

# SCHOLARLY PUBLISHING MYTHS AND MISCONCEPTIONS

Jadranka Stojanovski, Assistant Professor  
University of Zadar, Ruđer Bošković Institute

# WE LIVE IN THE DIGITAL AGE AND SCHOLARLY PUBLISHING ADOPTED MAJOR TECHNOLOGICAL IMPROVEMENTS

# 1665

*"If I have seen further, it is by standing on the shoulders of giants."*

Isaac Newton

Henry Oldenburg

- Journal des Scavans (Paris) and Philosophical Transactions of the Royal Society (London)



"That it may be the more evident to you that the humanities and science are not yet banished from among us by the clash of arms, I am writing to tell you that a certain most ingenious person here, named *Leewenhoeck*, has devised microscopes which far surpass those which we have hitherto seen, manufactured by Eustachio Divini and others. The enclosed letter from him, wherein he describes certain things which he has observed more accurately than previous authors, will afford you a sample of his work : and if it please you, and you would test the skill of this most diligent man and give him encouragement, then pray send him a letter containing your suggestions, and proposing to him more difficult problems of the same kind".



PHILOSOPHICAL  
TRANSACTIONS:  
GIVING SOME  
ACCOMPT  
OF THE PRESENT  
Undertakings, Studies, and Labours  
OF THE  
INGENIOUS  
IN MANY  
CONSIDERABLE PARTS  
OF THE  
WORLD.

Vol I.

For Anno 1665, and 1666.

In the SAVOY,

Printed by T. N. for John Martyn at the Bell, a little without Temple-Bar, and James Allestry in Duck-Lane, Printers to the Royal Society.

PHILOSOPHICAL  
TRANSACTIONS  
— OF —  
THE ROYAL  
SOCIETY

B  
BIOLOGICAL SCIENCES

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volume 367

number 1597

pages 1781–1922

In this Issue

*The social network and communicative complexity in animals*

Papers of a Theme Issue organized and edited by Todd M. Freeberg, Robin I. M. Dunbar and Terry J. Ord



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5 July 2012

# Journals – questions

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- journal as an old concept from the printed world
- journals slowing down a possible development of science (?), not implementing ICT advantages and possibilities...
- ...or implementing it at very slow pace
- journals are (still) main channel of scholarly communication

# DIFFERENT FORMS OF SCHOLARLY PUBLISHING ARE EVOLVING

# Is it PDF an appropriate format?

- like a **paper printout**, but:
  - no access to higher resolution images
  - no access to the underlying data, so some of the statements can't be checked
  - no access to the algorithm to really try it out
  - no direct link to all the other papers via the references
  - often not searchable?
  - often no proper metadata
  - proprietary format

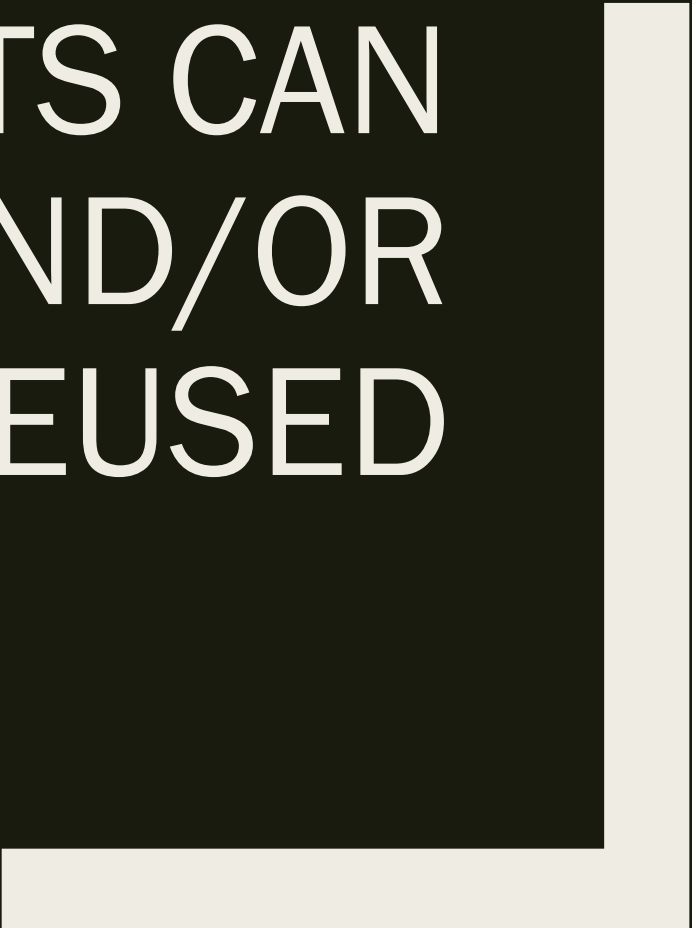


# Disfunctional scholarly publications

- **limited access**
- no global search engine, only parts can be retrieved
- no functional links (first demonstrated in 1968) leading to the description of an experiment or to underlying data
- no adaptive visualisation of data
- no standardized submission, constantly adapting to the regulations of the editorial board
- we don't know who is reading our papers (if anyone?)
- mining of text/data not possible, hard to chose what to read
- no efficient listing, filtering or discovering
- no network
- etc.

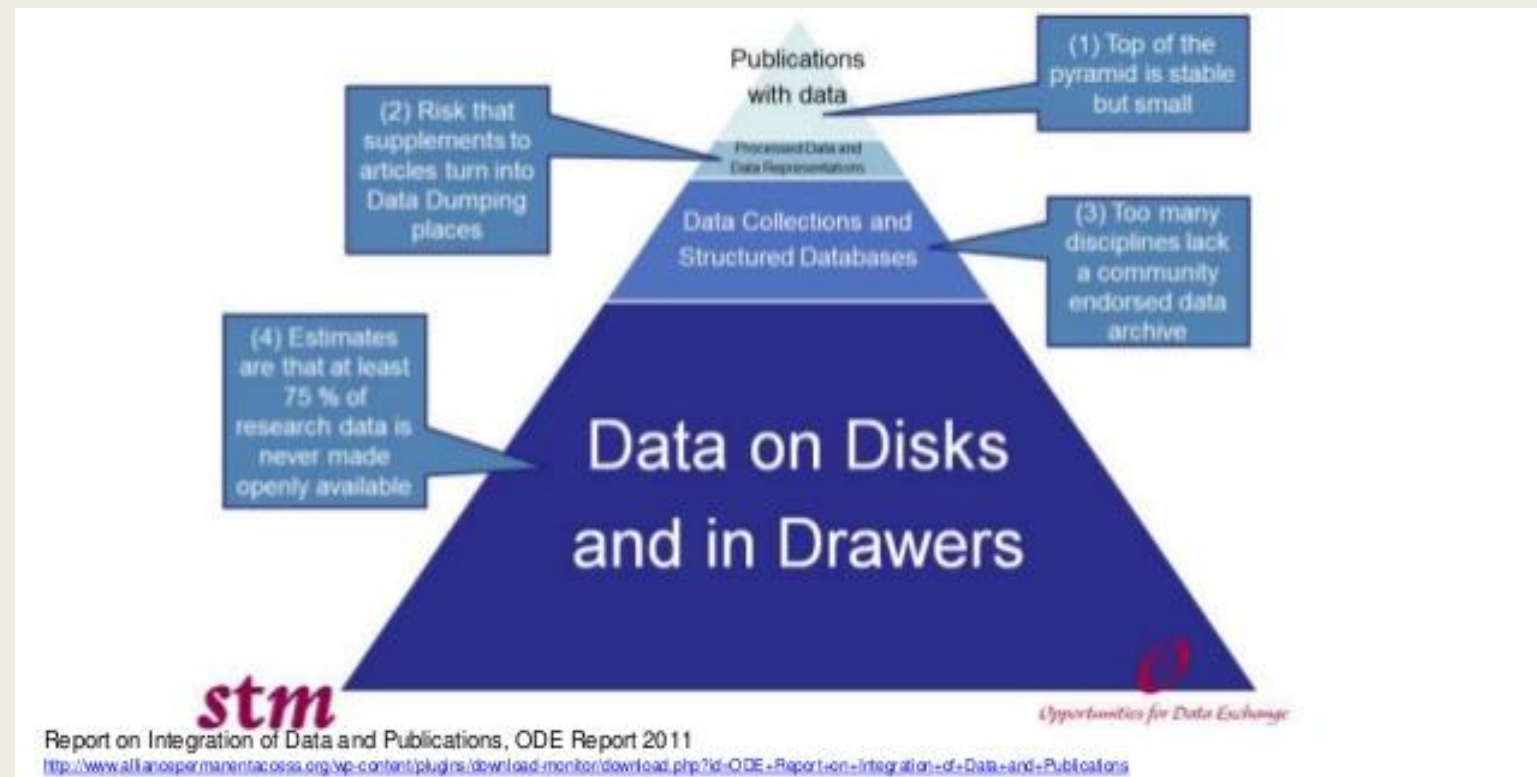


RESEARCH DATA ARE OFTEN  
ON THE DISPOSAL AND  
SHARED, SO RESULTS CAN  
BE CHECKED OUT AND/OR  
REUSED



# Research data in jeopardy

- 25% of the research data is curated in some way and accessible
- 75% of the research data is not accessible



# What could “publication” means?

- **Animation and virtual reality** – with animated graphics author can show differences between observed and model phenomena
- Author can record his/her thoughts as a part of his publication – **audio, video**
- **Datasets** – as a part of publication, or separate
- **Live mathematics** and numerical codes, 2D and 3D graphical presentations – interactivity
- **Future references, related papers**
  - *Images, interactive diagrams, video, audio*
  - *Possibly illustrated algorithms running real time on demand*
  - *Interactive control over remote program execution*
  - *Social network of related researchers*
  - *Possibly earlier versions of the paper, with commentaries*
  - *Metadata (publication date, exact references, quality verification results,...)*

# PEER REVIEW PROCESS IS MANAGED IN THE BEST POSSIBLE WAY

# Peer-review process



- evaluation of the research results in relation to the competence, significance and originality, carried out by qualified experts
- the backbone of the entire system of scientific publishing
- usually includes a review of at least two anonymous reviewers, and ideally they are well-intentioned colleagues in the narrow scientific area whose main task is to improve the paper
- in practice, the review process is very far from this concept, and stressful for the authors

# Peer review in practice



- slow
- expensive
- inconsistent (should be at least 6 reviewers per paper to obtain a statistically relevant result)
- subjective (biased)
- easy to abuse
  
- studies:
  - reviewers often do not agree with each other
  - poorly detected (deliberate) errors - 2 of 8
  - can not prevent the publication of papers containing fraud, even in the most prestigious journals such as Science and The Lancet



American Journal of  
August 9, 2012  
doi: 10.1097/M  
Retraction: PR

Ventricular  
Consider

PAP

# Early report

## Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children

A J Wakefield, S H Murch, A Anthony, J Linnell, D M Casson, M Malik, M Berelowitz, A P Dillon, M A Thomson,  
P Harvey, A Valentine, S E Davies, J A Walker-Smith

### Summary

**Background** We investigated a consecutive series of children with chronic enterocolitis and regressive developmental disorder.

**Methods** 12 children (mean age 6 years [range 3–10], 11 boys) were referred to a paediatric gastroenterology unit with a history of normal development followed by loss of acquired skills, including language, together with diarrhoea and abdominal pain. Children underwent gastroenterological, neurological, and developmental assessment and review of developmental records. Ileocolonoscopy and biopsy sampling, magnetic resonance imaging (MRI), electroencephalography (EEG), and lumbar puncture were done under sedation. Barium follow-through radiography was done where possible. Biochemical, haematological, and immunological profiles were examined.

**Findings** Onset of behavioural symptoms was associated by the parents, with measles, mumps, and rubella vaccination in eight of the 12 children, with m. infection in one child, and otitis media in another. All children had intestinal abnormalities, ranging from lymphoid nodular hyperplasia to granulomatous inflammation. Histology showed patchy chronic inflammation. In 11 children and reactive ileal lymphoid hyperplasia in seven, but no granulomas. Behavioural disorders included autism (nine), disintegrative disorder (one), and possible postviral or vaccinal encephalitis (two). There were no focal neurological abnormalities and EEG tests were normal. Abnormal laboratory results were significantly raised urinary methylmalonic acid compared with age-matched controls (mean 0.03), low haemoglobin in four children, and low serum IgA in two children.

**Interpretation** We identified associated gastrointestinal disease and developmental regression in a group of previously normal children, which was generally associated in time with possible environmental triggers.

Lancet 1998; 351: 637–41  
See Commentary page

**Inflammatory Bowel Disease Study Group, University Departments of Medicine and Histopathology** (A J Wakefield *lead*, A Anthony *lead*, J Linnell *lead*, A P Dillon *lead*, S E Davies *lead*), and the **University Departments of Paediatric Gastroenterology** (S H Murch *lead*, D M Casson *lead*, M Malik *lead*, M A Thomson *lead*, J A Walker-Smith *lead*), **Child and Adolescent Psychiatry** (M Berelowitz *lead*), **Neurology** (P Harvey *lead*), and **Radiology** (A Valentine *lead*), **Royal Free Hospital and School of Medicine, London NW3 2QG, UK**  
Correspondence to: Dr A J Wakefield

### Introduction

We saw several children who, after a period of normality, lost acquired skills, including language, together with abdominal pain, diarrhoea, and cases, food intolerance. We and gastroenterological features.

### Patients and methods

12 children, consisting of 11 boys and one girl, with developmental regression, symptoms of food intolerance, and gastroenterological features.



S. Pain, taken descending procedure was compared with paediatric colonoscopy on children with u. reported normal appearance follow-through radiography. Also under sedation, cere. (MRI), electroencephalography stem auditory, and sensory evoked, made these possible), and lumbar punct.

### Laboratory investigations

Thyroid function, serum long-chain fatty acids, cerebrospinal-fluid lactate were measured to exclude causes of childhood neurodegenerative disease. Methylmalonic acid was measured in random urine samples from eight of the 12 children and 14 age-matched and sex-matched normal controls, by a modification of a technique described previously.<sup>2</sup> Chromatograms were scanned digitally on a computer, to analyse the methylmalonic-acid zones from cases and controls. Urinary methylmalonic-acid concentrations in patients and controls were compared by a two-sample *t* test. Urinary creatinine was estimated by routine spectrophotometric assay.

Children were screened for antidiarrhoeal antibodies and boys were screened for fragile-X if this had not been done

Available online at www.sciencedirect.com  
ScienceDirect  
Journal of Business Venturing 23 (2008) 445–464

## Externally commercializing technology assets: An examination of different process stages

Ulrich Lichtenhaler\*

Technology and Innovation Management, WHU - Otto Beisheim School of Management, Burgardstr. 1, D-51365 Völklingen, Germany  
Received 1 August 2006; received in revised form 1 June 2007; accepted 1 July 2007

### Abstract

Besides applying technological knowledge in products and services by means of technology licensing. Despite its increasing managerial proficiency in managing different stages of the external technology transfer process. With the trend towards open innovation the number of success factor studies into new product development.

Keywords: External technology commercialization; Technology exploitation; Technology transfer

### 1. Executive summary

External technology exploitation is a process of commercializing technology assets in a firm's own products. It is a process of commercializing technology assets in a firm's own products. It is a process of commercializing technology assets in a firm's own products.

This paper examines the process of external technology exploitation. It is a process of commercializing technology assets in a firm's own products. It is a process of commercializing technology assets in a firm's own products. It is a process of commercializing technology assets in a firm's own products.

## Outward Cadaveric Green Medical China

Adam R. Miller,<sup>6</sup>  
Angli Wang<sup>1,9</sup>

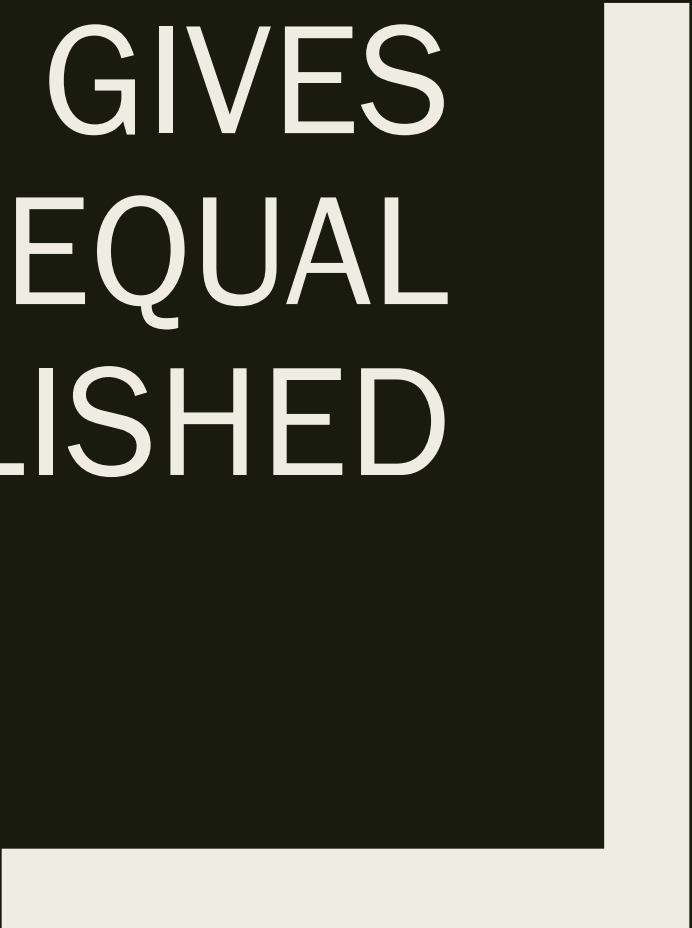
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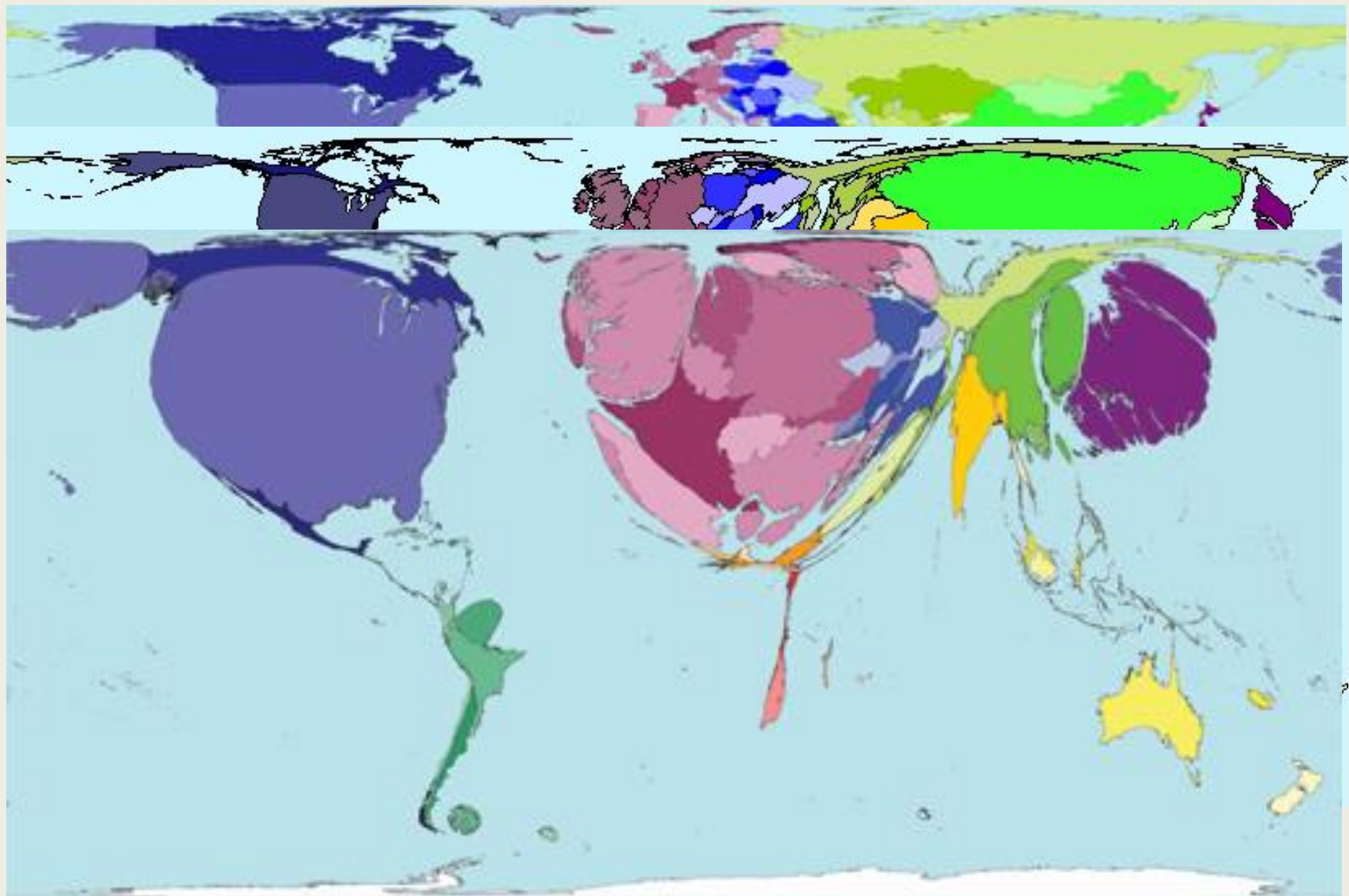
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# Peer-reviewers

- the reviewer can plead only for his vision of a research problem and/or may reject a paper with the topic of which is personally engaged;
- reviewer has usually only manuscript on disposal - **no** research data and other materials – it is very difficult to identify fraudulent, fictitious or wrongly interpreted data;
- the authors themselves suggest reviewers, choosing those who are prone to them;
- unavailable reviews can't have a positive impact on the reputation of the reviewer;
- present and questionable incentives of a reviewers to increase the chances of publishing their own papers in the same journal;
- instead of constructive criticism, sometimes insulting and destructive;

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SYSTEM IS FAIR AND GIVES  
EVERY SCIENTIST EQUAL  
CHANCE TO GET PUBLISHED

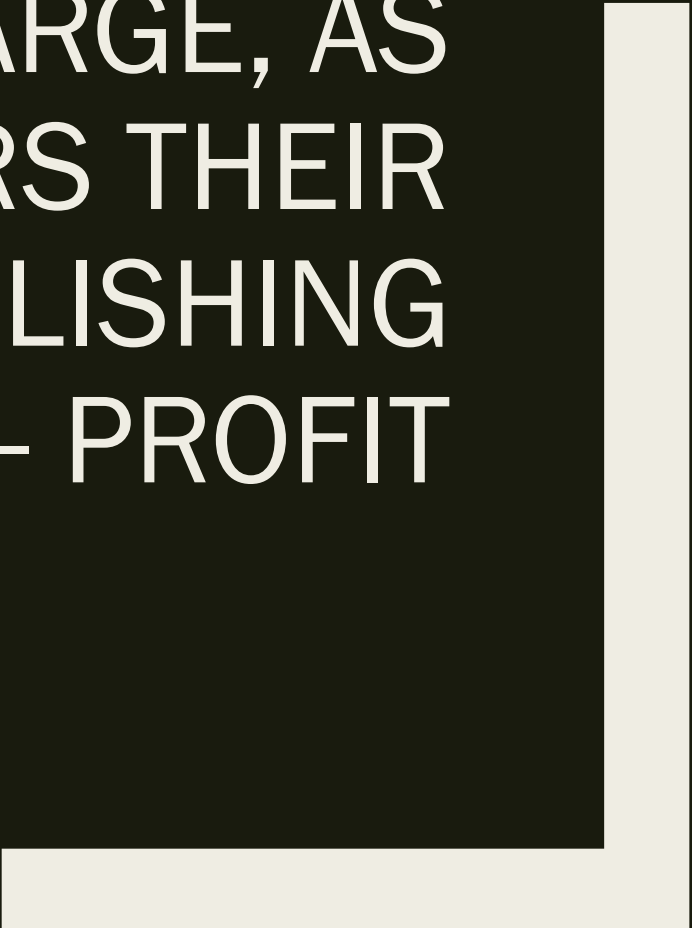




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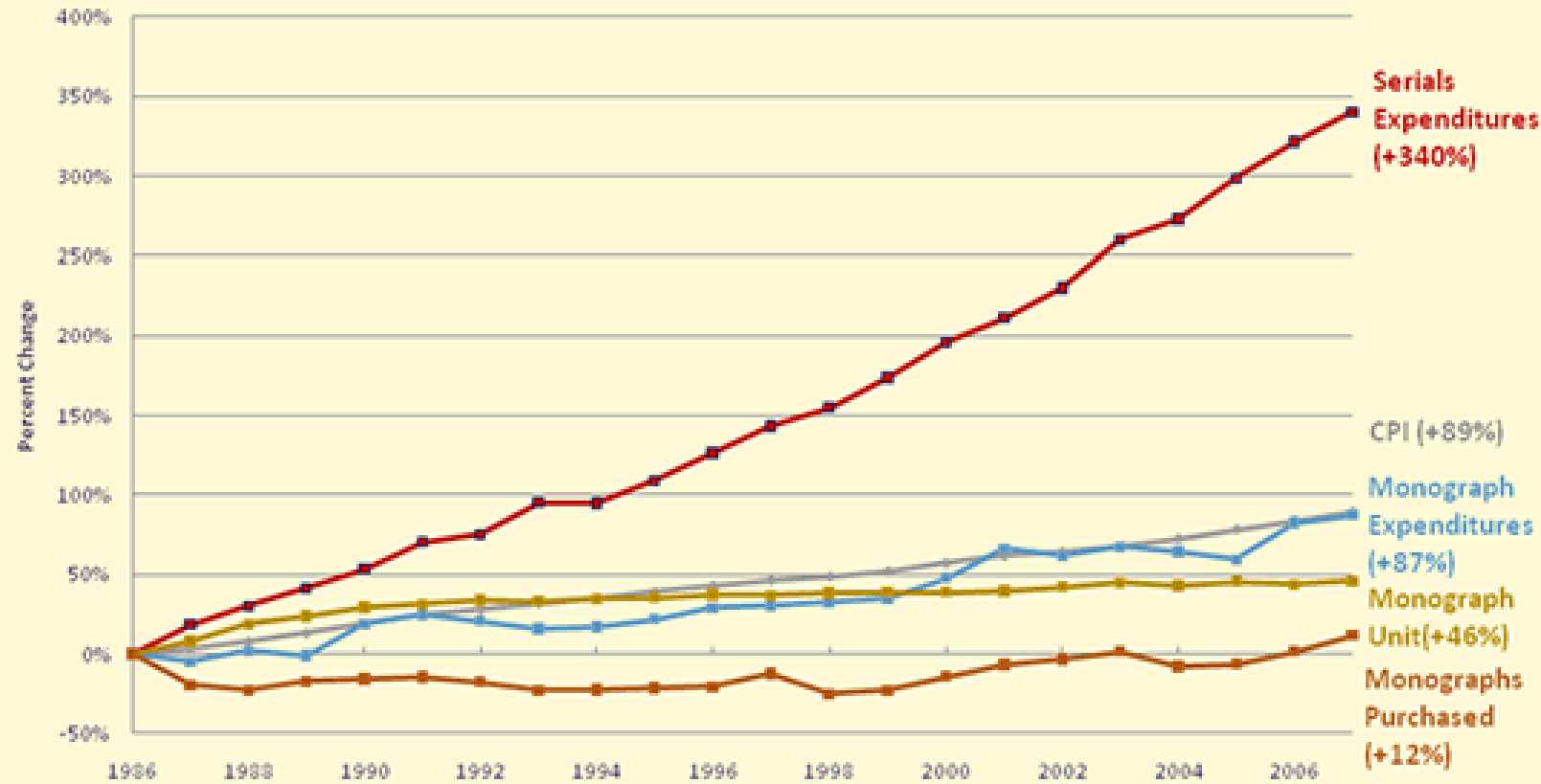
according Web of Science (2001)

SINCE RESEARCHERS ARE GIVING  
THEIR PAPERS FREE OF CHARGE, AS  
DO PEER REVIEWERS THEIR  
REVIEWS, SCHOLARLY PUBLISHING  
SYSTEM IS NOT-FOR- PROFIT



# Research Library Expenditure Trends

Monograph and Serial Expenditures  
in ARL Libraries, 1986 - 2007\*



Sources: ARL Statistics 2006-2007, Association of Research Libraries, Washington, D.C.

\* Includes electronic resources from 1999-2000 onward.



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### Article

## Synthesis of Disubstituted 1,2-Dihydro[60]fullerenes with Well-Defined Structure by Addition of 1-Alkoxy-1-chloroethanes to 2-(1-Octynyl)-1,2-dihydro[60]fulleren-1-ide Ion

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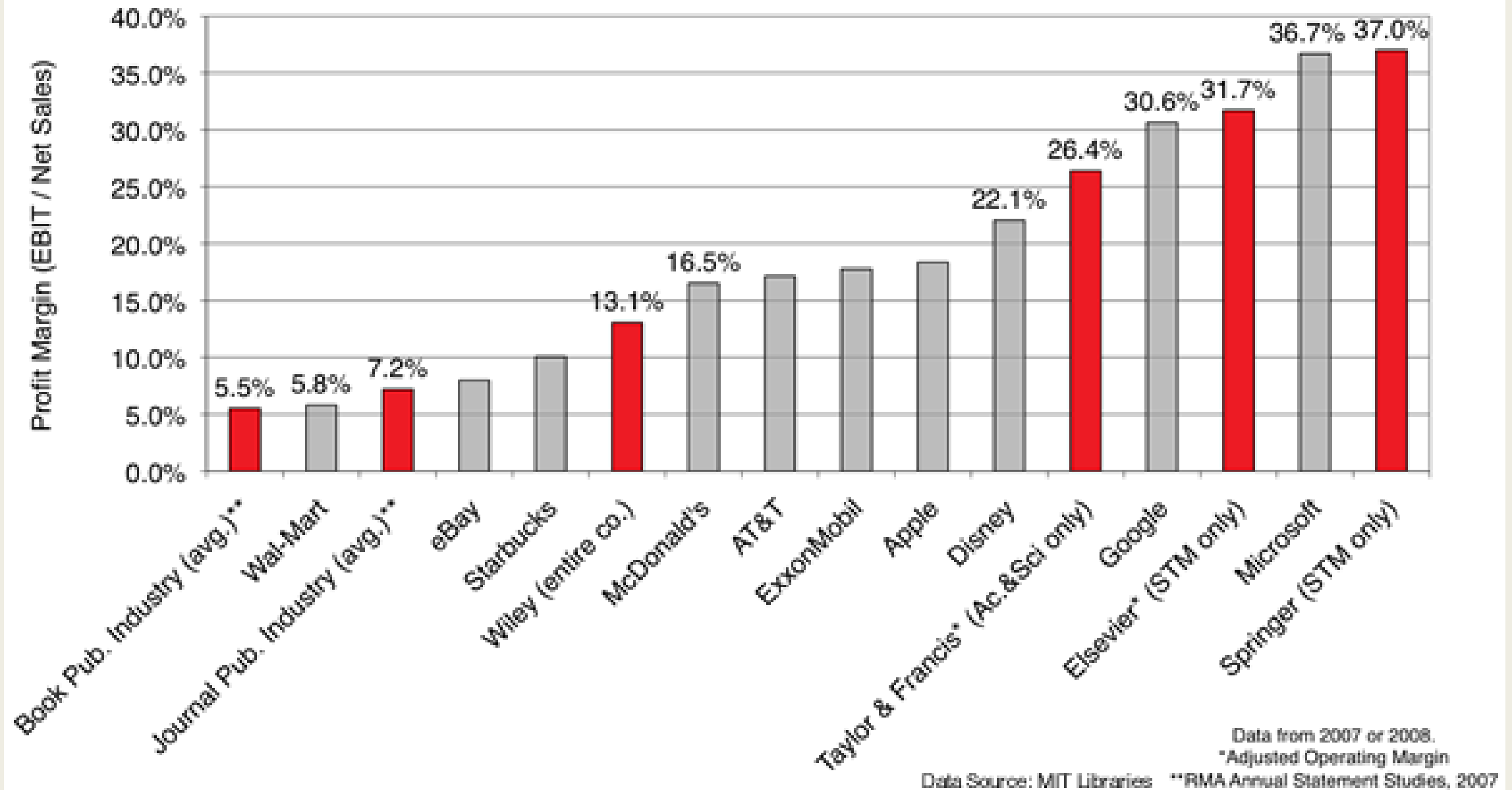
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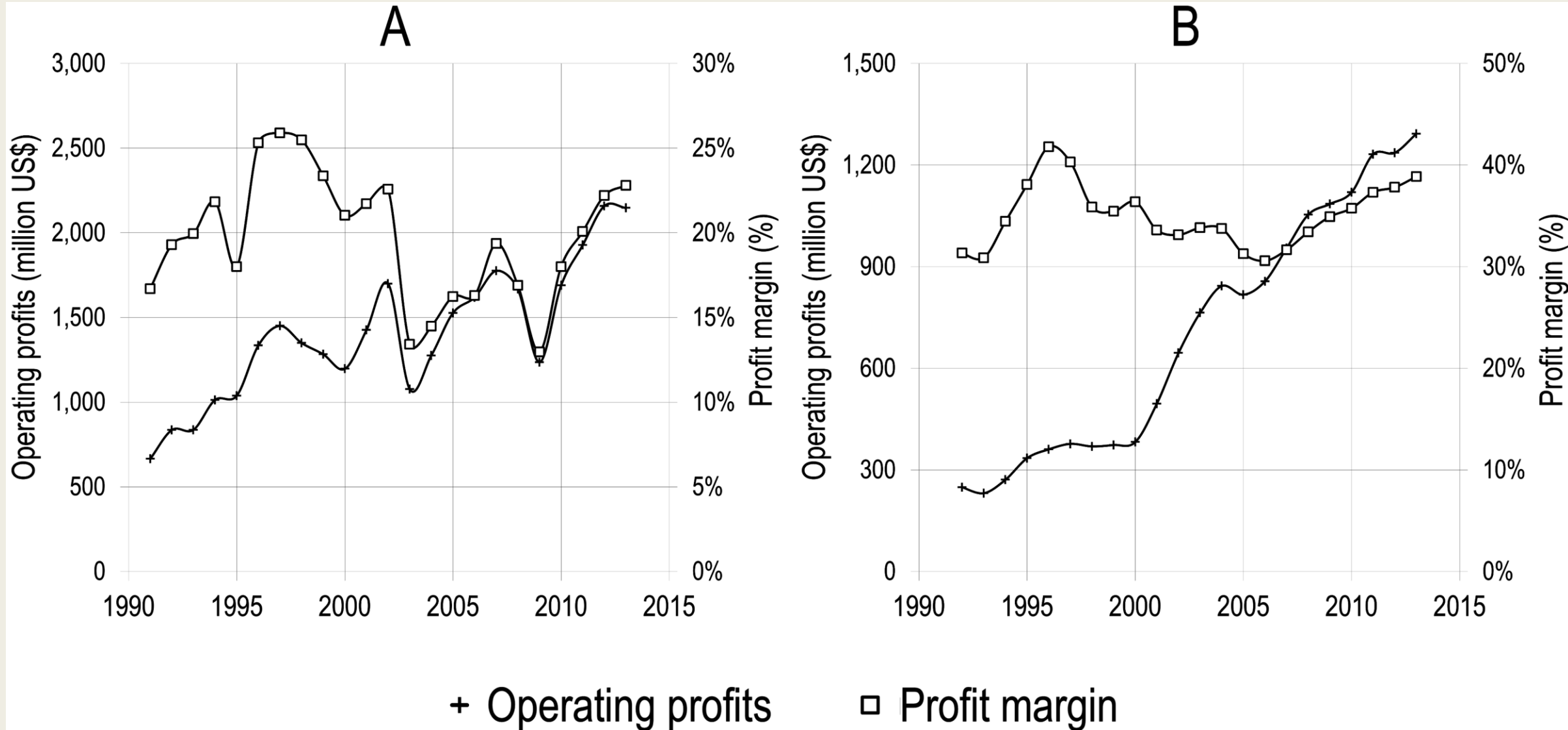
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## Profit Margins: Journal Publishers v. Other Companies



# Elsevier (A=all, B=STM)




# RESEARCHERS ARE PAID TO PUBLISH THEIR PAPERS IN JOURNALS

# Article processing charges (APC's)

<b>publisher</b>	<b># jrnls</b>	<b># full OA</b>	<b>APC (€)</b>	<b># hybrid jnls</b>	<b>APC (€)</b>
Elsevier	~2800	39	400-4000	1500	400-4000
Oxford	>250	13	~1200	>100	?
Pion	7	1	?	0	-
Sage	>700	13	~1500	>600	1150-2300
Springer	>2000	>360	1200-1800	>1500	2200
Taylor&Francis	1600	15	800-1200	700	2150
Wiley	~1500	22	1350	>1300	2300

RESEARCH PAPERS ARE  
REPRODUCIBLE AND THIS  
IS THEIR MAIN PURPOSE  
FOR CENTURIES





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Kohn's Second Law: An experiment is reproducible until another laboratory tries to repeat it.

Alexander Kohn

In Dr. N Sreedharan, *Quotations of Wit and Wisdom* (2007), 24

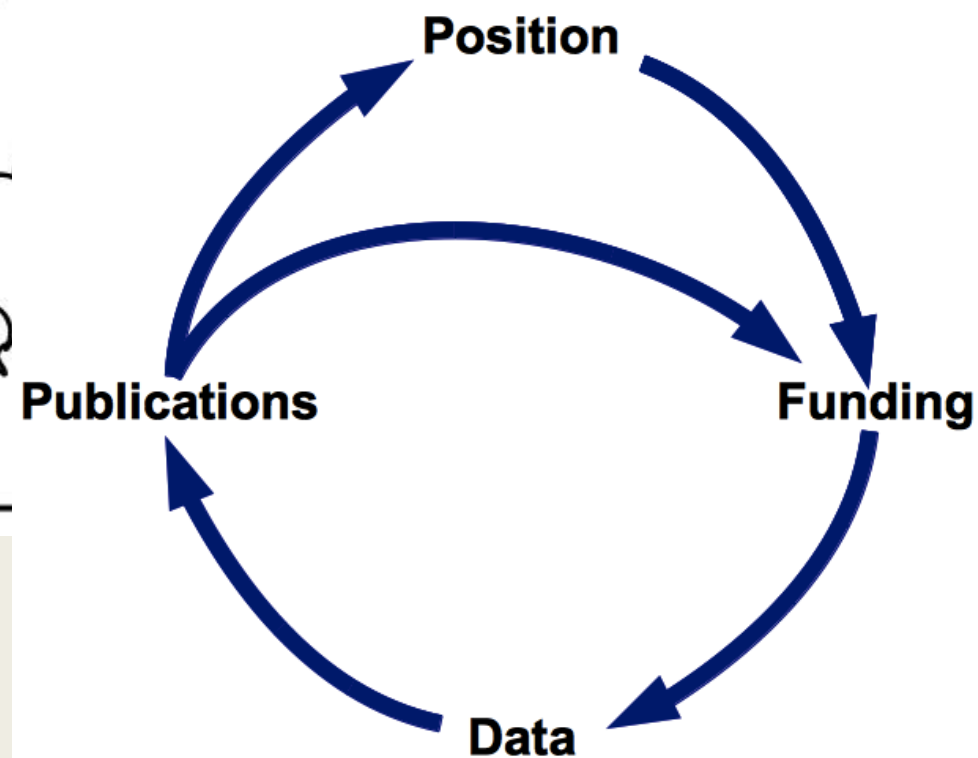
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## test

**Largest replication study to date casts doubt on many published positive results.**

▪ The **Monya Baker**

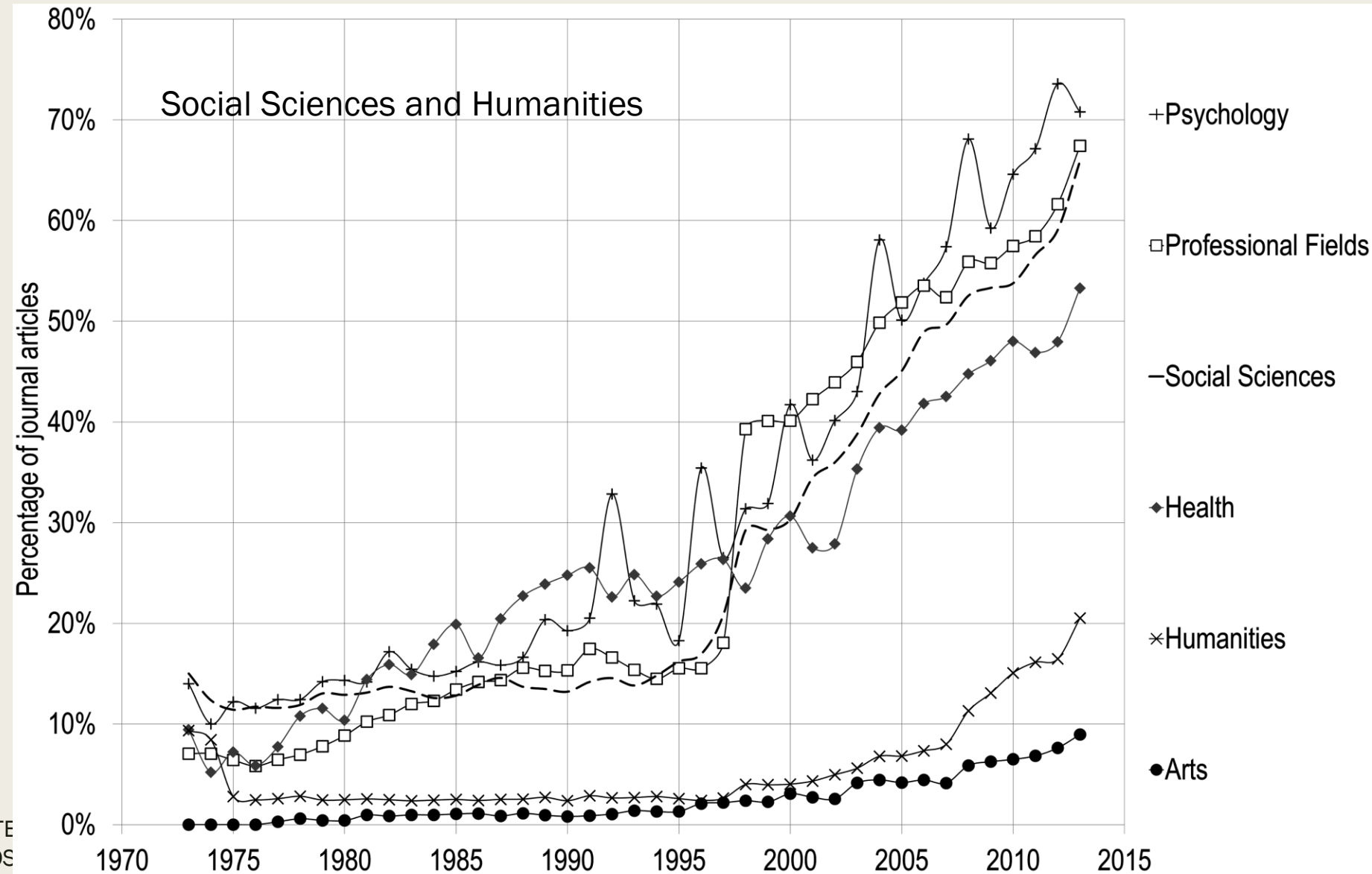
„PUBLISH OR PERISH“ OR  
„VISIBLE OR VANISHED“ OR  
„IMPACT OR PERISH“ – ARE  
JUST BUZZWORDS



# Percentage of papers published by the five major publishers

The Oligopoly of Academic Publishers in the Digital Era  
Vincent Larivière, Stefanie Haustein, Philippe Mongeon  
PLOS One, 2015

1st INTE  
PURPOS



# JIF IS A GOOD MEASURE FOR THE QUALITY OF PUBLISHED ARTICLES

# Importance of evaluation and assessment

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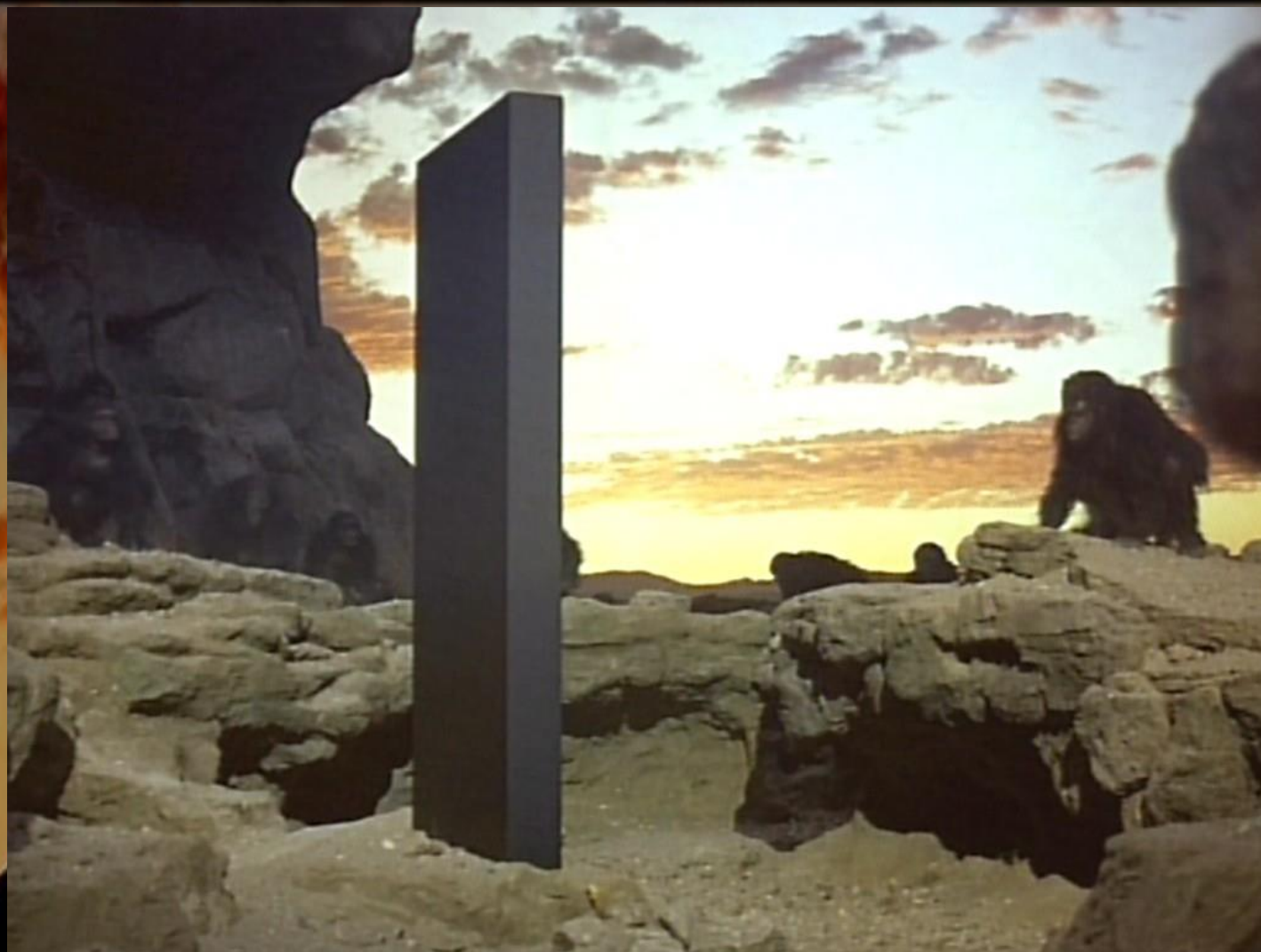
- whom to hire?
- whom to give money for the research?
- which journal is successful one?
- which channel of scholarly communication to use?
- assessment – must be **now** – based on the simple and fast available numbers
- assessing container (e.g. journal), not the content



# Rise of metrics

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- academic career
- research project assessment
- institution ranking
- funding decisions
- ...
- new situation has drawn significant criticism
  - *research integrity in jeopardy (retractions)*
  - *“salami-slicing” or redundant publishing*
  - *unequal treatment of researchers from low-cited disciplines*

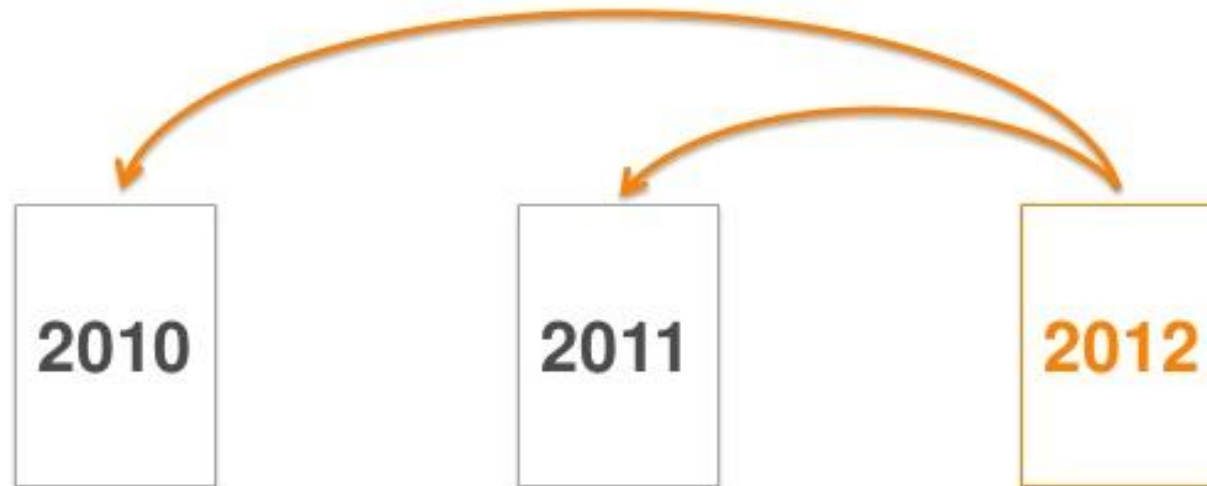


JIF

# Impact factor

*Impact factor is a mean citation count of an article in a journal*

$$IF_{2012} = \frac{\text{citation count in 2012}}{\text{number of papers from 2010 \& 2011}}$$



# CRITERIA FOR THE ADVANCEMENT IN THE CAREER ARE OBJECTIVE AND REFLECTING RESEARCHER'S QUALITY

# Academic career policies in Croatia

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- “papers must be published in journals with **JIF** above average for the specific subject category”
- “at least two-thirds of the papers must be published in the journals listed in **SCIE**”
- “paper is rated regarding ratio of the **JIF** and median of the subject category, and the minimal value must be 0.5
- “the value of the qualitative criteria  $Q$  is calculated as a sum of the ratios of **JIF** and median **JIF** of the subject category, multiplied by the factor  $F_d$  of the candidate”
- “Example: *Journal of Engineering Mechanics* in 2011 has JIF 0.99, subject category is *Engineering – Mechanical* with median JIF 0.743 ...”
- “in the **A1 category** are the papers published in journals with JIF in Q1, Q2, i Q3 of the subject category ...in the **A2 category** are papers from the journals in Q4...”
- “in the **A1 category** are the papers published in journals indexed by **Web of Knowledge**...if the **JIF** falls in the first 50% of the subject category...then the paper is counted as two papers”

# Criteria

---

- **JIF and number of papers** published in the journals indexed by *Web of Science* and/or *Scopus* database
- publications ranked in categories, depending on journal, index, publisher...(A1, A2...)
- complex formulas (lack of understanding?)
- wrong metric indicators are used to measure academic achievement at individual, project (grant) and institutional level

“JIF is not created for all the purposes that some people want to use them for. A lot of people who are using JIF are doing it for advertising purposes.”

“It is crucial to know how citations are *connected*, how they are *related*.”

[http://www.garfield.library.upenn.edu/papers/medicalwritingv8\(1\)1999.html](http://www.garfield.library.upenn.edu/papers/medicalwritingv8(1)1999.html)

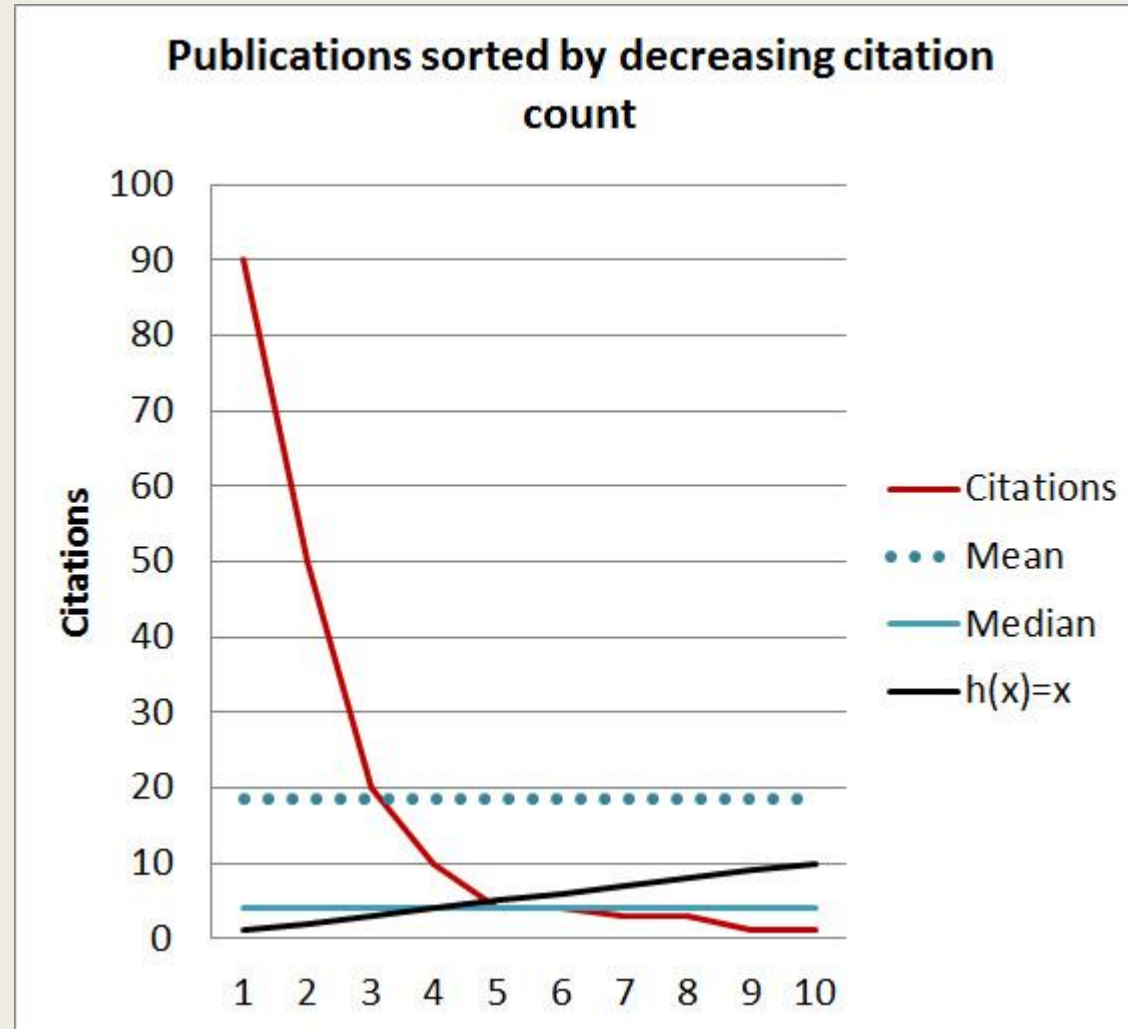


“The *real* problem is when you start using JIF as the **substitute for citation analysis** of individuals. I have always said that you should not use JIF to evaluate a person or department. If I manage to get my paper published in Nature, does that guarantee that it is a great paper? Even if the paper is never cited?”

***„Like nuclear energy, the impact factor is a mixed blessing. I expected it to be used constructively while recognizing that in the wrong hands it might be abused.”***



# Mathematically unsustainable



# Assessment (the case of Croatia)

- less and more „valued” types and categories of publications
- quantity above quality (one paper is always 1)
- to define categories, index publications are used (role, history, selection process is neglected)
- metric indicators for journals (like JIF) used to assess the value of single articles
- additional indicators – showing lack of understanding
- impact of the publication is assessed according wrapping (high JIF journals)
- new criteria not apply to already earned positions

# Citations

Are citations representing the statement „standing upon the shoulders of giants”?


- *(should we cite the crappy Gabor paper here?) and the article “Variation in Melanism and Female Preference in Proximate but Ecologically Distinct Environments”, published in Ethology (...and other examples from Retraction Watch)*

- positive and negative citations
- citations without context
- self-citations
- non-numerical aspect of citation – language, culture, time
- discriminating whole disciplines, non-English papers, authors from scientific periphery

# Possible metrics for an article

- total number of citations (Google Scholar, Scopus, WoS...) – deduplicated
  - # visits
  - # downloads
  - # comments
- # bookmarks at social networks, sharing, mentioning
  - expert's rating, grades, „likes”...
  - # discussions (blogs)
- # appearance in other media (newspapers...)

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RESEARCH RESULTS ARE  
FREELY AVAILABLE TO THE  
SOCIETY AND SUPPORT  
ECONOMICS



- only 20-30% of the published research is in open access (OA)

# CROATIAN JOURNALS ARE OF LOWER QUALITY THEN THE INTERNATIONAL JOURNALS





# Why are Croatian journals important?

- Protect excellence in locally relevant research (Leiden Manifesto);
- Development of terminology in Croatian language;
- Close editorial guidance of young researchers;
- Development of editorial and publishing skills in digital environment;
- Bridging the gap between science and application inside community;

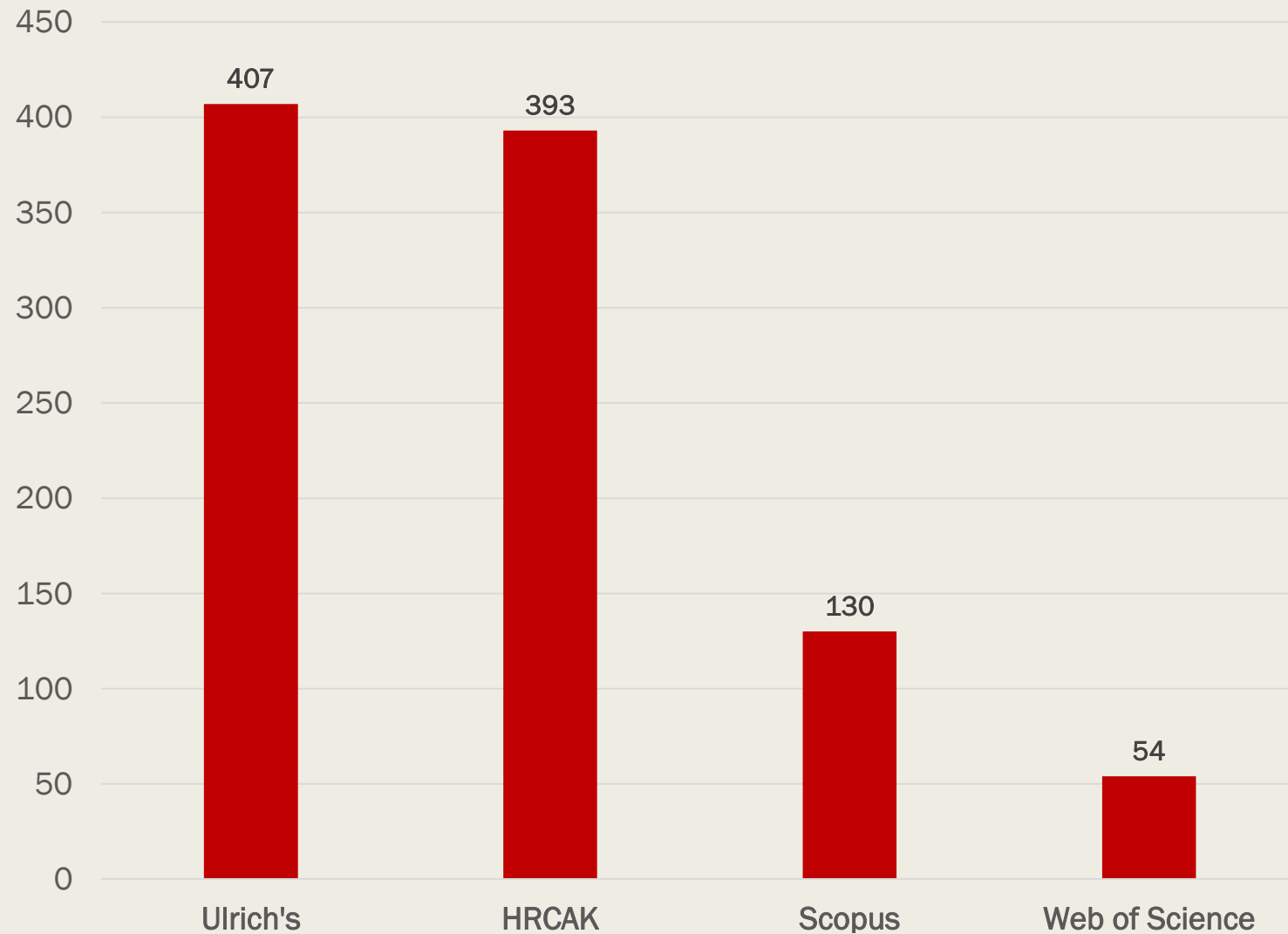


# Why are Croatian journals important?

- Benefits for the development of the research and academic culture – considering ethical issues and scientific integrity
- Building the reputation of the locally scientific community
- Development of the evaluation criteria, impact of the research is not reflected through citations only
- Lower cost of publishing concerning high Article Processing Charges (APC)
- Easy access to the research results for the community (OA)
- Content in Croatian language can be spread to a wider local community – no language barriers


# Visibility of the Croatian journals

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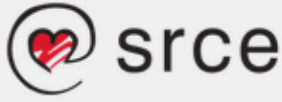




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# Criteria for inclusion?



# THE CRITERIA FOR INCLUSION OF THE POPULAR INDEX DATABASES ARE TRANSPARENT AND CARE ABOUT THE QUALITY OF THE JOURNALS



# Editorial standards

- timeliness of publishing
- international representation of members of the editorial board
  - title, abstract, keywords in English
  - Peer-review

# Journal content

- whether journal will contribute to the existing collection of journals within a specific area?
- whether the discipline of the journal has already been well covered?
- the journal compared to other journals in the discipline?

# International representation

- do authors, members of the editorial board, members of advisory bodies and others represent institutional, national, regional or international community?
  - will readers be international?

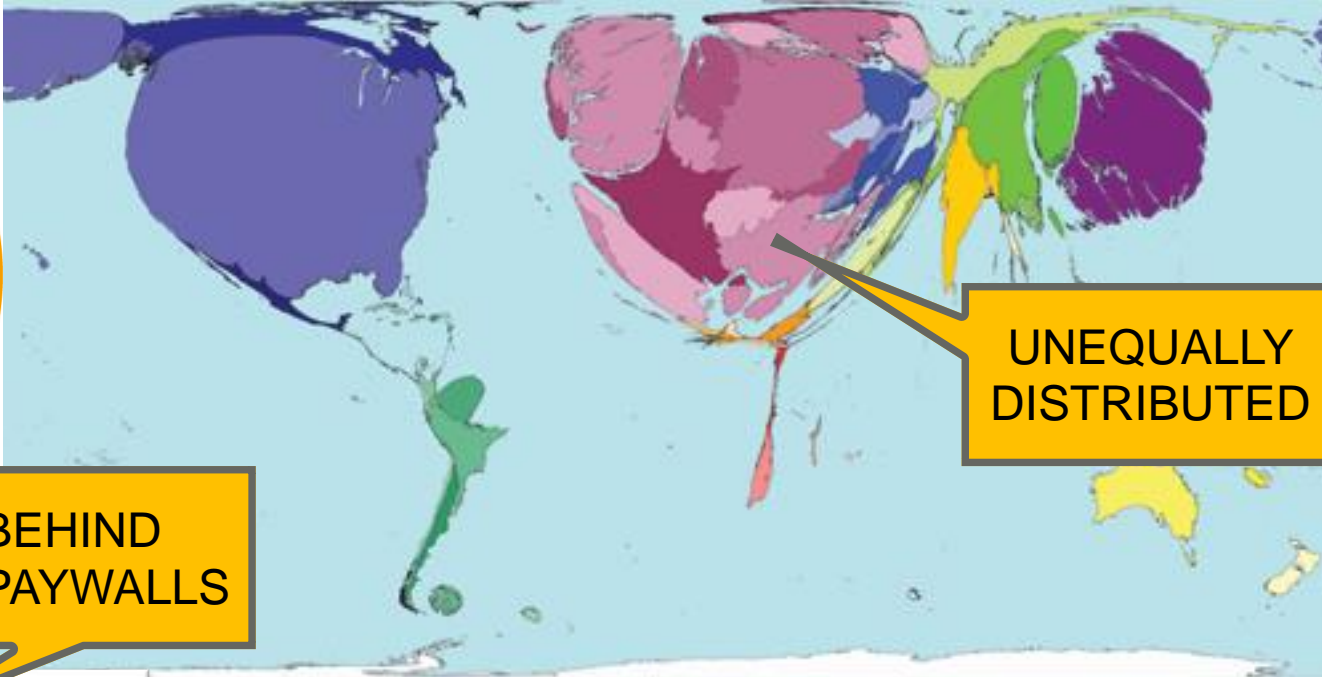
# Citations

- new journals
- looking at the citations of authors, editors ...
- old journals
- JIF, citation analysis



ASSESSMENT –  
INADEQUATE  
INDICATORS

BEHIND  
PAYWALLS



UNEQUALLY  
DISTRIBUTED

INAPPROPRIATELY  
DELIVERED

## Mutational dynamics and phylogenetic utility of noncoding chloroplast DNA

Thomas Borsch · Dietmar Quandt

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**Abstract** Introns and spacers are a rich and well-appreciated information source for evolutionary studies in plants. Compared to coding sequences, the mutational dynamics of introns and spacers is very different, involving frequent microstructural changes in addition to substitutions of individual nucleotides. An understanding of the biology of sequence change is required for correct application of molecular characters in phylogenetic analyses, including homology assessment, alignment coding, and tree inference. The widely used term “indel” is very general, and different kinds of microstructural mutations, such as simple sequence repeats, short tandem repeats, homonucleotide repeats, inversions, inverted repeats, and deletions, need to be distinguished. Noncoding DNA has been indispensable for analyses at the species level because coding sequences usually do not offer sufficient variability. A variety of introns and spacers has been successfully applied for phylogeny inference at deeper levels (major lineages of angiosperms and land plants) in past years, and phylogenetic structure *R* in intron and spacer data sets usually outperforms that of coding-sequence data sets. In order to fully utilize their potential, the molecular evolution and applicability of the most important noncoding markers (the *trnT-trnF* region comprising two spacers and a group I

intron; the *trnS-G* region comprising one spacer and a group II intron in *trnG*; the group II introns in *petD*, *rpl16*, *rpl16*, and *trnK*; and the *atpB-rbcL* and *psbA-trnG* spacers) are reviewed. The study argues for the use of noncoding DNA in a spectrum of applications from deep-level phylogenetics to speciation studies and barcoding, and aims at outlining molecular evolutionary principles needed for effective analysis.

**Keywords** Spacers · Introns · Phylogenetic structure *R* · Molecular evolution · SSRs · Inversions · Mutational hotspots · DNA barcoding

### Introduction

The application of noncoding chloroplast DNA sequence data in plant molecular systematics has been steadily increasing over the last decade. Sequencing of rapidly evolving spacers and introns was initially proposed for unravelling evolutionary patterns among closely related species (Taberlet et al. 1991; Manen and Natali 1995). The idea was to use universal amplification primers that anneal to conserved genes and thereby span more variable spacers and introns. At about the same time, pronounced differences in mutational dynamics and consequently in levels of variability between coding and noncoding plastid regions were pointed out by Morton and Clegg (1993), Clegg et al. (1994), and others. As compared to coding genes, the sequences of introns and spacers are functionally less constrained. This, however, describes average sequence conservation. Introns in particular possess a well-conserved secondary structure that leads to a mosaic of highly conserved and extremely variable parts (Cech 1988; Michel et al. 1989; Cech et al. 1994; Kelchner 2002; Borsch et al.

T. Borsch (✉)  
Botanischer Garten und Botanisches Museum Berlin-Dahlem  
und Institut für Biologie/Botanik, Freie Universität Berlin,  
Königin-Luise Str. 6-8, 14195 Berlin, Germany  
e-mail: t.borsch@bgbm.org

D. Quandt (✉)  
Neos-Institut für Biodiversität der Pflanzen, Universität Bonn,  
Meckenheimer Allee 170, 53115 Bonn, Germany  
e-mail: quandt@uni-bonn.de

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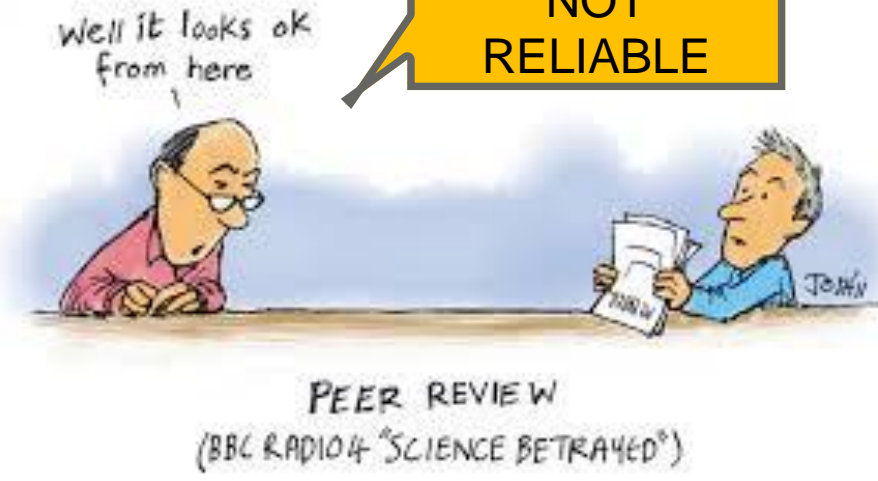
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### Severe fever with thrombocytopenia syndrome, an emerging tick-borne zoonosis

Quan Liu PhD a b, Bao He PhD b, Si-Yang Huang PhD a, Feng Wei PhD c, Prof Xing-Zhan Zhu PhD a

#### Summary

Severe fever with thrombocytopenia syndrome (SFTS) is an emerging haemorrhagic fever that was first described in rural areas of China. The causative agent, SFTS virus (SFTSV), is a novel phlebovirus in the Bunyaviridae family. Since the first report in 2010, SFTS has been found in 11 provinces of China, with about 2500 reported cases, and an average case-fatality rate of 7-3%. The disease was also reported in Japan and Korea in 2012; Heartland virus, another phlebovirus genetically closely related to SFTSV, was isolated from two patients in the USA. The disease has become a substantial risk to public health, not only in China, but also in other parts of the world. The virus could undergo rapid evolution by gene mutation, reassortment, and homologous recombination in tick vectors and vertebrate reservoir hosts. No specific treatment of SFTS is available, and avoiding tick bites is an important measure to prevent the infection and transmission of SFTSV. This Review provides information on the molecular characteristics and ecology of this emerging tick-borne virus and describes the epidemiology, clinical signs, pathogenesis, diagnosis, treatment, and prevention of human infection with SFTSV.

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*Isaac Newton in a letter to Robert Hooke,  
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