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Inside science and innovation policy research: the researcher in the quality assessment game

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The next 30 minutes:

1. A bit of the history behind research quality assessment, the peer review, ISI, citations, bibliometrics
2. Some empirical knowledge on researchers views
3. Recent challenges to research evaluation – new policy demands (accountability, commitment to economic growths, cross disciplinarity, mode 2 science...)
4. Conclusion and discussion



Starting point: the peer review:

- The system developed to select scientific results for publication (1665 and forward)
- Required entry point for journal (and book) publication
- Introduced as core selecting system for funding of research for 100+ years,
- Taken for granted as THE EVALUATION SYSTEM by researchers, politicians and the public since the 1970s



Robert Merton: the norms guiding scientists behind the Peer Review System –the structure of authority in science; stated by

- **The ethos of science:** C(ommunism), U(niversalism), D(interestness, O rganized), S(cepticism) - secured by peer review:
- Errors of judgment, of course, occur. But the system of monitoring scientific work before it enters into the archives of science means that much of the time scientists can build upon the work of others with a degree of warranted confidence. It is in this sense that the structure of authority in science, in which the referee system occupies a central place, provides an institutional basis for the comparative reliability and accumulation of knowledge. (Merton and Zuckerman 1973)



Evaluating the peer review system:

Plus:

- Identify quality
- Promote new knowledge
- Reduce risk/fraud
- Sustain/build reputation
- Support the traditional disciplines
- Risk management
- Flexibility in assessing

Minus:

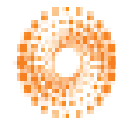
- Bias
- Conservatism/looking back
- Incompetence/inadequacy
- Lack of transparency
- Interdisciplinarity?
- Restricted to written documentation
- Time consuming



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BIBLIOMETRICS instead of Peer Review?

Collecting and processing bibliographic data; author information (citations), journal information (rankings), network analysis processed by two commercial companies.



THOMSON REUTERS

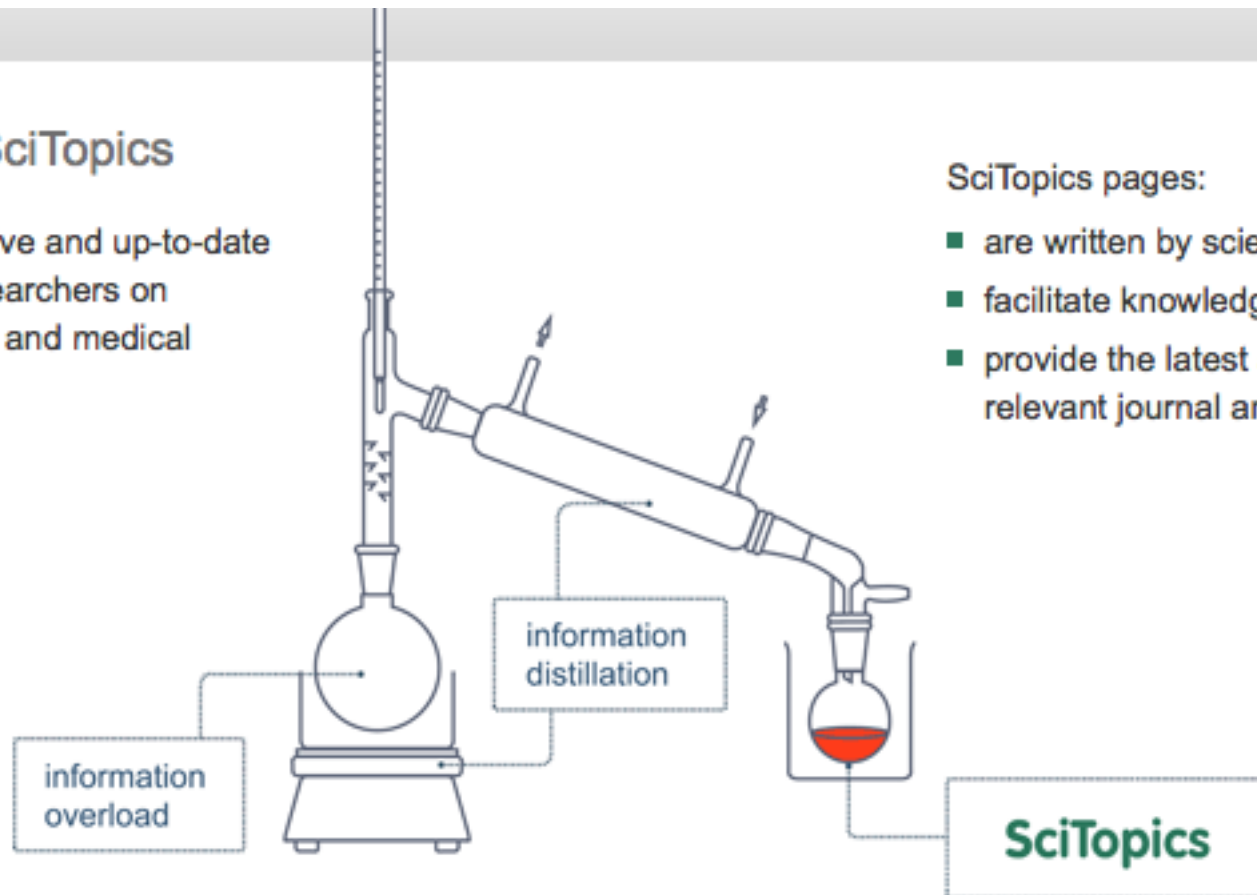


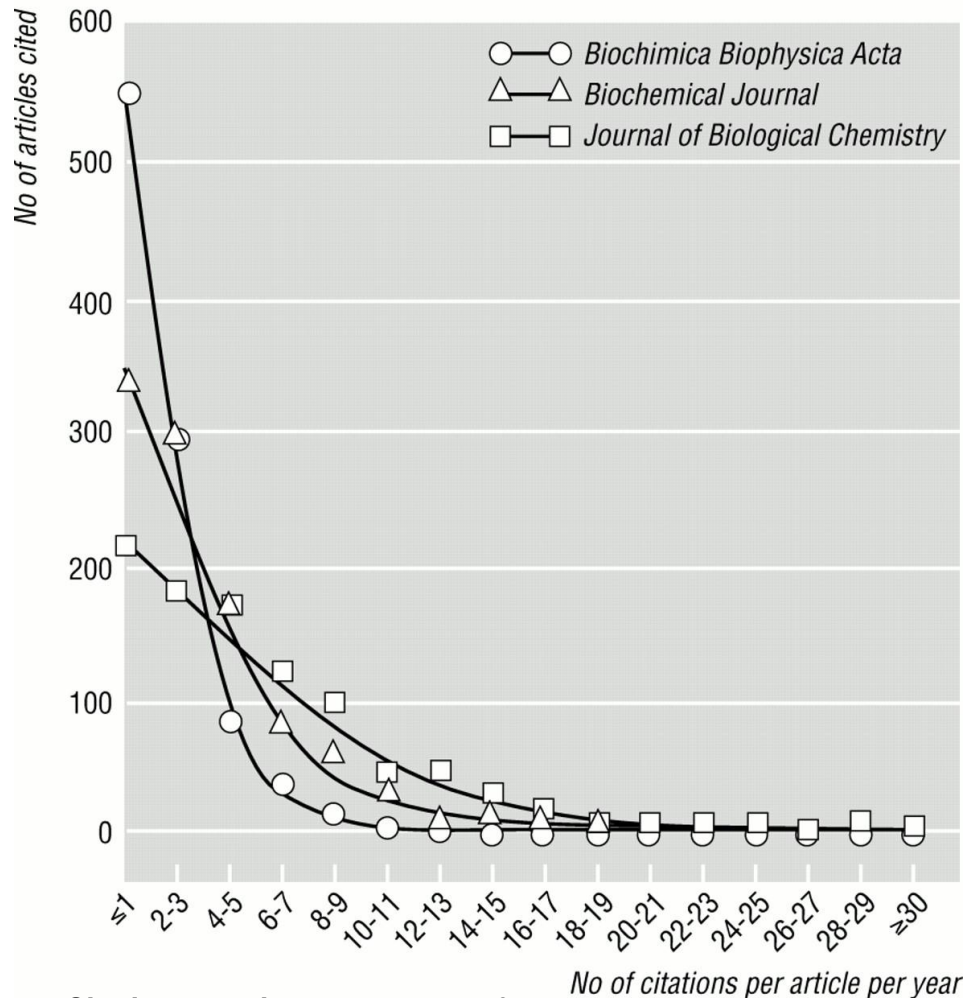
SciTopics

Active and up-to-date
researchers on
biological and medical

SciTopics pages:

- are written by scientists
- facilitate knowledge
- provide the latest articles from relevant journals and

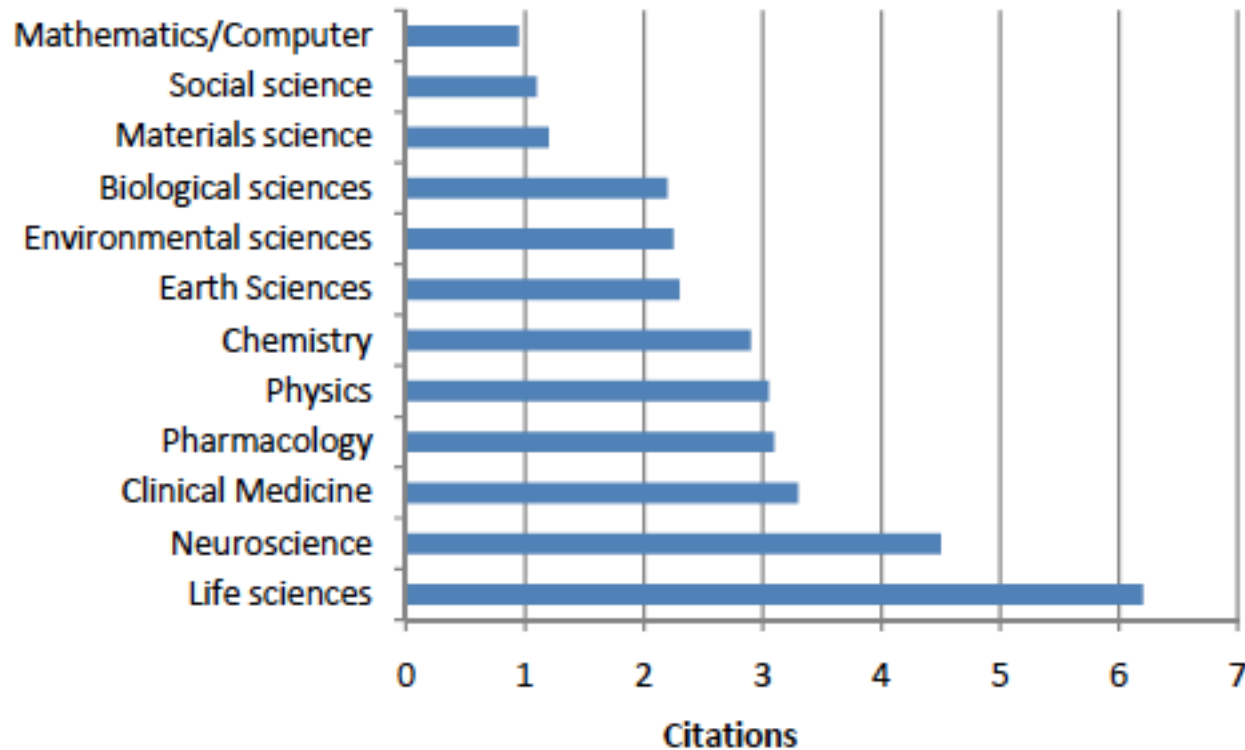




Seglen, P. O BMJ 1997;314:497 Citation rates in 1986 or 1987 of articles published in three biochemical journals in 1983 or 1984.



Average citations per article



Average citations per article for different disciplines, showing that citation practices differ markedly. Data from Thomson Scientific [Amin-Mabe 2000].



Mapping economics

The mapping of excellence in economics research highlighted some of the problems and successes that had been encountered in other parts of the pilot.

However the **bibliometric approach** chosen did not reveal to new, **upcoming units**.....

In fact, several economists had raised their concern that **only mainstream economic research was to be detected by a bibliometric analysis** using pre-defined sub-fields and **the heterodox thought would be left out**. It was acknowledged that the findings of the mapping exercise in economics had been largely consistent with other studies.



Many citations = high ranking journals = high quality papers?

Starbuck: Although higher-prestige journals publish more high value articles, editorial selection involves considerable randomness. Highly prestigious journals publish quite a few low-value articles, low-prestige journals publish some excellent articles, and excellent manuscripts may receive successive rejections from several journals..

Gans ` & Shepherd: How Are the Mighty Fallen.

David Hamilton: Political science, antropology, sociology, business – all have between 60 and 80% UNCITED papers (in the ISI database)



The assumed positive side of metric based research assessments:

Most European countries have implemented some kind of performance assesment in budgetting for research and as tools for science policy because:

- Better governance of research
- Incentives to better performance
- Transparency and efficiency in ressource allocation
- Securing and encouraging research quality
- Accountability (value for money)
- Cost reducing assessment



The negative side of relying on assessment systems - from literature reviews

- Block innovative and risky research, decrease diversity and experimentation in research
- Encourages 'publication inflation' (e.g., 'salami publishing') and 'game playing' (e.g., with indicators, self citation, citation clubs)
- The logic is 'looking good' rather than necessarily doing better
- Encourage traditional 'academic' research at expense of research linked to society's needs, cross disciplinary research, risk taking.
- Separate research from teaching (downplay teaching)
- Rewards past performance not current or future potential reinforce research elite (Matthew effect)

- (Martin and Genua 2003)



(85%) for the idea that peer review provides control in scientific communication.

Disagree Agree

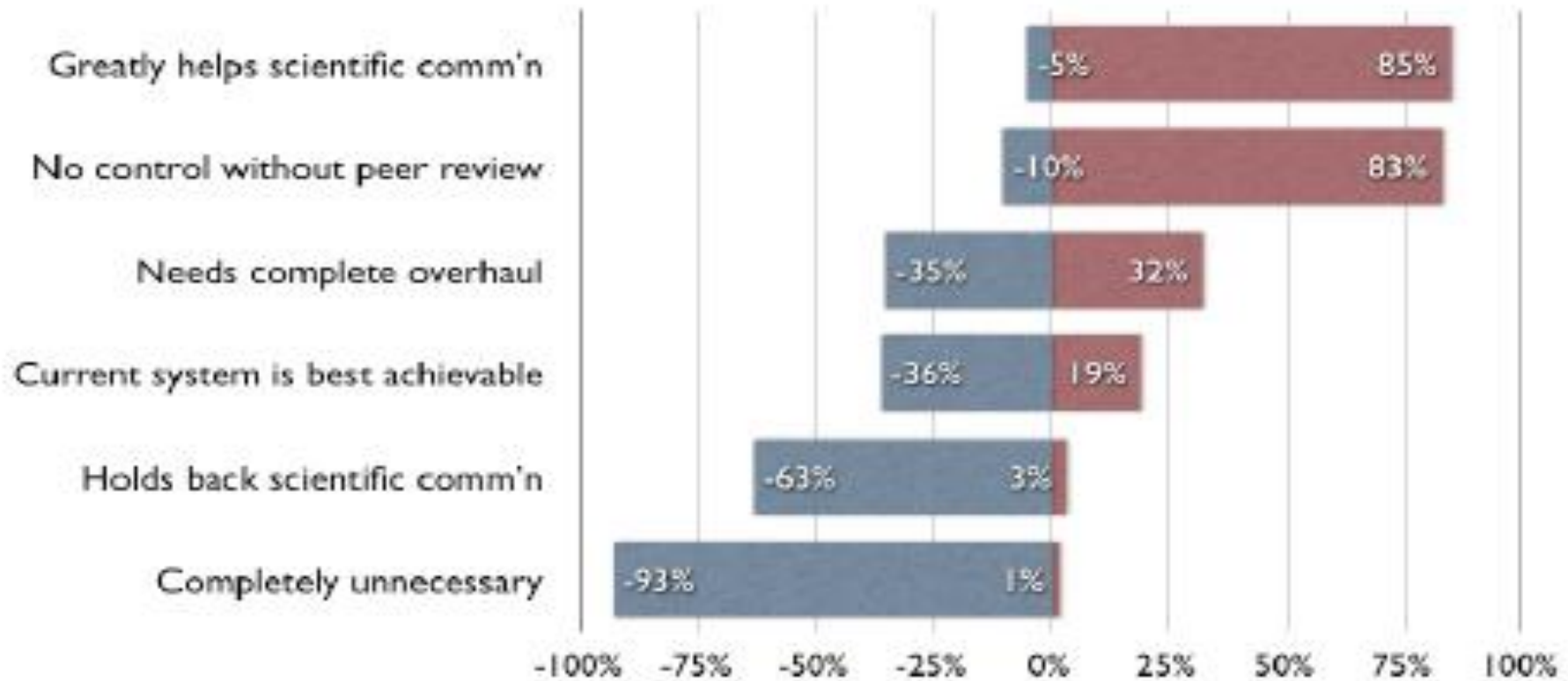


Figure 9: views on peer review



The Peer Review Survey 2009

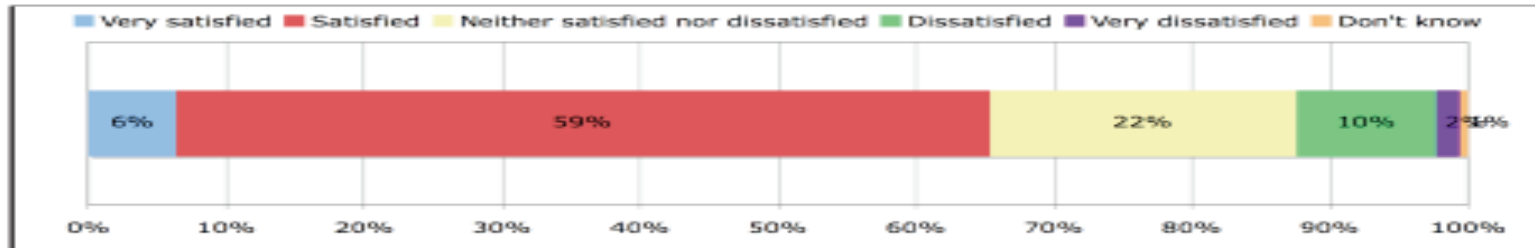
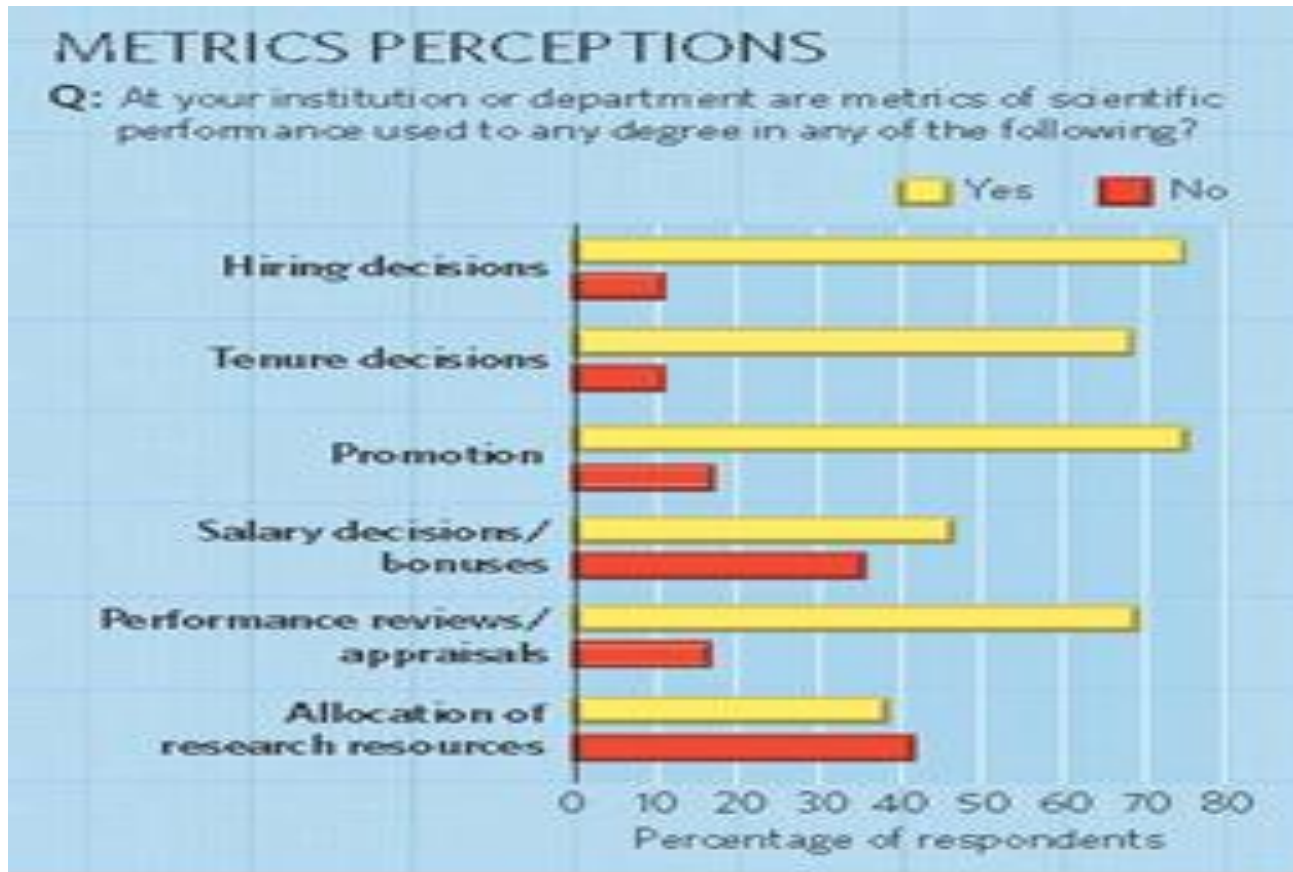


Figure 8: Overall satisfaction with the peer review system used by scholarly journals

- 84% believe that without peer review there would be no control in scientific communication,
- 91% say that their last paper was improved through peer review
- While 43% of respondents thought peer review was too slow, 65% of authors (a further sub-group) reported that they had received a decision on their most recent paper within 3 months.
- Papers aren't recognising previous work: 81% think peer review should ensure previous research is acknowledged;
- Reviewers want anonymity: 58% would be less likely to review if their signed report was published
- Detecting plagiarism and fraud might be a noble aim but is not practical.
- <http://www.senseaboutscience.org.uk/index.php/site/project/395>

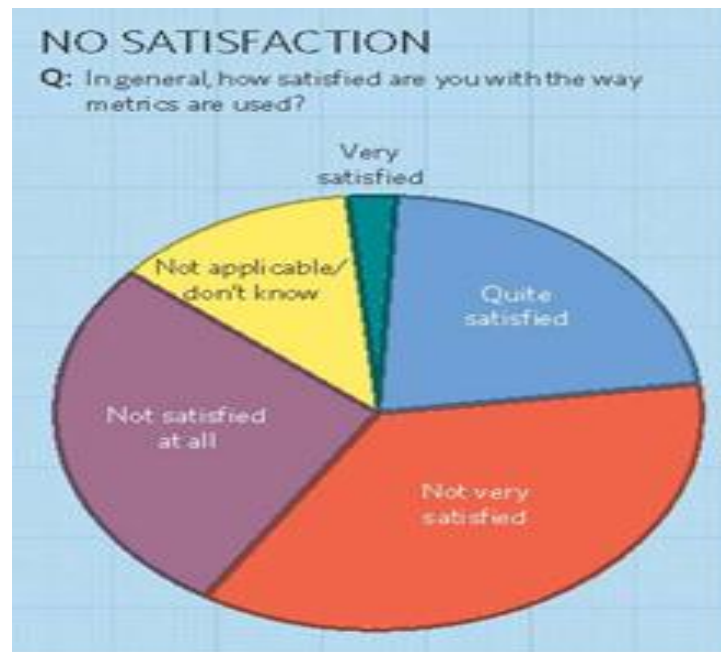


Researcher perception of the use of metrics





Researcher satisfaction with the use of metrics





Impact on researchers and research organizations:

- The classic peer review: gave researchers a feeling of self-governance; you could to some degree select when to be evaluated (submitting articles, job and funding application),
- With institutional and policy uses of assessment systems, it is no longer a question of individual decision making.
- Large evaluation systems with peer reviews and/or bibliometrics evaluate departments, institutions as well as individuals, creating a foreseeable culture of adaption to the new systems
- The career of the individual researcher depends on individual and institutional evaluation results, hence learning to play the system is a matter of survival.



Challenges to the research assessment systems (peer review/bibliometrics):

- New public management policy framework for research, demands focus on accountability and 'value for money',
- More and more cross- and transdisciplinary research (*discussed as Triple Helix, Mode 1 and 2 research*), is demanded,
- More and more fluid or time based project based or intermediate research organizations,
- Demands for dissemination/communication of research as part of the research quality.
- Demands for demonstration of societal impact (REF/UK)



Summing up challenges to the peer review, reviewers and metrics/bibliometrics:

- Disciplinary vs. cross/transdisciplinary fields
- Temporary project organizations vs. stable departments
- Classic science criteria vs. relevance and policy defined criteria
- Consequences when universities incorporate the new collaboration strategies
- Social robust knowledge, application in society
- Communication of research
- Risk, uncertainty as part of the research,
- Constructing trust to expert knowledge



Some critical consequences for governance in science

- tendencies toward risk reduction behaviour by scientists, with a subsequent reduction in the production of new knowledge;
- tendencies to stay inside well-defined or with the effect of narrowing horizons to traditional disciplines instead of encouraging transdisciplinarity;
- tendencies to establish a strong relation between productivity and expenses and foster 'budget thinking' behaviour in organizations and among individual researchers;
- tendencies to 'downgrade' the kinds of specialized knowledge in the research organization like 'craftsmanship', which are not so easily measured.



Alternative?

Looking for ‘quality’ in production of new knowledge

Lessons from recent studies of knowledge based private organizations - should we look at dimensions such as:

Belief, commitment and tacit knowledge

Social capital

Social networks, connections

Role of the collective

From Nonaka, Nahapiel and Ghoshal, Burt, Bozeman.



New roles for the peer review system

- From the distant and anonymous system to a new modified:
- Modified peer review model who integrate verbal communication, self evaluation reports, research documents, site visits and interviews
- No longer anonymous reviewers but participatory or dialogue models for research assessment,
- The evaluation takes shape of a formative evaluation,
- The formative peer review is used more and more by science policy organizations and agencies but our knowledge of how it influences the classic peer review is limited
- Relying on processes and organizing instead on control of performance



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