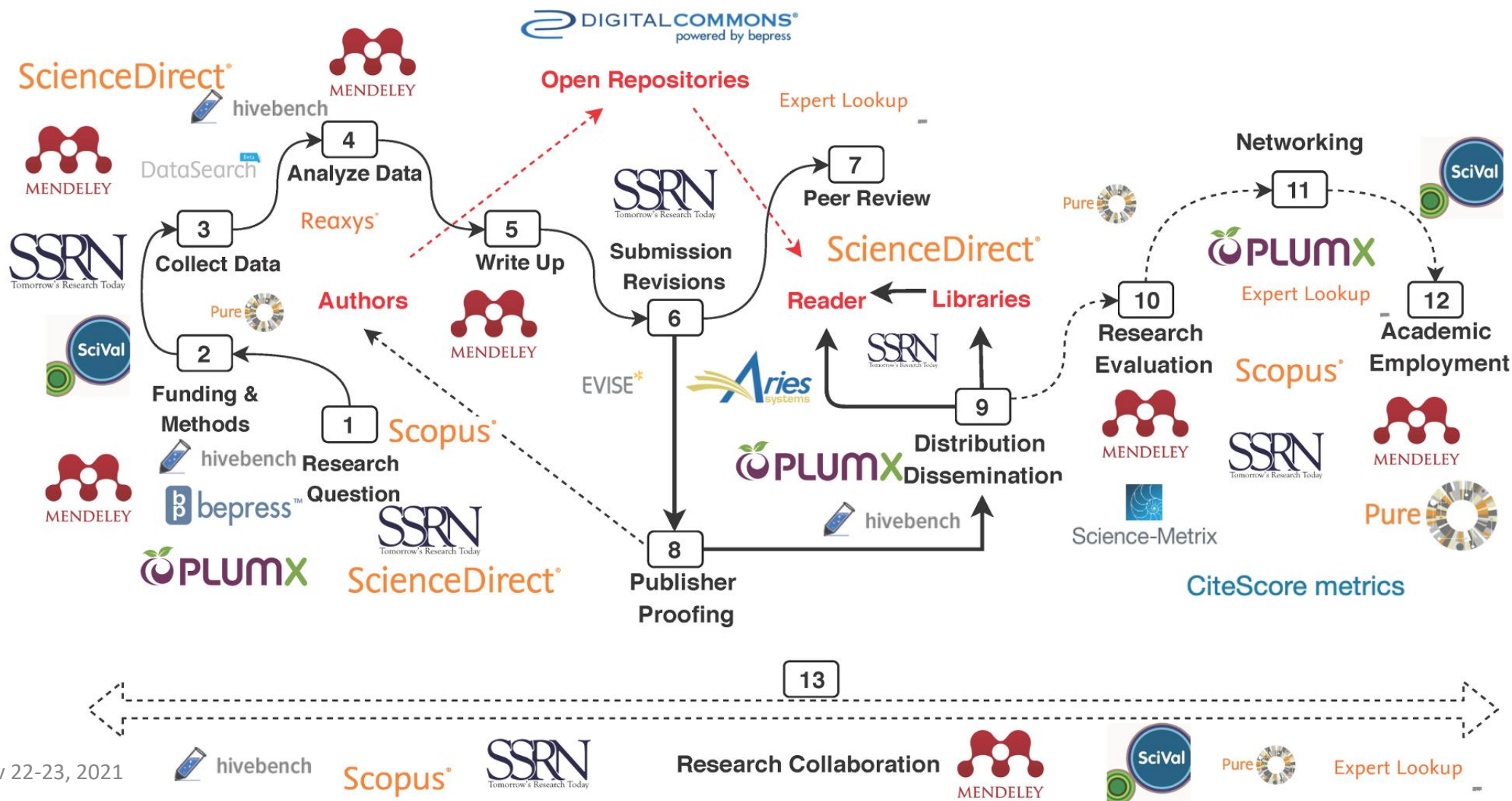
- Academic journals play an increasing role within the functioning of data systems, in particular for the acquisition and exploitation of big data by the information industry.
- The big data environment transforms journals into a complex information generation device with high exploitation and valorization potential.
- Everything becomes data
  - *Vertical integration* (Posada & Chen, 2018)
  - *Data capitalism* (Herb, 2019)
  - *An eco-system that is continually in flux, containing a wealth of new trends and possibilities* (STM Trends 2025)
  - *If it's free, you are the product*

# The Academic Knowledge Research Production Process

## The Research Process

## The Publishing Process

## The Evaluation Process



CHEN, George ; POSADA, Alejandro ; et CHAN, Leslie. Vertical Integration in Academic Publishing : Implications for Knowledge Inequality In : Connecting the Knowledge Commons — From Projects to Sustainable Infrastructure : The 22nd International Conference on Electronic Publishing – Revised Selected Papers. Marseille : OpenEdition Press, 2019. DOI: 10.4000/books.oep.9068

# STM TRENDS 2025

## LET'S GO UPSTREAM

*Seeking the Source of Trust and Truth*



FUNDERS RESERVOIR

CITATIONS SUMMIT

H3

OPEN SCIENCE CLOUD

METRICS MOUNTAIN

LAKE OF KNOWLEDGE

SCHOLARLY FIELDS

RESEARCH PARK

UNIVERSITY

THE WOODS OF TRUTH

EARLY FINDINGS GROVE

FAKE SCIENCE JUNGLE

SWAMP OF SUSPECT SCIENCE

DATA MINE

DATA ARCHIVE

bioRxiv

arXiv

PREPRINT TOWN

LIBRARY

LAB

OUTPUT ORCHARDS

FREE SHARING FAIR

ACADEMIC ACRES

PAPER MILLS FACTORY

TRUST & INTEGRITY

JOURNALS CASCADES

REACTION ISLAND

GOLD TOWER

medRxiv

PEER REVIEW

DIAMOND CITY

FAST TRACK CHANNEL

DATA STORAGE

AI FACTORY

GREY LITERATURE BEACH

PREMIUM PARK

OPEN ACCESS SUBURBS

RETRACTION ISLAND

READ & PUBLISH CONTAINER TERMINAL

LIBRARY

NEWS

MILLER COASTER SOCIAL MEDIA

VISITOR CENTRE

PIRACY PLATFORM

COUNTER PLATFORM

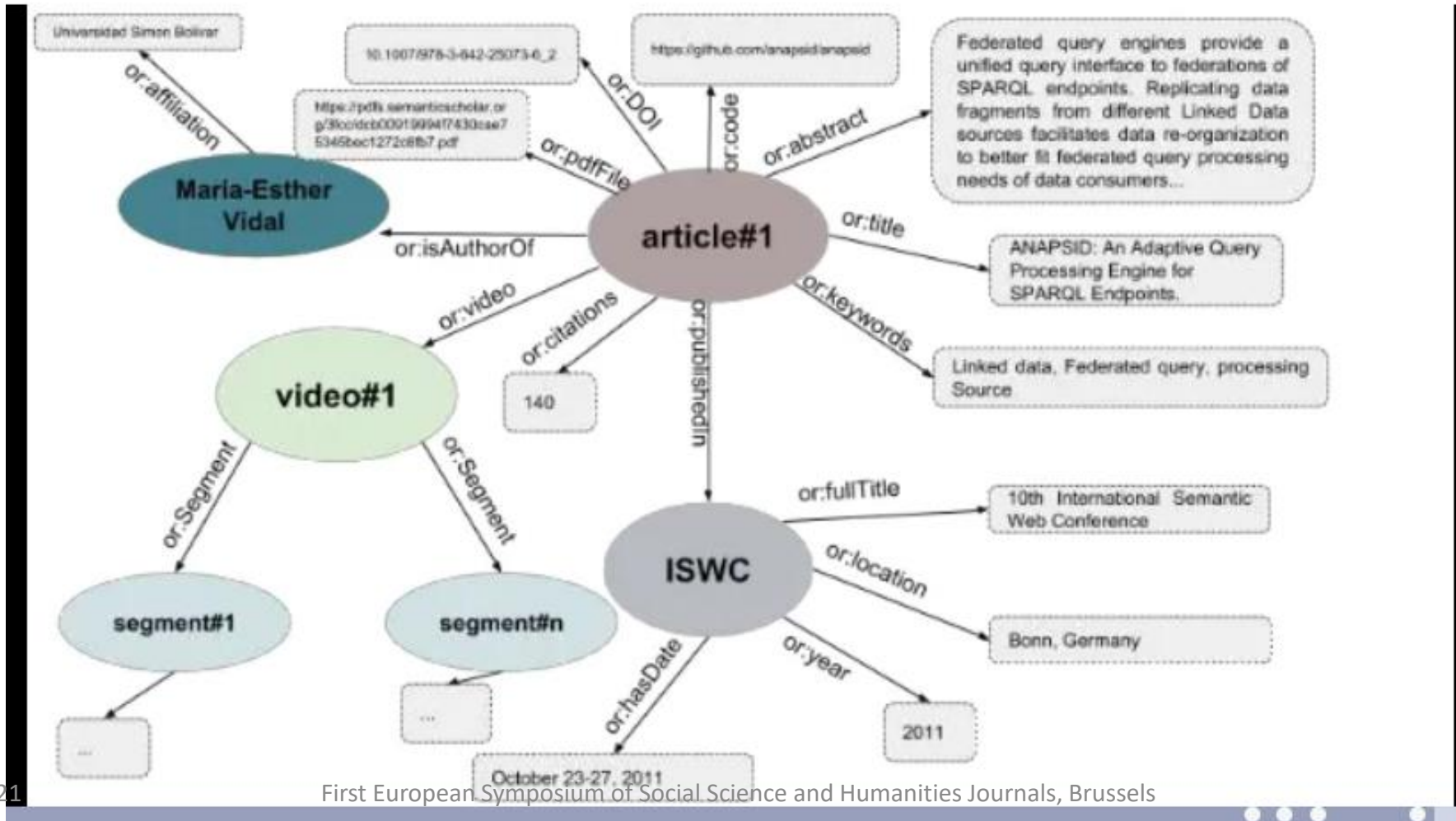
NBM

THE SEA OF SYNDICATION

SHARING PLATFORM

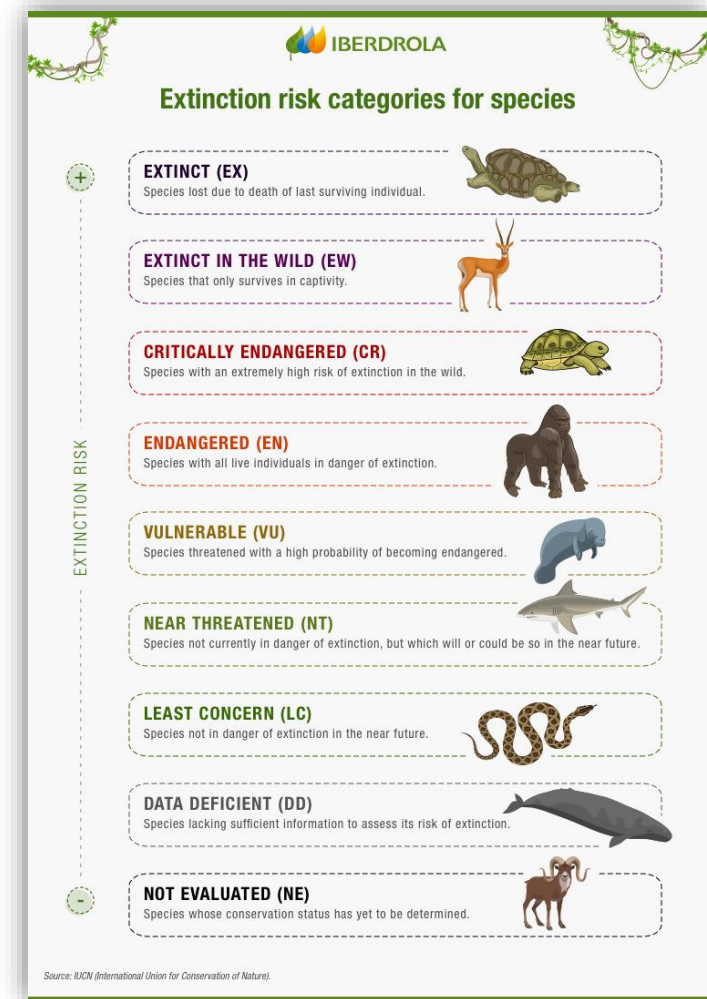
# Towards an Open Research Knowledge Graph

Sören Auer (2018). Towards an Open Research Knowledge Graph.  
<https://www.slideshare.net/soeren1611/towards-an-open-research-knowledge-graph>



# Endangered, vulnerable, and/or threatened?

- Are journals at risk of extinction?
- What species are at the highest risk?
  - Cf. risk assessment of the impact of Plan S
  - Cf. French monitoring committee



# Merci

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Schöpfel, J., & Fabre, R. (2019). La question des revues dans la science ouverte : une approche fonctionnelle. *I2D Information, Données & Documents*, 2(2), 109–127. <https://doi.org/10.3917/i2d.192.0109>