

Great Debates – GDB4 ECS

Rewards and recognition in science: what value should we place on contributions that cannot be easily measured

Should we place a value on unmeasurable values?



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Presentation and video available online: <http://www.itia.ntua.gr/1945/>

My thesis in brief (and in part...)

- What can be measured (publications, citations and other bibliometrics) let it be measured.
- ...
- We do not need to assign numbers to the unmeasurable—in particular to the dedication and commitment to community work.
 - Experience from counting such services indicates that the results may be opposite to expectations.
- Metrics can serve as thresholds and shortlisting criteria.
 - They are not sufficient to support final decisions, which should move away from the “audit culture”.
- ...
- ...

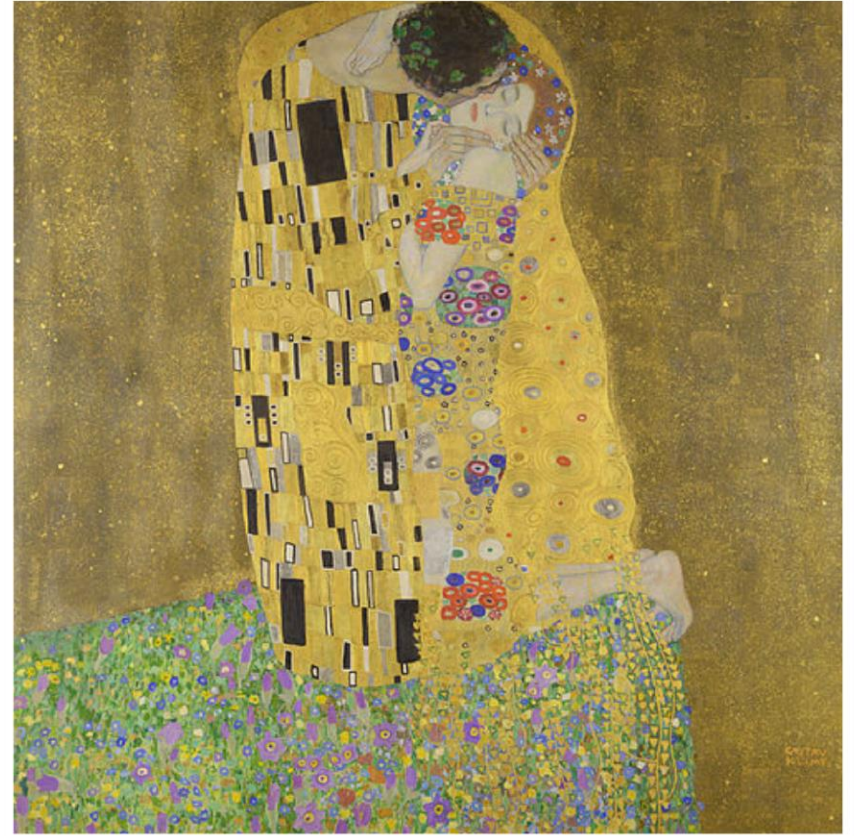
Two important things in life

money



The Money Changers, Marinus van Reymerswaele (or follower; 1548; Bilbao Fine Arts Museum)

LOVE



The Kiss (Lovers), Gustav Klimt 1907–1908 (Österreichische Galerie Belvedere, Vienna)

The radical difference of money and love as perceived from their definitions

*“The word ‘**money**’, as used in economics, has two quite distinct meanings.*

*[...] [1] a **unit of measurement**, denoting the value in exchange of all **goods and services**.*

[...] [2] a means of payment and, as such, money is also a medium of exchange.”

Pierce and Tysome (2014)

*“I define **love** thus: The will to extend one's self for the purpose of nurturing one's own or another's **spiritual growth**.”*

Peck (2002)

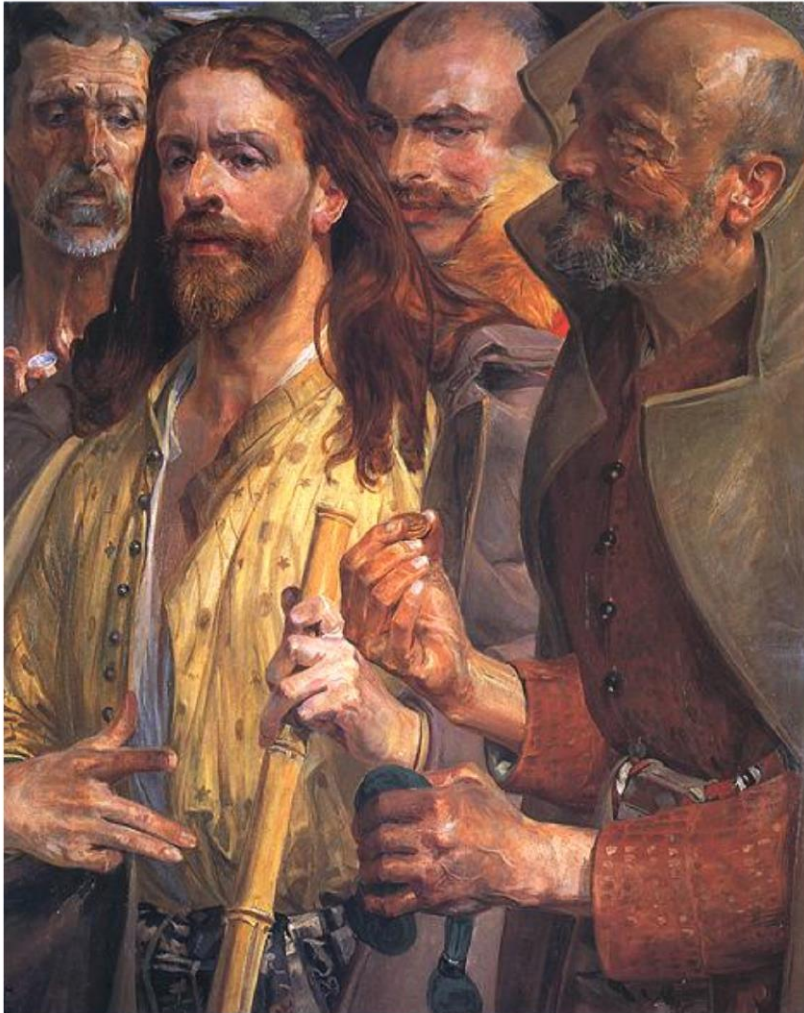
Similarities: Both have a social content—not a physical one. Both depend on credit. Both contribute to happiness.

Mixing up the two may be tricky—even meaningless



Love of money - Love for money - Money for love

Monetary (measurable) vs. unmeasurable values: An old dilemma and an old advice...



*“Render unto Caesar the things
that are Caesar's, and unto God
the things that are God's”*

*(Ἀπόδοτε οὖν τὰ Καίσαρος
Καίσαρι καὶ τὰ τοῦ Θεοῦ τῷ Θεῷ).*

[Matthew 22:21]

The Tribute Money (aka Render unto Caesar; triptych
middle; 1908), Jacek Malczewski

Modern ethics: Welcome to the Narcisscene

Welcome to the Narcisscene

Returning Humans to the Center of the Cosmos

ta conference in Amsterdam in 2001, the International Geosphere–Biosphere Programme (IGBP) and affiliated scientific groups issued what its authors called “the historic Amsterdam Declaration on Earth System Science.” According to this historic declaration, “A new system of global environmental science is required.”¹ Although the IGBP eventually closed in response to changes in the funding landscape, its most historic act was to propose the concept of the Anthropocene, a new geologic epoch that would emphasize and draw public attention to the degree to which humanity has altered the “Earth system.” Paul Crutzen, who then served as IGBP vice chair and had earlier won a Nobel Prize in atmospheric science, is credited (along with Eugene Stoermer) with introducing the concept of the Anthropocene and advocating its adoption by the International Commission on Stratigraphy (ICS), which is responsible for naming and dating geologic periods, eras, and epochs.

In view of the glacial pace of geologic events and the time it takes for things to turn into rock or become encased in it, you might think there would be no hurry to name a new geologic epoch, especially because the current one, the Holocene, started only about 11,500 years ago. You would be wrong. In 2002, Crutzen published an article in *Nature* magazine, “Geology of Mankind,” which called on geologists “to assign the term ‘Anthropocene’ to the present, in

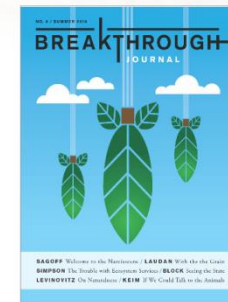
around a capricious humanity. It accomplishes a counter-Copernican revolution.

The Anthropocene makes humanity great again.

Sagoff (2018)

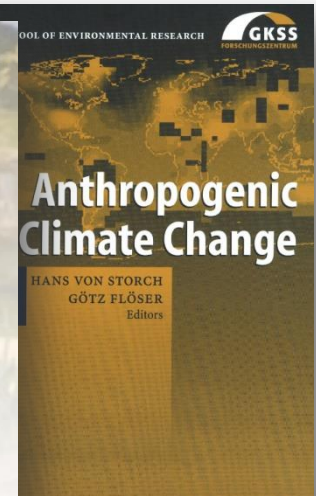


Mark Sagoff



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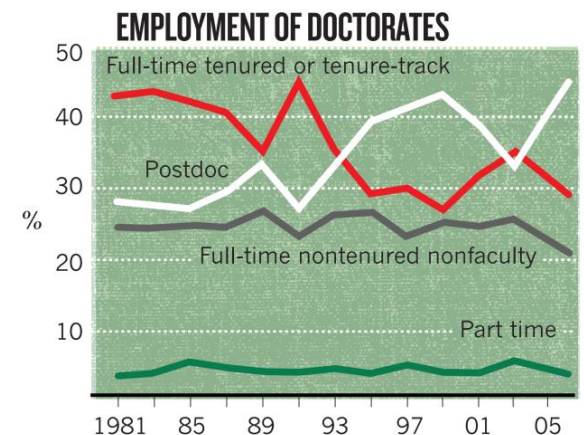
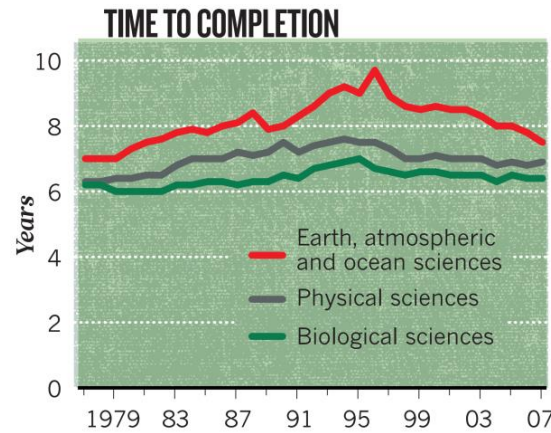
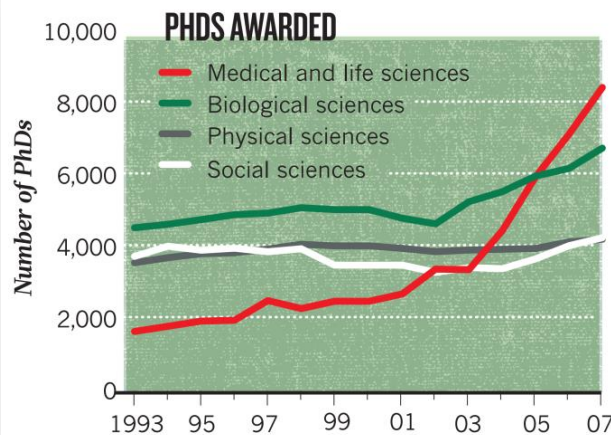
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Narcissism of individuals or wild competition?

Absolute priority in research publications and citations; emphasis on grants	Low priority in teaching
Exponential growth of publications	Equal growth of meaningless publications
Rise of team size in research projects and authoring of papers	Not necessarily an improvement of quality of research and collaboration level
Increasing number of awarded PhD degrees and number of postdoc positions	Decreasing number of formal academic positions (postdocs instead of professors)

These facts signify a wildly competitive environment in which new scientists have to struggle for academic success and an active career in science.



Source: Cyranoski et al. (2011.)

Perverse incentives: can they make the boat go faster?

TABLE 1. GROWING PERVERSE INCENTIVES IN ACADEMIA

<i>Incentive</i>	<i>Intended effect</i>	<i>Actual effect</i>
“Researchers rewarded for increased number of publications.”	“Improve research productivity,” provide a means of evaluating performance.	“Avalanche of” substandard, “incremental papers”; poor methods and increase in false discovery rates leading to a “natural selection of bad science” (Smaldino and McElreath, 2016); reduced quality of peer review
“Researchers rewarded for increased number of citations.”	Reward quality work that influences others.	Extended reference lists to inflate citations; reviewers request citation of their work through peer review
“Researchers rewarded for increased grant funding.”	“Ensure that research programs are funded, promote growth, generate overhead.”	Increased time writing proposals and less time gathering and thinking about data. Overselling positive results and downplay of negative results.
Increase PhD student productivity	Higher school ranking and more prestige of program.	Lower standards and create oversupply of PhDs. Postdocs often required for entry-level academic positions, and PhDs hired for work MS students used to do.
Reduced teaching load for research-active faculty	Necessary to pursue additional competitive grants.	Increased demand for untenured, adjunct faculty to teach classes.
“Teachers rewarded for increased student evaluation scores.”	“Improved accountability; ensure customer satisfaction.”	Reduced course work, grade inflation.
“Teachers rewarded for increased student test scores.”	“Improve teacher effectiveness.”	“Teaching to the tests; emphasis on short-term learning.”
“Departments rewarded for increasing U.S. News ranking.”	“Stronger departments.”	Extensive efforts to reverse engineer, game, and cheat rankings.
“Departments rewarded for increasing numbers of BS, MS, and PhD degrees granted.”	“Promote efficiency; stop students from being trapped in degree programs; impress the state legislature.”	“Class sizes increase; entrance requirements” decrease; reduce graduation requirements.
“Departments rewarded for increasing student credit/contact hours (SCH).”	“The university’s teaching mission is fulfilled.”	“SCH-maximization games are played”: duplication of classes, competition for service courses.

Source: Edwards and Roy (2017)

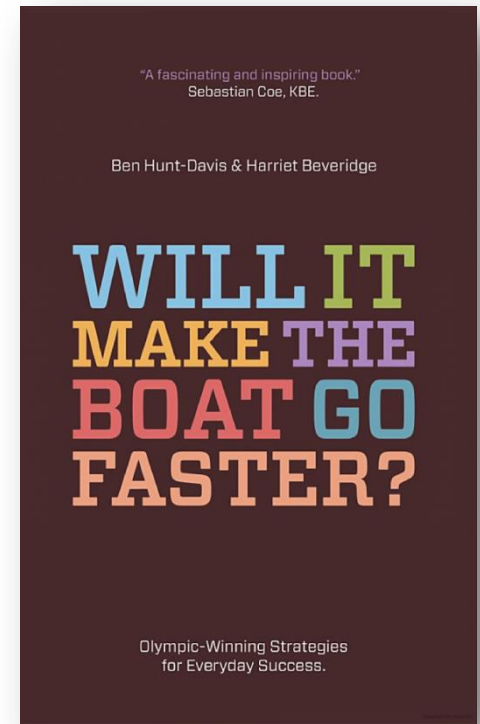
Should we Make the Boat Go Faster?

- Yes, if:

1. our target is to win the Olympics;
2. the game's rules are specified and rigid;
3. there is a single metric to measure success.

Is the Fast Boat a model for University?

- Not at all! The conditions 1-3 are not met.
- Following this model is perhaps a road to failure.



Hunt-Davis and Beveridge (2011)

When we complain about the bad situation of politics and political leaders in our countries and internationally, we must bear in mind that modern politicians and opinion makers have been educated in modern University. The irrationalism (aka political correctness), the poverty in ideas for social progress and the political regression constitute the **most spectacular evidence of failure of modern University.**

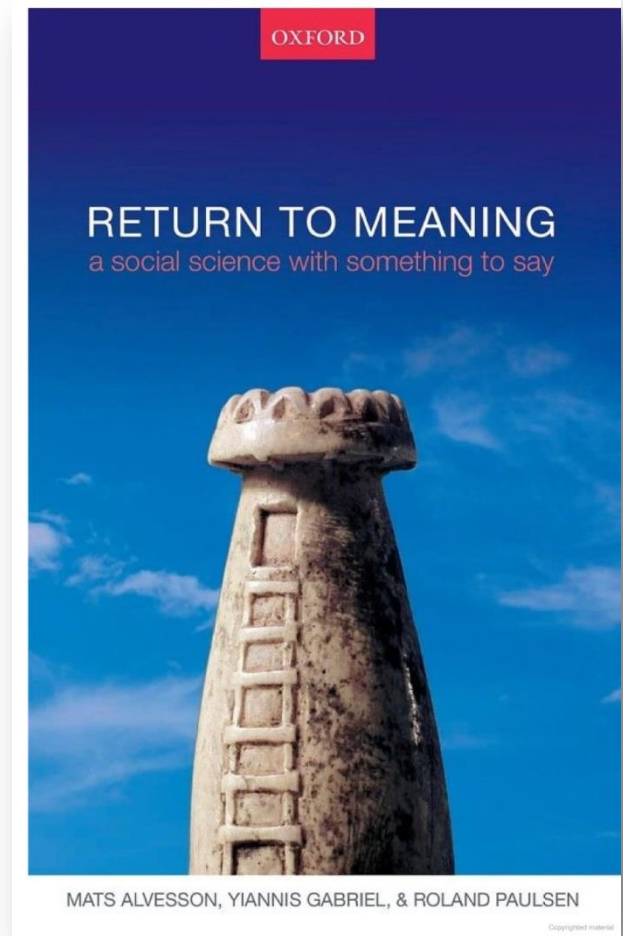
Research in Academia and its assessment

- There is no doubt that **quantitatively** the research efforts and outputs **thrive**.
- There is no shortage of **metrics** to count these **outputs** for individuals and collectively.
 - Care is needed as many metrics employ double- or multi-counting of items (cf. **papers by kiloauthors → megacites**).
- Evaluation gives **emphasis on grants**, revealing the managerial logic of modern universities. Shouldn't we question that?
 - Is emphasis on money rational, ethical, socially progressive?
 - Does it highlight the **intellectual** nature of University?
- Is thriving of numbers an indication that we are in a good state?

“Never before in the history of humanity have so many written so much while having so little to say to so few.” (Alvesson et al., 2017)

Nonsense in academic research?

*“We argue that we are currently witnessing not merely a decline in the quality of scientific research, but a **proliferation of meaningless research** of no value to society and of only modest value to its authors—apart from in the context of securing employment and promotion. [...] Publishing comes to be seen as a game of hit and miss, of targets and rankings, crucial for the fashioning of academic careers and institutional prestige but devoid of intrinsic meaning and value, and of no wider social uses whatsoever. This is what we view as the **rise of nonsense in academic research.**”*



Alvesson et al. (2017)

Innovations in assessment of research

- It is healthy to question a dubious assessment of research and seek innovation.
- Positive development is the **dispute of the relevance of the Impact Factor of the journal** where a paper is published (i.e., a dispute of interwoven political and economical interests).
 - However, even this marginal initiative is not successful: for example, youngsters are unprecedentedly eager to publish in glamorous journals.
- The innovative metrics that have appeared (i.e., altmetrics) may signify **regression** rather than progress (for example, counting **activity in social networks** may be prone to manipulation and are less objective than citations).
- The emphasis given to “**open access**” publications has also **negative consequences**.
 - “Open access” is **just another business model** in which authors, instead of subscribers, pay.
 - If this model prevails, only funded research would be published while **unfunded original ideas would remain into darkness** (or “grayness”).
- It is likely that these innovations would lead to worsening of an already unsatisfactory state of affairs.

Teaching as Community Service and Community Property

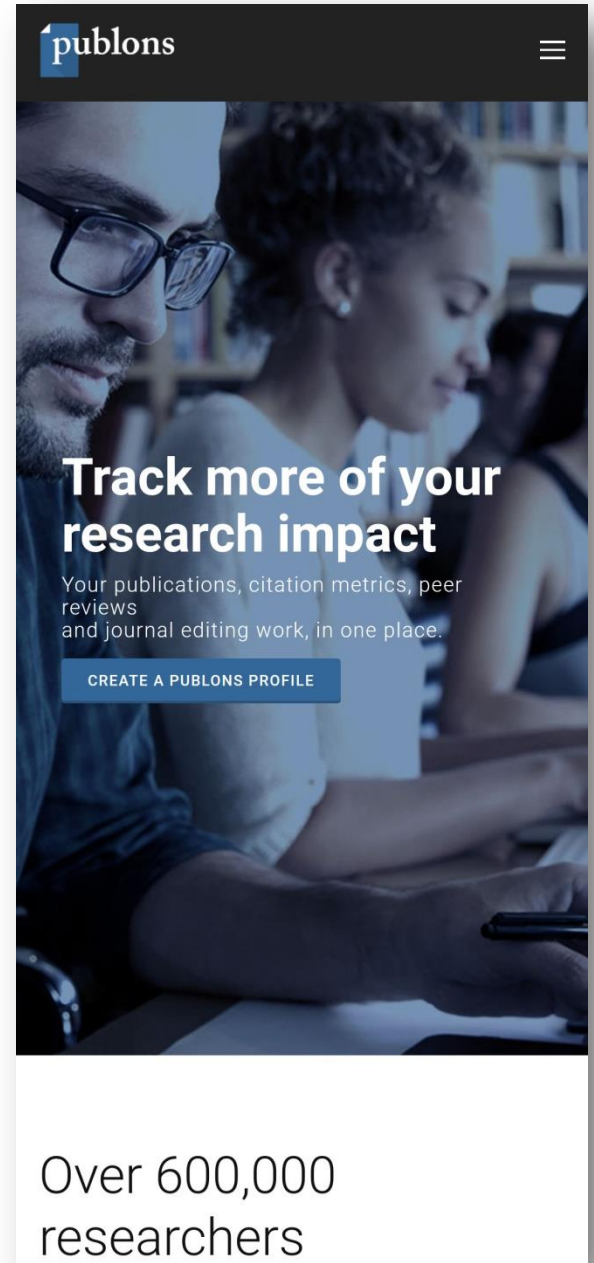
- What is more important for the society? Publishing papers or writing educational books, lecture notes and other educational artifacts (multimedia, software applications) that help students?
- Is it not the main **mission of University to educate students** and to guide them to become a professionals?
- Once educational artifacts are of value and are made visible (not only kept in the classroom), are they not an **important community property?** (cf. Shulman, 1993).
- If they are community property, which are the mechanisms to deem if they are valuable, and to recognize, judge and reward their producers?

Participatory work in Community

- In addition to research and teaching, people in academia provide a lot of **community services**, including leadership and collective work.
- Several innovative services have been made possible because of the internet. These include:
 - ❑ New ways of communicating scientific results to the society;
 - ❑ Collecting, processing and providing (open) data to the community;
 - ❑ Developing and providing (open) software to the community;
 - ❑ Organizing relevant information and providing it (openly) to the community (example: the History of Hydrology wiki, <http://www.history-of-hydrology.net/>).
- The **peer-review system**, which includes several roles (editors, associate editors, reviewers), remains the most demanding and essential community service; it is amazing that it has survived the explosion of research outputs.
- For some of these services (data, software) a quantified reward and recognition system has already been developed (they are regarded as published items).
- Some others cannot **(and should not) be incorporated in an “audit system”**.

Should we measure participatory work?

- Why not—provided that we follow ethical rules.
- (Counter)example: **Publons** is a web platform to track, peer review and editorial contributions for academic journals (launched in 2012 and by now counting more than 600 000 reviewers).
- It **mostly counts anonymous reviews**.
- Is it *ethical* to track anonymous transactions? [Note: the question is whether it is *ethical*, not whether it is possible or accurate.]
- Does **trying to get credit for anonymous transactions express an altruistic contribution to the society?** [Is it *love*?]
- Or does it express a mixture of **fear** (fear to be eponymous and responsible by name) and **egocentrism** (to translate every action in a kind of monetary units)?



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Academics as role models in University

- **Science** vs. sophistry
- **Thought** vs. stereotypes
- **Meaning** vs. nonsense
- **Rationalism** vs. irrationalism
- **Universality** vs. monomery (one-sidedness)
- **Transparency** (openness) vs. concealment
- **Honesty** vs. cheat
- **Integrity** vs. deception
- **Courage** vs. fear
- **Democratic governance** vs. bureaucracy and technocracy
- **Eponymity** vs. anonymity
- **Participation** vs. solitude
- **Dedication** vs. cynicism
- **Love** vs. hate

“Those are my principles, and if you don't like them... well, I have others.”

(Attributed to Groucho Marx)

My thesis in conclusion

- What can be measured (publications, citations and other bibliometrics) let it be measured.
- It is possible to improve the traditional metrics to conform to ethical values and discourage misconduct (a simple example: normalization of publications and citations by number of authors; Koutsoyiannis et al. 2016).
- We do not need to assign numbers to the unmeasurable—in particular to the dedication and commitment to community work. Experience from counting such services indicates that the results may be opposite to expectations.
- Metrics can serve as thresholds and shortlisting criteria. They are not sufficient to support final decisions, which should move away from the “audit culture”.
- Instead of introducing metrics for unmeasurable virtues, I propose to **compile and announce a list on non-measurable services** (primarily: teaching) **and ethical values** (cf. previous slide) that are important for individuals as well as for academic selection and promotion committees to consider.
- Assuming that there exists non-artificial intelligence, humans are able to judge based on non-numerical criteria (e.g. everybody agrees that between Romeo and Juliet there was a big love).

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