

**Peer Review is the Worst Form  
of Manuscript Assessment...  
Except for All the Other Forms  
That Have Been Tried**

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# Scope

- Excludes peer review of
  - Clinical studies
  - Government contracts
  - Research proposals
- Does not discuss wider implications
- Does not discuss mission of ACS or *JC/CS*
- Disclaimer

# Scope

- Centers on chemistry
- Focuses on *JCICS*
- Number One in computer science, information systems

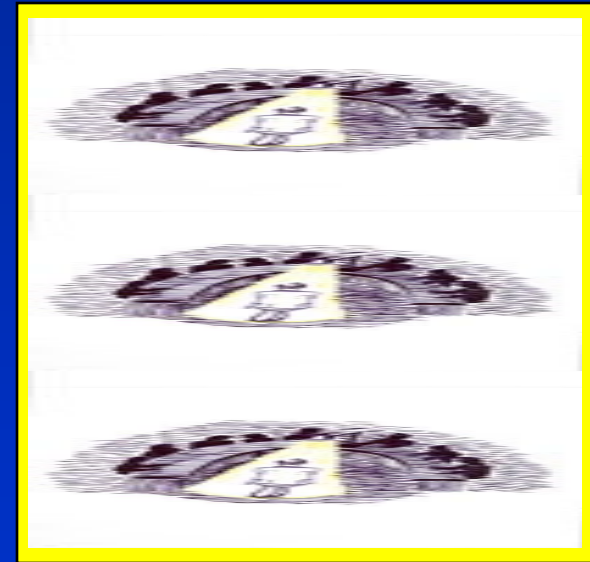


# “High Quality, High Impact”

In 2003, ACS received almost 45,000 papers and published over 24,000

# Functions of Peer Review

- Improve good papers
- Filter bad papers
- Detect abuse
- Detect plagiarism
- Detect fraud



# Other Functions

- Give authors feedback
- Give authors incentive to write good manuscripts *before* submission
- Journal branding

# Quality Criteria

- Reliability
- Fairness
- Predictive validity

# The Chemist

Author

Reader

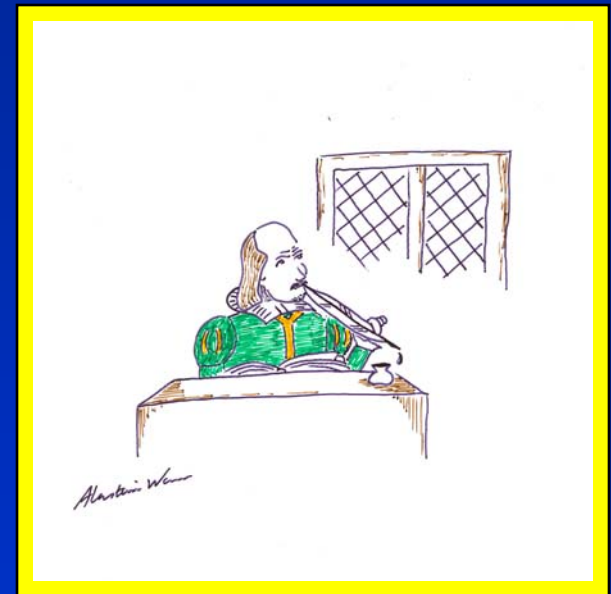


Reviewer

Editor

# The Author

- Produces a paper
- Chooses journal
- Submits the manuscript
- Writes to editor
- Suggests reviewers

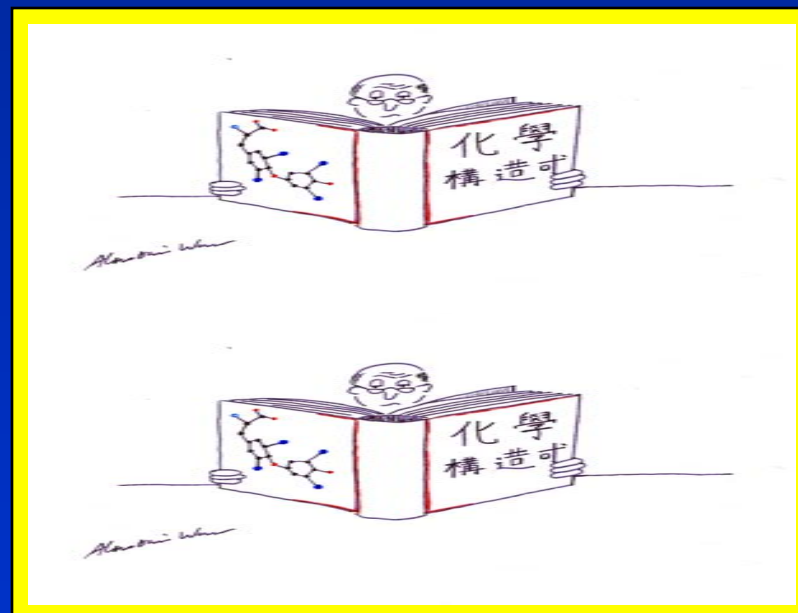


# The Black Hole



# The Editor

- I print/read letter and m/s
- Make notes about
  - spelling
  - use of English
  - reference style
  - obvious errors
  - copyright form



# Rejection Without Review

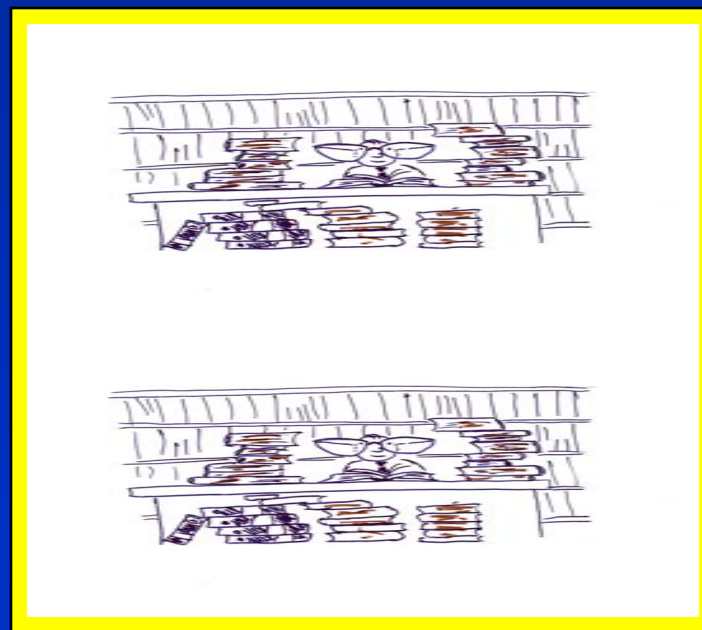
*“We still think it’s important to have a minimal level of screening, to keep the material at least ‘of refereeable quality’, and avoid material that is manifestly irrelevant, offensive, or silly. ArXiv was set up for an elite research community; there was never a pretense of Jeffersonian democracy”*

P. Ginsparg, 2002

# Rejection without Review

## Reasons

- Obscure topic
- Subject of minority interest
- Outside scope of journal
- Poor presentation
- Non-novelty
- Routine QSAR



# Choice of Reviewers

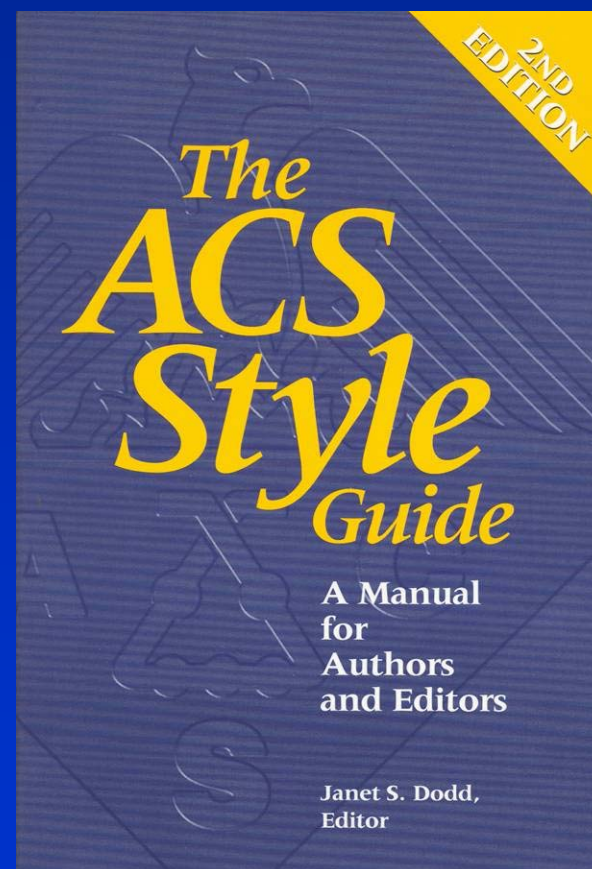
- How many?
- Who are the authors' "peers"?
- Author suggestions
- Names from list of references
- The network in my head

# Choice of Reviewers

- Names in my files
- Scan journals on shelf
- Internet searches
- Ask a fellow editor or colleague
- Ask reviewer who has refused

# Reviewer Guidelines

- Few instructions on the Web
  - but I get few queries
- I do send out guidelines for certain topics



# The Reviewer Responds (Sometimes)

- Yes I can (Great!)
- I can't... (Groan!)
  - Too busy
  - Traveling
  - Doing six other reviews this week
  - Outside my field
  - Clash of interest
  - I collaborate with author

# Often, No Immediate Response

- Sometimes a timely review appears
- Most times it doesn't
- Then I start on the reminders
- Sometimes I still hear nothing
- Then I assign another reviewer

# Recommendations

- Publish without change
- Publish after revision
  - minor
  - major
- Do not publish

# Reviewers

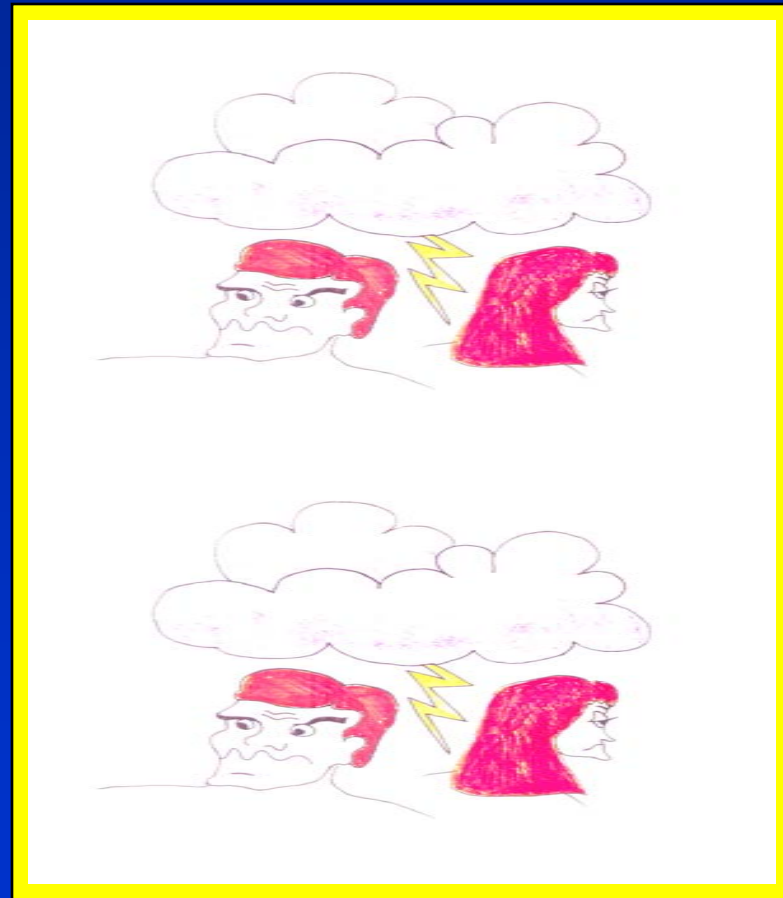
- Zealots
- Pushovers
- Average
- Demoters
- Assassins

Siegelman, *Radiology*, 1991

# Reviewers

- The softie
- The nit-picker
- The guy with attitude
- The snail
- The invisible man
- The editor's dream

# Reviewers Disagree



# Why?

- Editor's choice
- Different academic perspectives
- Different criteria
- Different standards
- Bias
- Even if reviewers agree, paper may still be invalid

# 44 Papers Studied

- 31 accepted
- 12 rejected
- 1 withdrawn

# Worst

Reviewers assigned	Reviews done	Comment
9	2	
8	3	
7	1	Plus me
7	3	
6	2	
6	3	3 papers
5	2	

# Best

Reviewers assigned	Reviews done	Comment
2	2	Once
3	2	13 times
3	3	9 times
4	4	3 times
4	3	4 times
4	2	3 times

# Rejections

- 7/12 rejected by 2 or more reviewers
- 1 not rejected by either reviewer
  - Editor rejects (Unintelligible. Non-novel?)
- 1 rejected by 1 reviewer out of 2
  - Editor rejects (Non-novel. Specialized)
- 3 rejected by 1 reviewer out of 3
  - Editor rejects (Needs a major rewrite)
  - Editor rejects (Another editor adjudicated)
  - Editor rejects (Hard decision)

# One Reviewer Rejects Editor Accepts

- 6 Papers, only 1 reject review out of 3 or 4
  - only 1 rejection out of 4, revision re-reviewed
  - accepted after two revisions
  - unusual subject, “adjudicated”
  - 2 good reviews, 3rd reviewer biased?
  - “not enough chemistry”
  - 1 hard decision

# First Hard Decision

- Rev 1: Discovery of a lifetime
- Rev 2: Publish with major revision
- Rev 3: Work is completely misguided
  
- Accepted
  - Reviewers discussed
  - Rev 3 withdrew objection

# Second Hard Decision

- Rev 1: Reject
- Rev 2: Publish with major revision
- Rev 3: Publish with very minor revision
  
- Rejected
  - Team has produced rejected work in past
  - Rev 3 is known to be lenient
  - Hints of plagiarism

# Easy Decisions

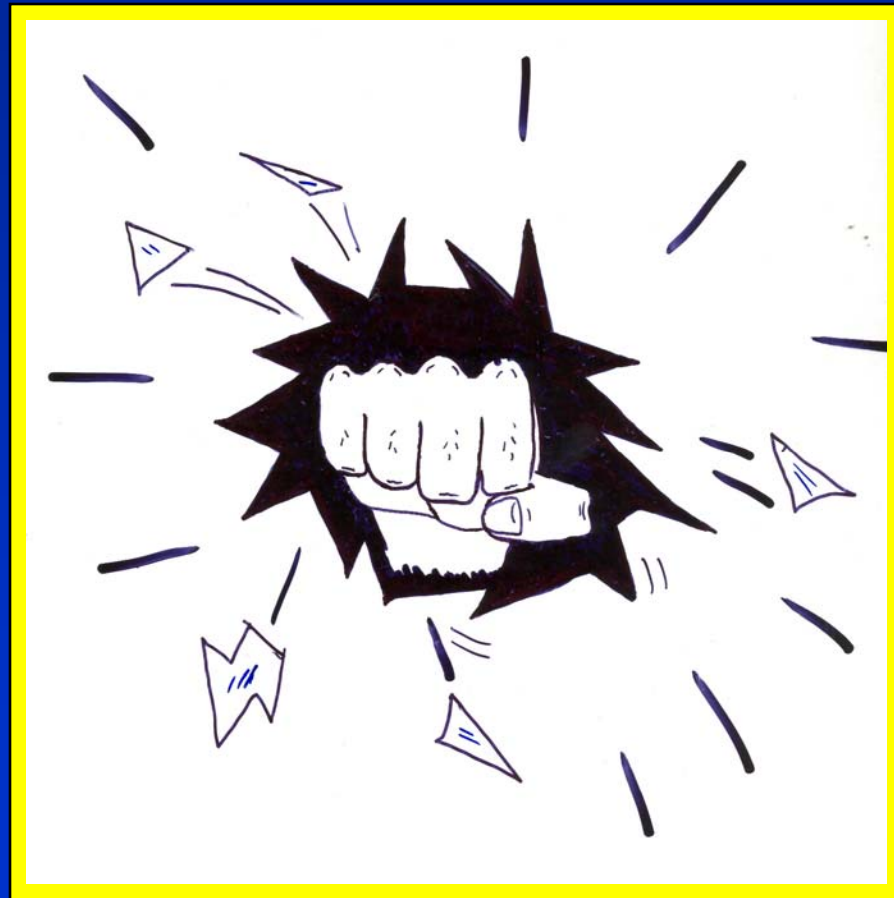
- One paper had two (“genuine”) “publish without change” reviews
- Five others had one (“genuine”) “publish without change” review
- Who are these near perfect authors?



# What Happens Next?

- *All* reviews sent to author
- Path One
  - Author revises manuscript
  - Accept, re-review or reject revision
- Path Two
  - Manuscript rejected
- All reviewers told about final decision
- All reviewers see reviews and author comments
- Later, the rejected paper appears elsewhere

# Do I Get Any Comeback?



# Aftercare

*“The traditional paper is frozen once published....”*

Richard Smith, Editor *BMJ*

# Ethics

- Falsification of results
- Plagiarism
- Failing to give credit to others
- Duplicate publication
- Salami slicing of results
- Deliberately delaying publication



# Other Issues

- Bias
- Language problems
- International issues
- Supplementary material
  - Making data sets available

# Other Issues

- Double blind peer review
- Open peer review
- Privacy
  - Data Protection Act
- Economics

# Peer Review

*“Peer review is slow, expensive, biased, easily abused and poor at detecting fraud. A lone editor can do just as well. What peer review does achieve is to improve a paper....”*

Richard Smith, Editor *BMJ*

# Conclusion

*“Judicious use of peer review, by an editor who tries to be even-handed, and has years of experience of the system and the reviewers, is about the best we can hope to achieve....”*

Wendy Warr, Associate Editor, *JCICS*