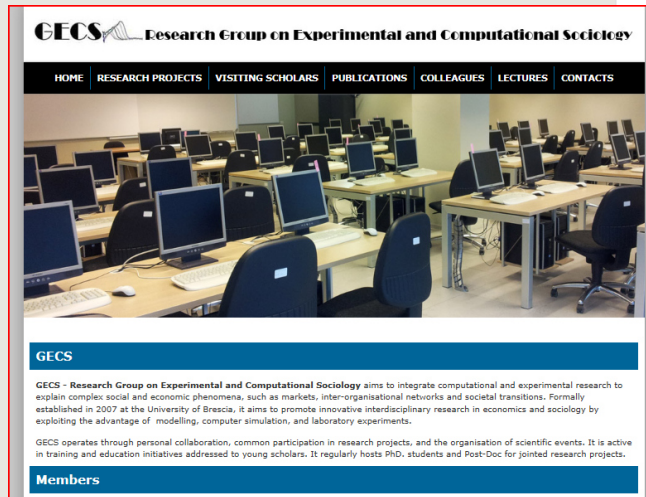


Competition, serious “gamification” and scientist misbehaviour: Can quantitative indicators and rankings be neutral and context-free measures of the quality of science?

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GECS
Research Group on Experimental and Computational Sociology

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GECS - Research Group on Experimental and Computational Sociology aims to integrate computational and experimental research to explain complex social and economic phenomena, such as markets, inter-organisational networks and societal transitions. Formally established in 2007 at the University of Brescia, it aims to promote innovative interdisciplinary research in economics and sociology by exploiting the advantage of modelling, computer simulation, and laboratory experiments.

GECS operates through personal collaboration, common participation in research projects, and the organisation of scientific events. It is active in training and education initiatives addressed to young scholars. It regularly hosts PhD, students and Post-Doc for jointed research projects.

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Trans-Domain COST Action TD1306

New Frontiers of Peer Review (PEERE)

Descriptions are provided by the Actions directly via e-COST.

Peer review is a cornerstone of science, whose quality and efficiency depends on a complex, large-scale collaboration process, which is sensitive to motivations, incentives and institutional contexts. Recent proofs of the failures of peer review, due to judgment bias and parochialism and cases of misconduct, have contributed to calls for a reconsideration of the rigour and quality of the processes. This Action aims to improve efficiency, transparency and accountability of peer review through a trans-disciplinary, cross-sectorial collaboration. The objectives of this Action are: (i) to analyse peer review in different scientific areas by integrating quantitative and qualitative research and incorporating recent experimental and computational findings; (ii) to evaluate implications of different models of peer review and to explore new incentive structures, rules and measures to improve collaboration in all stages of the peer review process; (iii) to involve science stakeholders in data sharing and testing initiatives; (iv) to define collaboratively a joint research agenda that points to an evidence-based peer review reform. Not only can a better peer review system improve the self-regulation processes of science to benefit all science stakeholders, it can also increase the social recognition and credibility of science in Europe.

General Information*

Chair of the Action:
[Prof Flaminio SQUAZZONI \(IT\)](#)

Vice Chair of the Action:
[Dr Francisco GRIMALDO \(ES\)](#)

Science officer of the Action:
[Dr Giuseppe LUGANO](#)

Administrative officer of the Action:
[Ms Anja VAN DER SNIJKT](#)

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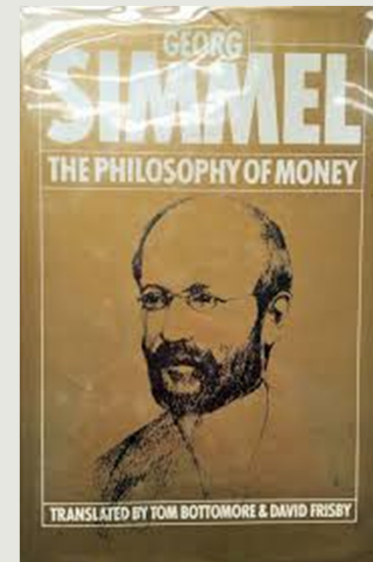
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Memorandum of Understanding
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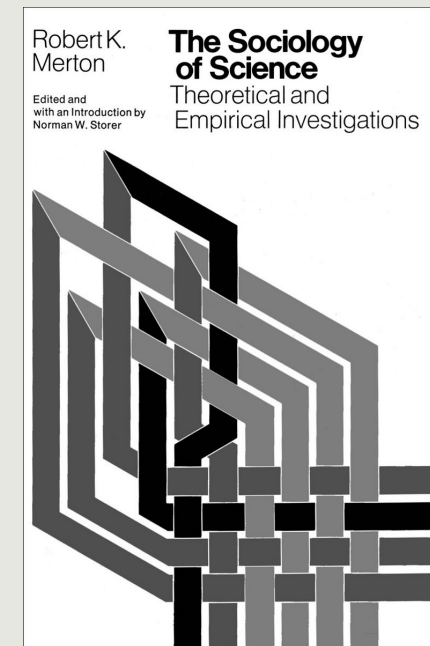
Websites*

Action website:
<http://www.w.peere.org/>

- ❑ Reputation/citations = money/prices as a means of exchange that regulates the science system
- ❑ Money and prices as quantification devices triggered calculative rationality of individuals, including allocation and discretization of time, strategization of effort/output measures, value recognition among people, status and power



- ❑ Reputation is a complex artefact
- ❑ Scientists built disciplines, institutions and associations to self-regulate and manage reputational credit allocation
- ❑ Reputation is productive if competitive spirits (i.e., the “priority for reward” game) are constrained by strong social norms
- ❑ Attention and signalling devices:
metrics could help scientists to deal with coordination problems



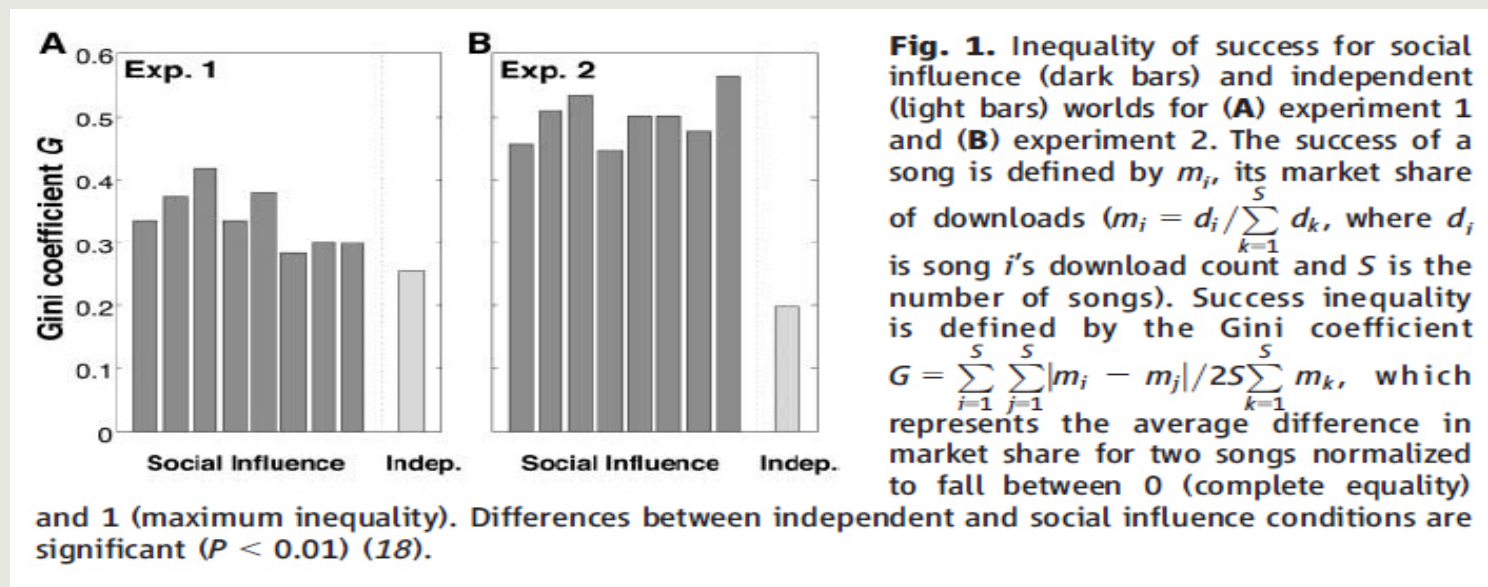
- ❑ Growing competition at all levels
- ❑ Increasing role of scientists from emerging countries, exposed to strong competitive rewards
- ❑ Growing fragmentation and knowledge specialisation
- ❑ Serious concerns on allocation problems



- ❑ Rankings are natural social artefacts
- ❑ They are built-in competition devices
- ❑ They are a reference with an objective allure that are used to allocate power/reputation resources
- ❑ They tend to transform relations in “serious games”
- ❑ In times of scarce attention the “rankitude” could bring people to easy, broad-tent view conclusions about value of people independently of contexts and situations



- ❑ Salganik, Dodds and Watts (2006, Science)
- ❑ 14000 participants who were shown a list of 48 unknown songs in two experimental conditions (independent and social influence)
- ❑ Exp 1: previous downloads in a grid; Exp 2: list



- ❑ MIUR and ANVUR in Italy and Norwegian Association for Higher Education Institutions (2004-2010): a performance indicator used to allocate a percentage of the total funds
- ❑ Pros: it mapped productivity differences, stimulated low-quality institutions, paid-off more active excellent centres
- ❑ Cons: no “neutrality” across disciplines and so penalised certain domains; rankings were used internally as a political means to allocate resources and compare individuals; it frustrated specialists in certain fields by exposing them to conflicting incentive schemes
- ❑ PAQ Research quality assessment of University of Brescia

- ❑ “Simplicity and transparency of the point system mean that, even for departments where local efforts to prevent that the indicator is used in undesirable ways, it is difficult to prevent it from playing a role at the individual level. Experience with bibliometric measures shows that when these types of indicators first exist and are readily available, they will often be used in both intended and unintended ways”
- ❑ The deep “reflexivity” of science system

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Regular Article

Peer-review in a world with rational scientists: Toward selection of the average

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A SIMULATION OF DISAGREEMENT FOR CONTROL OF RATIONAL CHEATING IN PEER REVIEW

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Saint Matthew strikes again: An agent-based model of peer review and the scientific community structure

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ARTICLE INFO

ABSTRACT

This paper investigates the impact of referee reliability on the quality and efficiency of peer review. We modeled peer review as a process based on knowledge asymmetries and subject to evaluation bias. We tested various levels of referee reliability and different mechanisms of reviewing effort distribution among agents. We also tested different scientific community structures (cohesive vs. parochial) and competitive science environments (high vs. low competition). We found that referee behavior drastically affects peer review and an equal distribution of the reviewing effort is beneficial only if the scientific community is homogeneous and referee reliability is the rule. We also found that the Matthew effect in the allocation of resources and credit is inherent to a 'winner takes all' well functioning science system, more than a consequence of evaluation bias.

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The screenshot shows a NetLogo simulation window titled 'eciprocity'. The interface includes a control panel with buttons for 'setup', 'go', 'step', 'debug', 'results', and 'plot-careers'. A central area displays a network graph with nodes and edges, representing the scientific community structure. On the right side, there are several control panels and monitors:

- Parameters:** velocity (0.1), author-article-bias-factor (0.1), author-spent-factor-for-article (1).
- Monitors:** Initial-productivity (0), round-productivity-gain (1), publication-factor (0.75), publication-productivity-gain (1.5), unreliable-probability (0.50), unreliable-spent-factor-for-article (0.5).
- Plots:** Evaluation Bias, Productivity Loss, and Reviewing Productivity Index.
- Buttons:** choose-reviewers-by-ranking, random-behaviour.

The bottom of the window shows a 'Command Center' area.

- 200 agents, authors and referees
- Endowment and resources
- Quality (as authors and referees) [E. 1]
- Publication investment and reviewing cost [Eq. 2]
- Resources multiplier (depending on publication) [m]
- Evaluation (randomly matching of authors and referees, noise)
- Publication selection rate (25, 50%, 75%)
- Referee behaviour: random, fair or “rational”

Scenario	Evaluation bias	Productivity loss	Reviewing expenses
<i>Weak selection (75% published submissions)</i>			
Random behaviour	16.51	7.68	25.98
Cheating	20.07	4.91	21.34
<i>Medium-level selection (50% published submissions)</i>			
Random behaviour	25.27	14.98	30.77
Cheating	56.63	28.02	32.21
<i>Strong selection (25% published submissions)</i>			
Random behaviour	29.42	15.00	29.42
Cheating	70.86	34.72	35.24

Table 2: Percentage of cheaters among the referees in the “cheating scenario” in various selection rate environments (values of cheaters in percentage on the total number of referees).

Selection range	Cheaters
Strong selection	0.27
Medium selection	0.28
Weak selection	0.35



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- ❑ The mantra of rankings can erode variety in the science system by distorting resource allocation, reducing species niches and promoting homophily pressures (e.g., “top-five focal point” effect)
- ❑ Excessively simplified, although “big picture” valid quantitative indicators tend to be politically used in power relations locally (e.g., “reflexivity”)
- ❑ Rankings must be improved, e.g., “real” productivity measures and be completed by more qualitative principles and evaluation criteria when they are used for resource allocation
- ❑ Scientific reputation cannot be fully captured by quantitative indicators and so indicators must be used intelligently to set up priorities and allocate resource



Questions
are
guaranteed in
life;
Answers
aren't.