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# **Editorial Peer Review and the EERQI-Project**

Quo vadis, peer review?

Overview on the current research  
status on the quality of editorial peer  
review



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# Peer review: the ups and downs

*“The good ones in the crock, the bad ones in the  
craw.”*

Peer review: still main tool for quality assessment of  
scientific output

But: system inherent flaws unavoidable

- Mueller subdivides flaws of peer review into seven  
categories:



# Peer review: the ups and downs

- 1) Time delay
- 2) Costs and efficiency
- 3) Inconsistency and randomness of results  
(lack of ***reliability***)
- 4) No guarantee for error detection
- 5) Systematic bias (i.e. against gender, ideas, authors...)
- 6) Possible fraud and misuse
- 7) Missing ***validity***



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# Peer review vs. validity and reliability

Reduced/missing validity most serious problem for peer review:

- Reasons: different research approaches/ contexts/traditions

Limited validity not restricted to interdisciplinary peer review; also within the same research field criteria may vary:

- Reasons: ongoing internationalization of scientific world and thus pluralization



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# Flaws of peer review regarding validity

David Bridges (2009): Missing validity is not an intrinsic problem of peer review as such, but more a managerial problem relating to the design of peer review.

- Is it really a managerial problem?



# Research and the „validity problem“

No reason to give up on peer review:

- Various empirical studies show **kappa coefficients** between 0.20 and 0.40 (*fair amount of reviewer agreement* according to Hornborstel 2006, Cicchetti 1991, Weller 2001)
- Reviewer disagreement is not merely a negative factor but allows *multiperspectivity* (see Bornmann/Daniel 2003 and Weingart 2005)



# Reliability of peer review

**Def.:** Reliability as *probability* that the review process for two submitted manuscripts with the same content would yield to the *same results*

- **Problematic:** Each individual review process is influenced by several other factors (e.g.: selection of reviewers by the publisher, see Godlee & Dickersin 1999, Rothwell & Martyn 2000)
- **Lack of consistency** remains persistent problem (cp. empirical study by Rothwell & Martyn, 2000)



# Reliability of peer review

**Main problem:** Inconsistency due to inherent subjectivity of individual assessment of each reviewer → difficult to minimize

- **And:** Two to three reviews are obtained per submitted document
- **Finally:** Decision-making regarding publishing normally takes place in secrecy and non-transparent manner by editor

# Possible ways to improve validity and reliability of peer review

- Learn from best practices in „peer review management“ (e.g. from books like „How to Survive Peer Review“, Wager et al. 2000)
- **But:** Current research does not give empirical evidence of improved reliability/validity due to standardization of the review process (Mueller, 2008)
- And one basic dilemma remains: standardization as unavoidable by-product of quality assessment



**“The EERQI-Dilemma“**



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# Peer review – indispensable or replaceable?

- Criticism against peer review is not a new phenomenon
- Opinions range from peer review as being “censorship” (Froehlich 2003) to peer review as being “irreplaceable to measure the innovativeness of research in general” (Hornborstel, 2007).
- Peer review as “convenient” quality assessment tool for the editors (as it is not remunerated) (e.g. Rennie, 1993)



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# Peer review – indispensable or replaceable?

- Mueller (2008): No real alternative to peer review can be found as quality assurance system in science
- Peer review as filter function and quality maintainer in science, especially in manifold online publications (e.g. open-access movement, pre-publishing repositories)
- **Conclusion:**
  - Peer review > limitations and constraints
  - Peer review > advantages



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# Peer Review and the EERQI-Project

- Although constraints persist, there is no alternative to peer review for EERQI as method to test quality of indicators
- Main constraints are: limited reliability
- BUT: there is no alternative approach
- THUS: we should be careful – but nevertheless be aware of the limitations



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***Thank you for your attention!***