Peer Review

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Contents

I. What is peer review?

- **Definition :** Review by peers

  The peer review process란 동일한 분야에 종사하는 사람에 의하여 연구방법 및 결론 등을 정밀하게 심사 받는 한 과정. 이는 학문적 연구분야에서 필연적인 과정임. 이 과정은 필연적이지만 가끔 더디고, 비효과적이며 오해를 불러 일으키기도 함.

- Includes:

  internal review (by editorial staff)

  external review (by experts in the field)

- Peer-reviewed journals may also be called “refereed” or “juried” journals.
- Peer review is a process by which manuscripts are submitted for publication in a scholarly or research journal and are reviewed by subject experts for comment, evaluation, and approval.
- These articles often go through a revision process after the peer review and prior to publication.
- Many articles are submitted to the journal editors. Of these articles, a select few make it to publication.
- Peer review process definition adapted from the *Concise Dictionary Of Library And Information Science*.

II. Why?

- **Purpose**

  The process는 의미 없는 실험결과의 유포, 비정당한 주장(unwarranted claims), 수용할 수 없는 분석 및 해석(unacceptable interpretations), 그리고 단순한 주관적인 관점(personal views)등을 사전에 방지함에 목적이 있음. 따라서 이는 서로간의 연구를 심사하는 동료들의 능력에 의존적임. 이는 정당성(legitimate)있는 정보를 갖는 결과를 도출함에 목적이 있으며 그 분야에 대토론 혹은 결론을 가져다 줄 수 있음.

What do editors want from papers?

- **중요성**(Importance)
- **새로움**(Originality)
- **독자의 흥미 유발성**
- **독자 및 연구자들에게 대한 유익성**
- **진실성**(Truth)
- **“와우”성**(Excitement/“wow” factor)
- **투명성 및 문장력**(Clear and engaging writing)

When did peer review start?

Some would say that “Peer Review” goes back as far as the 17th century, when it was known as “The Inquisition of the Holy Roman and Catholic Church”. Scholars’ works were examined for any hints of “heresy”.

Galileo

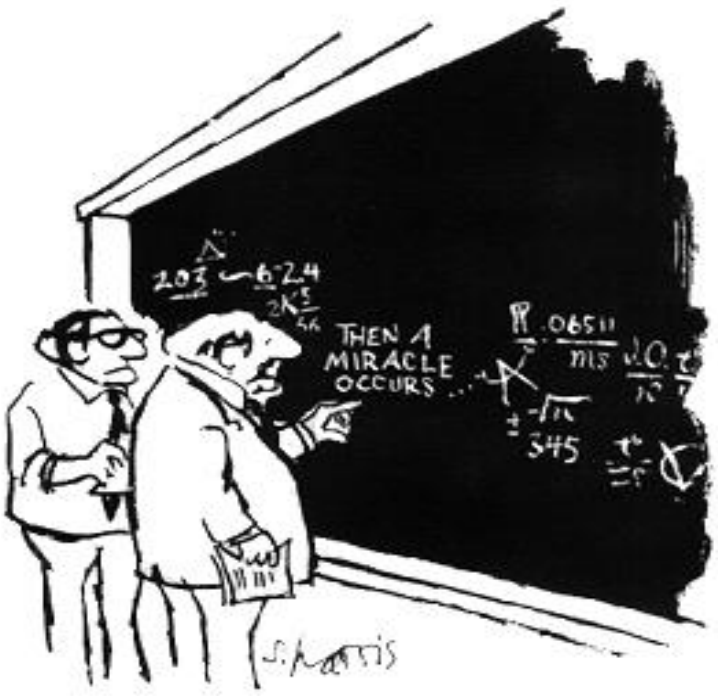
Wikipedia (http://en.wikipedia.org/wiki/Peer_review)

Peer review in “Modern times”

Peer review (known as refereeing in some academic fields) is used in:

1. Publication process
2. Awarding of funding for research
3. Patents
4. Standards

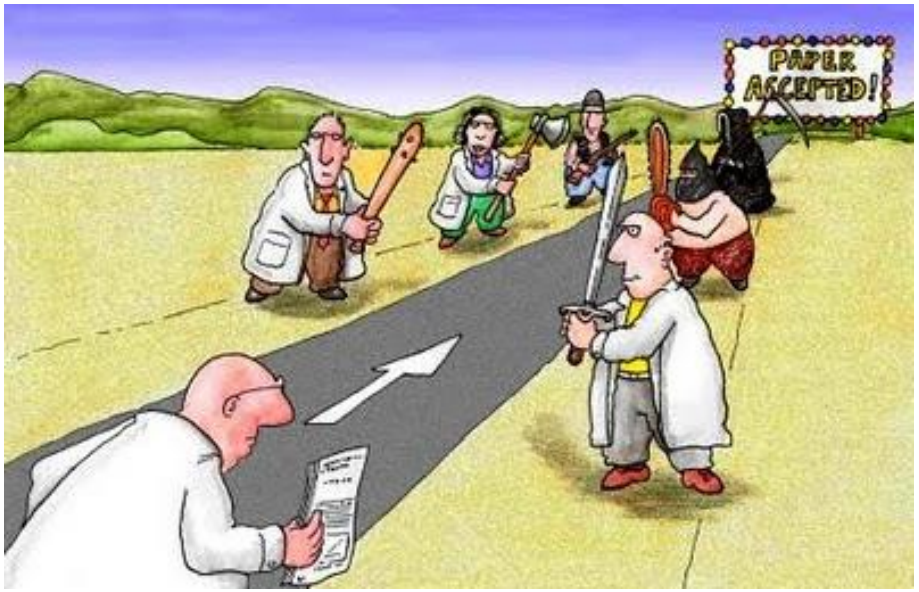
Each of these involve slightly different practices, but ultimately colleagues are evaluating each other.



"I think you should be more explicit here in step two."

What we know about peer review?

Research evidence



BioMed Central
The Open Access Publisher

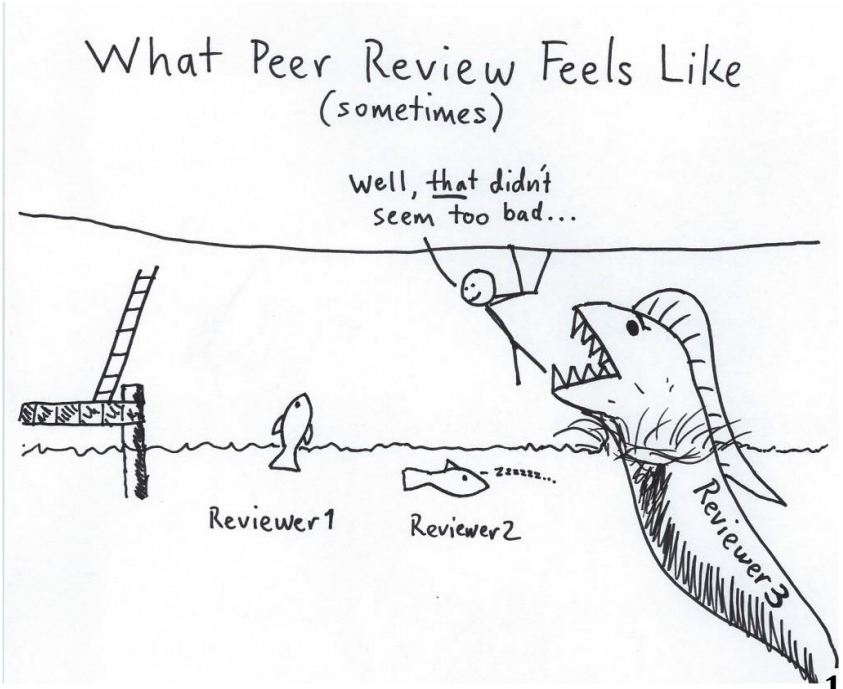
Springer

Future of Peer Review

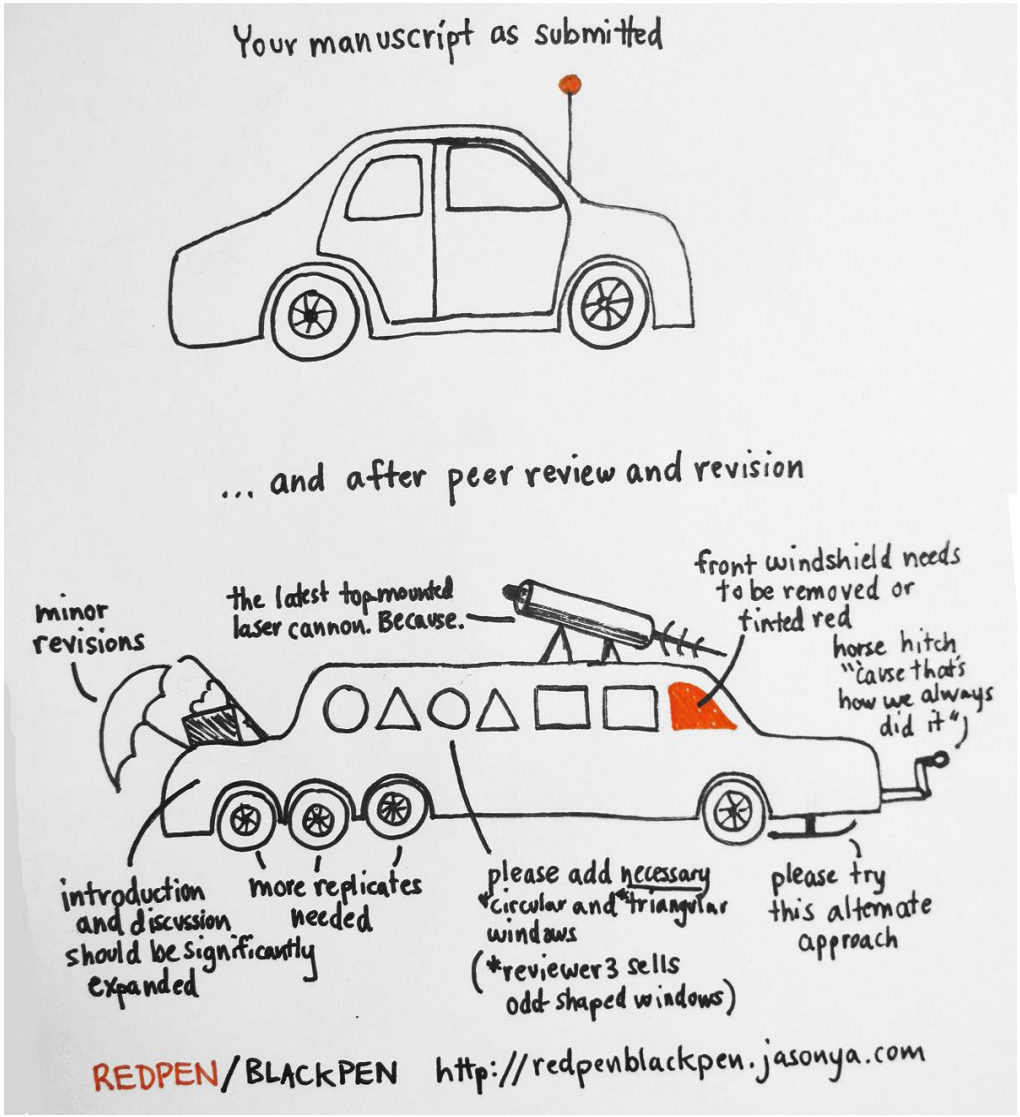
Image by James Yang http://www.jamesyang.com

Maria Kowalczuk, PhD

Deputy Biology Editor, BioMed Central



Your Manuscript On Peer Review



I'm a big fan of peer review. Most of the revisions that reviewers suggest are very reasonable and sometimes really improve the manuscript.

Other times it doesn't seem to work that way. I've noticed this is especially true when the manuscript goes through multiple rounds of peer review at different journals. It can become a franken-paper, unloved by the very reviewers who made it.

Why do peer review?

- Filter
  - More papers submitted than could be “printed”
  - Eliminate “bad” science, pseudo-science, harmful science...
- Aura of “quality” (only the best gets in)
- Collegial stamp of approval
- Professional obligation to the principles of one’s discipline

So, what's the problem?

- Famous papers that were published and did NOT get peer reviewed:
  - **Watson & Crick's** 1951 paper on the structure of DNA in Nature
  - **Abdus Salam's** paper "Weak and electromagnetic interactions" (1968). Led to Nobel Prize
  - **Alan Sokal's** "Transgressing the Boundaries..." in 1996 turned out to be a hoax. Now known as the Sokal Affair.
- Famous papers that were published and passed peer review that later proved to be fraudulent:
  - **Jan Hendrik Schon** (Bell Labs) submitted and passed peer review 15 papers published in Science and Nature (1998-2001) found to be fraudulent.
  - **Igor and Grichka Bogdanov** 1999 & 2002 published papers in theoretical physics believed by many to be jargon-rich nonsense.
- Famous papers that got rejected that later turned out to be seminal works:
  - **Krebs & Johnson's** 1937 paper on the role of citric acid on metabolism was rejected by Nature as being of "insufficient importance", was eventually published in the Dutch journal Enzymologia. This discovery, now known as the Krebs Cycle, was recognized with a Nobel prize in 1953.
  - **Black & Scholes** 1973 paper on "the pricing of options and corporate liabilities", rejected many times, was eventually published at the intersession of Merton Miller to get it accepted by the Journal of Political Economy. This work led to the Nobel Prize.

- 최근에 Peer review와 관련하여 제기되는 문제는 Peer review circle입니다.

- ‘Peer review circle’ 은 ‘Peer review ring’ 이라고도 하며, 논문의 가짜 리뷰를 위해 몰래 만들어지는 과정을 말합니다. 정상적인 Peer review 과정에서 논문 저자는 Peer reviewer가 누구인지 알 수 없습니다(Single Blind Review Process). 그러나, Peer review circle이 비밀스럽게 만들어진 경우, 저자는 Peer review가 누구인지 알 수 있으며, 가짜 Peer review를 통해 부실한 논문의 출판이 승인될 수 있습니다.
- 2014년 7월, Sage Publications사는 Peer review circle과 관련 저자를 적발하고, Vibration and Control 저널에 관련된 약 60 편의 논문을 철회 처리했습니다.
- 2013년 5월, 저널 편집장이 저자와 가짜 Peer reviewer 간 이메일 수발신기록을 적발할 때까지 계속되었으며, Peer reviewer는 논문의 저자와 직접적 연락을 해서는 안됨에도 불구하고, 가짜 Peer reviewer는 투고 논문의 저자와 연락할 수 있었던 것입니다.
- 계속적인 추적으로 Sage Publications사는 Peer review circle과 관련된 사건을 조사하였으며, 130개의 가짜 Peer review 의심 이메일 계정을 보고하였다. 그에 따르면, 논문의 투고 이후 수분안에 리뷰코멘트가 작성되기도 하였는데 이러한 코멘트는 모두 가짜 Peer reviewer가 작성한 것으로 확인되었다.

Two Recent Articles...

- ***"Is Peer Review Broken?"***

  by Alison McCook

  The Scientist, vol 20 (2), Feb 2006, pg 26.

  http://www.the-scientist.com/2006/2/1/26/1/

  - Submissions are up, reviewers are overtaxed, and authors are lodging complaint after complaint about the process at top-tier journals. What's wrong with peer review?

- ***"Journal lays bare remarks from peer reviewers"***

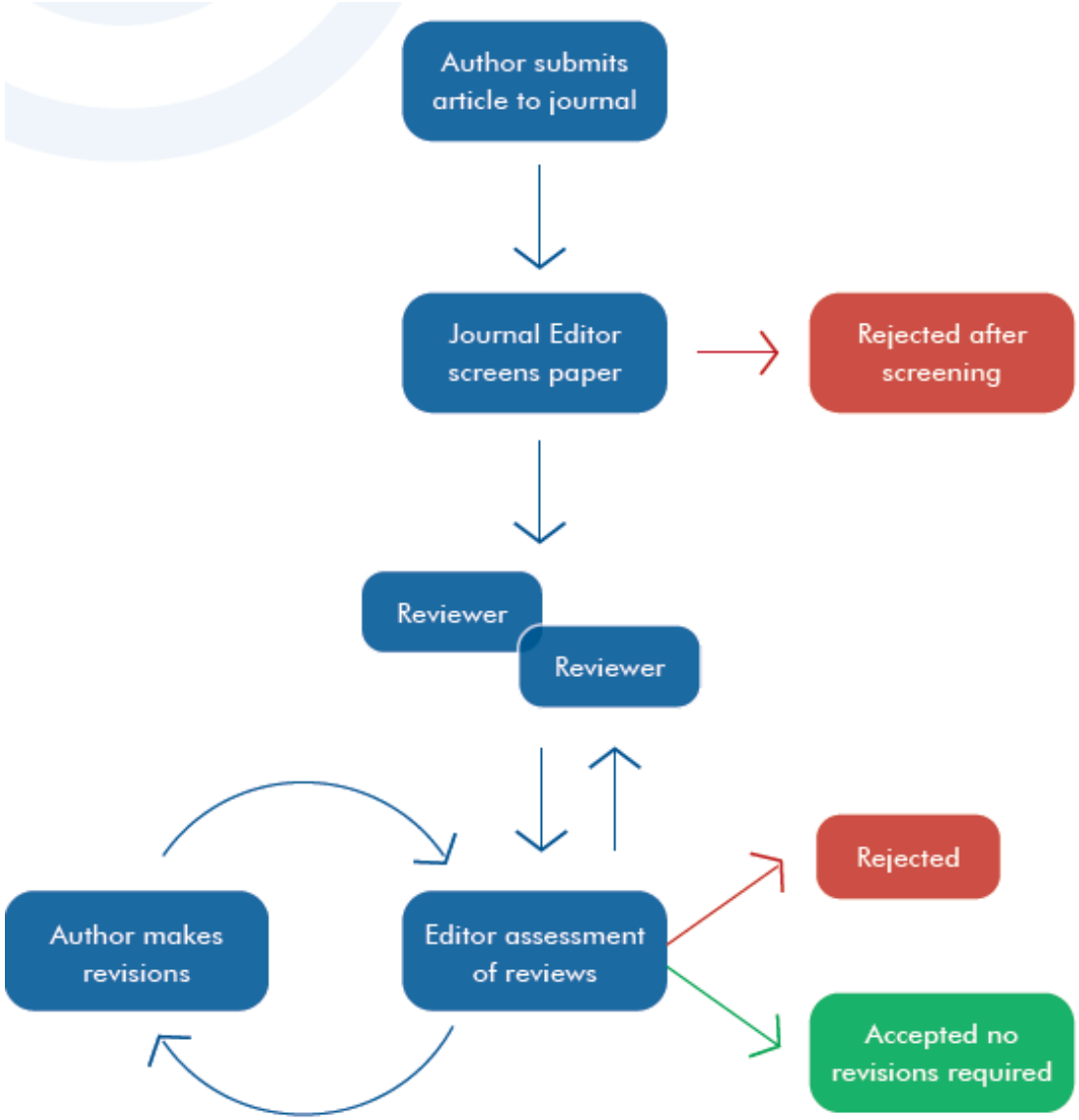
  by Emma Marris

  Nature, vol. 439, 9 February 2006, page 642

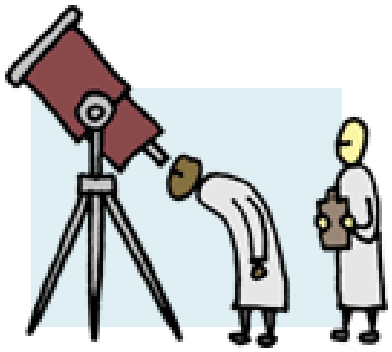
  http://www.nature.com/nature/journal/v439/n7077/full/439642b.html

  - Cloak of anonymity shed by new publication. Editors of a journal launched this week are out to revolutionize peer review. By publishing signed reviews alongside papers, they hope to make the process more transparent and improve the quality of the articles.

III. Peer Review Process



The peer review process



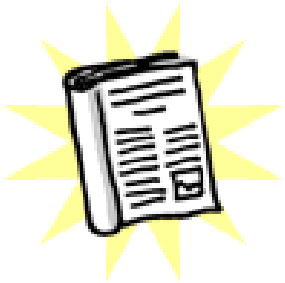
Scientists study something.

Scientists write about their results.

Journal editor receives an article and sends it out for peer review.

Peer reviewers read the article and provide feedback to the editor.

Editor may send reviewer comments to the scientists who may then revise and resubmit the article for further review. If an article does not maintain sufficiently high scientific standards, it may be rejected at this point.



If an article finally meets editorial and peer standards it is published in a journal.

Kinds of Review Process

- Single Blind Review Process
- Double Blind Review Process
- Open Review Process

  - Typically it is a double blind process: the reviewers do not know who the author is and the author does not know who the reviewers are. That way only the merits of the paper are evaluated.

- Hybrid Review Process

Peer Review 유형, 장점 및 단점

리뷰유형	장점	단점
싱글 블라인드 리뷰	• 리뷰어들은 심사하는 논문에 대해 압력이나 방해를 받지 않고 자유롭게 비판할 수 있습니다. • 저자가 누구인지 아는 것만으로도 연구 주제에 대해 파악하고 투고된 논문을 평가하는데 필요한 많은 정보를 얻을 수 있습니다.	• 개인적 편견: 리뷰어가 저자가 누구인지 알기 때문에, 객관적으로 논문을 평가하지 않을 수도 있습니다. • 성별 혹은 지역에 대한 편견과 같은 다른 차별요소가 논문의 운명을 결정할 수 있습니다. (예를 들어, 일부 리뷰어들은 개발 도상국에서 수행된 연구에 대해 부정적일 수도 있습니다).
더블 블라인드 리뷰	• 지역이나 성별 및 저자의 배경에 따른 차별요소가 현저하게 줄어들 수 있습니다. • 저자와 리뷰어 둘 다 개인의 공격 혹은 압력의 대상이 되지 않습니다.	• 저자의 배경을 아는 것이 실제로 심사하는 연구를 이해하는데 도움이 될 수 있습니다. • 더블블라인드 시스템이 완벽하게 구축되어 있지는 않습니다. 따라서, 리뷰어들은 연구 주제, 문체 등을 기반으로 하여 저자의 신원을 추측할 수도 있습니다.
오픈 리뷰	• 투명성 (Transparency)을 갖춤으로써 조작의 위험성과 편견을 줄일 수 있습니다.	• 리뷰어들은 대중들이 만족할 만한 피드백을 제공해야 된다는 것에 압박감을 느끼거나 논문에 대해 비판을 해야 함에도 불구하고 이를 자제할 수도 있습니다.
하이브리드 리뷰	• 투명성을 갖춤으로써 조작의 위험성과 편견을 줄일 수 있습니다. • 리뷰어들은 장기간에 걸쳐 논문에 대한 광범위한 코멘트를 제공하고 저자와 소통할 수 있습니다. • 저자들은 자신의 논문이 오픈 시스템에 공개된 날을 자신의 논문의 우선 출판일(publication priority)로 지정할 수 있습니다.	• 오픈 리뷰 중에 저자들은 까다로운 질문들에 직면할 수 있습니다. 하지만 이러한 이유로 투고되는 논문의 완성도는 높아질 수 있습니다.

IV. New Peer Review

4.1 What is Author-guided Open Peer Review?

- It is time to challenge the idea that **scientific peer review** can only be arranged and handled by **journal editors**. We propose a research assessment process **complementary** to journal-handled peer review where **authors themselves** can **invite experts** to **openly evaluate their work**.
- The Open Peer Review Protocol and our recent article on academic self-publishing describe in detail the requirements for implementing author-guided open peer review. The key features are:
- **Authors invite** expert peers to formally evaluate their work posted in any online archive (libraries, repositories, preprint servers, etc).
- Reviewers who accept submit a detailed **qualitative and quantitative assessment** of the work.

- The **reviewer's name** and any **conflict of interest** are **publicly disclosed**.
- Reviews are published with a **creative commons license** (or similar) and become publicly available along with the original work.
- Reviews are subject to **commentary** and **evaluation by the entire community**.
- Author-guided open peer review can be implemented at any stage of an article's lifetime: a) **before journal submission**, (b) **during journal peer review** (in agreement with the journal's editor), and (c) **after journal publication**.
- Read the Open Peer Review Protocol for more detailed implementation instructions and **read** and **sign** the Manifesto of Independent Peer Review.

4.2 Why is the Open Peer Review ?

- The current blind peer review model has repeatedly been criticized as **slow**, **opaque** and prone to **bias** or even **fraud**. In addition, the fact that journals monopolize research evaluation creates an environment of fierce academic **competition**, opposed to **open collaboration** for the benefit of science and society.

Author-guided open peer review:

- Offers reviewers incentives to provide **good quality** and **helpful** reviews.
- Helps journal editors make **better-informed decisions** on manuscripts that merit publication and **reduce risk-taking**.
- Creates an **alternative evaluation system** bypassing **journal publication costs**, which is especially important for authors with limited resources (see **developing countries**).
- Allows the **dynamic evaluation** of scientific ideas and results, in accordance with the concept of **critical rationalism**.
- Encourages **collaboration** between **authors** and **reviewers**.

4.3 Portable Peer Review

모든 연구자들에게 논문 제출 후에 거치는 Peer Review 과정은 길고 부담스러운 과정이다. 평균 Peer Review 기간은 80일이다. 하지만, 보완요청과 또 한번의 리뷰 과정을 감안하면 더 길어진다. 여기서의 문제는 거절당하고 다른 저널에 제출하면 동일한 과정을 반복해서 겪어야 한다는 것이다.

출판계내에서도 이런 시스템의 문제를 개선하기 위한 노력이 있어 왔고, 그 중 하나가 Portable Peer Review입니다. Portable Peer Review의 핵심은 Peer Review과정을 줄이는 것입니다. 이미 Peer Review 과정을 거쳤으면 다른 저널에서 같은 과정을 거치지 않게 하거나, 아예 저널과 무관한 독립 기관에서 Peer Review를 거치고 이를 복수의 저널에 통용되도록 하는 것입니다.

연구자들에게 저널에 논문을 제출하고 수록되는 과정에서 가장 소모적인 과정 중의 하나가 Peer Review입니다. 따라서 기존 Peer Review과정의 효율성을 제고하기 위한 대안이 제시되는 것은 반가운 일입니다. 이러한 대안들이 잘 작동하려면 독립 Peer Review 서비스의 역할 뿐 아니라 저널과 출판사들의 적극적인 협조가 이루어져야 할 것입니다.

4.4 자가 출판(Self-Publishing)

빠른 기술 발전과 더불어서 저자가 스스로 전자책을 출판하는 자가출판(Self-Publishing)이 새로운 트렌드로 주목받고 있다. '출판 혹은 도태'의 경쟁하에 놓인 연구자는 참신한 아이디어를 담은 논문을 스스로 출판해 보고자 하는 것에서 시작하였다.

자가 출판의 경우에는 영국의 동화작가 베아트릭스 포터의 "피터 래빗의 이야기"로 잘 알려진 작가이다. 1901년 동화책을 출판이 거듭 거정당하자 스스로 출판을 하게 되고, 이는 대성공을 거둔다. 약 100년 전에도 이렇듯 자가 출판을 통해서 성공한 사례가 많으며, 오늘날은 디지털 기술의 발전으로 더욱 접근이 용이해졌다.

전통적 출판 방법을 더 선호하는 학자들은 우려를 표하기도 합니다. 정식적이고 신뢰 가능한 출판 방법은 아니라는 주장이 있지만, 자가 출판은 출판에 관한 제약이 거의 없고 저자들에 의해서 블로그나 전자책을 통해서 자유롭게 의견을 소통할 수 있으며, 출판 결과를 빨리 접할 수 있다는 장점이 있다.

4.5 Results-free Peer review

연구 결과가 최초 가설과 다르게 나올 때면 고민에 빠지기 마련이며, 저널 게재에 대한 두려움이 들 수도 있습니다. 논문 평가는 사람이 하는 것이니 항상 100% 객관적일 수는 없으며, 주어진 가설의 달성 여부에 대한 가중치는 평가자마다 다를 수 있습니다. 최근 한 저널이 흥미로운 실험을 진행했습니다. BMC Psychology라는 오픈 저널이 result-free Peer review방식을 만들었습니다. Peer review 과정에서 리뷰어가 결론 부분을 보지 못하게 하고 논문의 목적과 취지, 방법론에 얼마나 충실한지를 보고 논문을 평가하는 방식입니다.

이 방법은 두 번의 단계를 거치는데,

- 첫 번째 리뷰에서 리뷰어는 제출된 논문의 결론을 보지 않고 논문의 취지와 방법론만 가지고 평가합니다.
- 두번째 단계에서 리뷰어는 동일한 논문을 논문의 결론을 포함하여 평가하게 되는데, 결론 자체가 유효한가가 아니라 그 결론이 취지와 방법론에 정합성을 갖는지를 평가합니다.

V. Difficulties and Problems

- Means different things at different journals
- Slow
- Expensive
- Subjective
- Biased
- Open to abuse
- Poor at detecting errors
- Almost useless at detecting fraud

Is peer review reliable?
(How often do two reviewers agree?)

NEJM (Ingelfinger F 1974)

- **Rates of agreement only "moderately better than chance" (Kappa = 0.26)**
- **Agreement greater for rejection than acceptance**

Grant review

- **Cole et al, 1981 – real vs sham panel, agreed on 75% of decisions**
- **Hodgson C, 1997 – two real panels reviewing the same grants, 73% agreement**

Are two reviewers enough?

- **Fletcher and Fletcher 1999 - need at least six reviewers, all favouring rejection or acceptance, to yield a stats significant conclusion ($p<0.05$)**

Should we mind if reviewers don't agree?

- Very high reliability might mean that all reviewers think the same
- Reviewers may be chosen for differing positions or areas of expertise
- Peer review decisions are like diagnostic tests: false positives and false negatives are inevitable (Kassirer and Campion, 1994)
- Larger journals ask reviewers to advise on publication, not to decide

Bias

Author-related

- Prestige (author/institution)
- Gender
- Where they live and work

Paper-related

- Positive results
- English language

Prestigious institution bias

Example: Peters and Ceci, 1982

Resubmitted 12 altered articles to psychology journals that had already published them

Changed:

- title/abstract/introduction - only slightly
- authors' names
- name of institution, from prestigious to unknown fictitious name (eg. "Tri-Valley Center for Human Potential")

Peters and Ceci - results

- **3편은 재심**: Three articles recognised as resubmissions
- 1**편 게재**: One accepted
- 8**편 게재거절**: Eight rejected (all because of poor study design, inadequate statistical analysis, or poor quality: none on grounds of lack of originality)

How easy is it to hide authors' identity?

- Not easy
- In RCTs of blinded peer review, reviewers correctly identified author or institution in 24~50% of cases

Reviewers identified (open review) – results of RCTs

Asking reviewers to sign their reports in RCTs made no difference to the quality of reviews or recommendations made

- Godlee et al, 1998
- van Rooyen et al, 1998
- van Rooyen et al ,1999

Open review on the web

Various experiments and evaluations are underway…

What makes a good reviewer? – results of RCTs

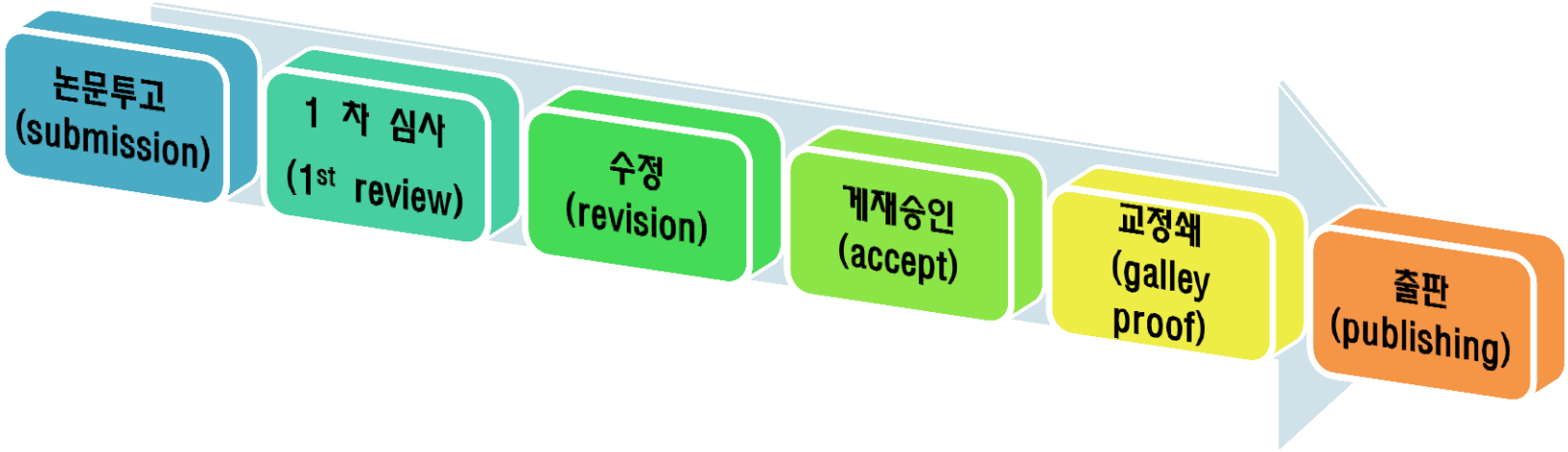
- Aged under 40
- Good institution
- Methodological training (statistics & epidemiology)

What might improve the quality of reviews?

- Reward/credit/acknowledgement?
- Careful selection?
- Training?
- Greater accountability (open review on web)?
- Interaction between author and reviewer?

  (real time open review)

VI. An Example: Peer Review Process & System



1. 투고
2. 1차 심사 – 보통 2~3인의 동료과학자에 의해 심사 및 결과 통보
   → accept, minor (major)revision, 또는 reject
3. **수정 투고** (revised manuscript + response to reviewer's comments)
4. 2차 심사 – minor revision 또는 accept
5. 게재승인 통보
6. 교정쇄 확인
7. 출판

Journal of Electrical Engineering & Technology

The scope of the journal includes the following: Electrical power engineering, Electrical machinery and energy conversion systems, Electrophysics and applications, Information and controls

JEET(Journal of Electrical Engineering and Technology) which is an official publication of the Korean Institute of Electrical Engineers aims to publish the highest quality manuscripts dedicated to the advancement of electrical engineering technologies. The first issue of JEET was published in March 2006 and was selected for inclusion in Thomson Reuters Web of Science(SCIE) on June 2010. (IF=0.563) JEET presently is being published on a bimonthly basis. The scope of the journal includes the following: Electrical power engineering, Electrical machinery and energy conversion systems, Electrophysics and applications, Information and controls. Papers based on novel methodologies and implementations, creative and innovative electrical engineering associated with the four scopes are particularly welcome but not restricted to the above topics. The JEET publishes primarily in conformity with international publication ethics codes based on the COPE (committee on publication ethics: http://publicationethics.org/). Additionally, the JEET publication complies strictly with the general research ethics codes of the KIEE (http://www.kiee.or.kr). The full text and detailed information on the journal is available online at http://www.jeet.or.kr

Announcement

› MORE

- Impact Factor: 0.725 (2012) [2013-06-20]
- The 9th Editor's Workshop [2013-05-15]

Current issue

› MORE

- Vol. 8, No. 6, 2013 [2013-01-31]
- Vol. 8, No. 5, 2013 [2013-01-31]
- Vol. 8, No. 4, 2013 [2013-01-31]
- Vol. 8, No. 3, 2013 [2013-01-31]
- Vol. 8, No. 2, 2013 [2013-01-31]

JEET Online Submission

COPE

COPE Flowchart

KCSE

SCIE

crossref

CITEDBY crosscheck

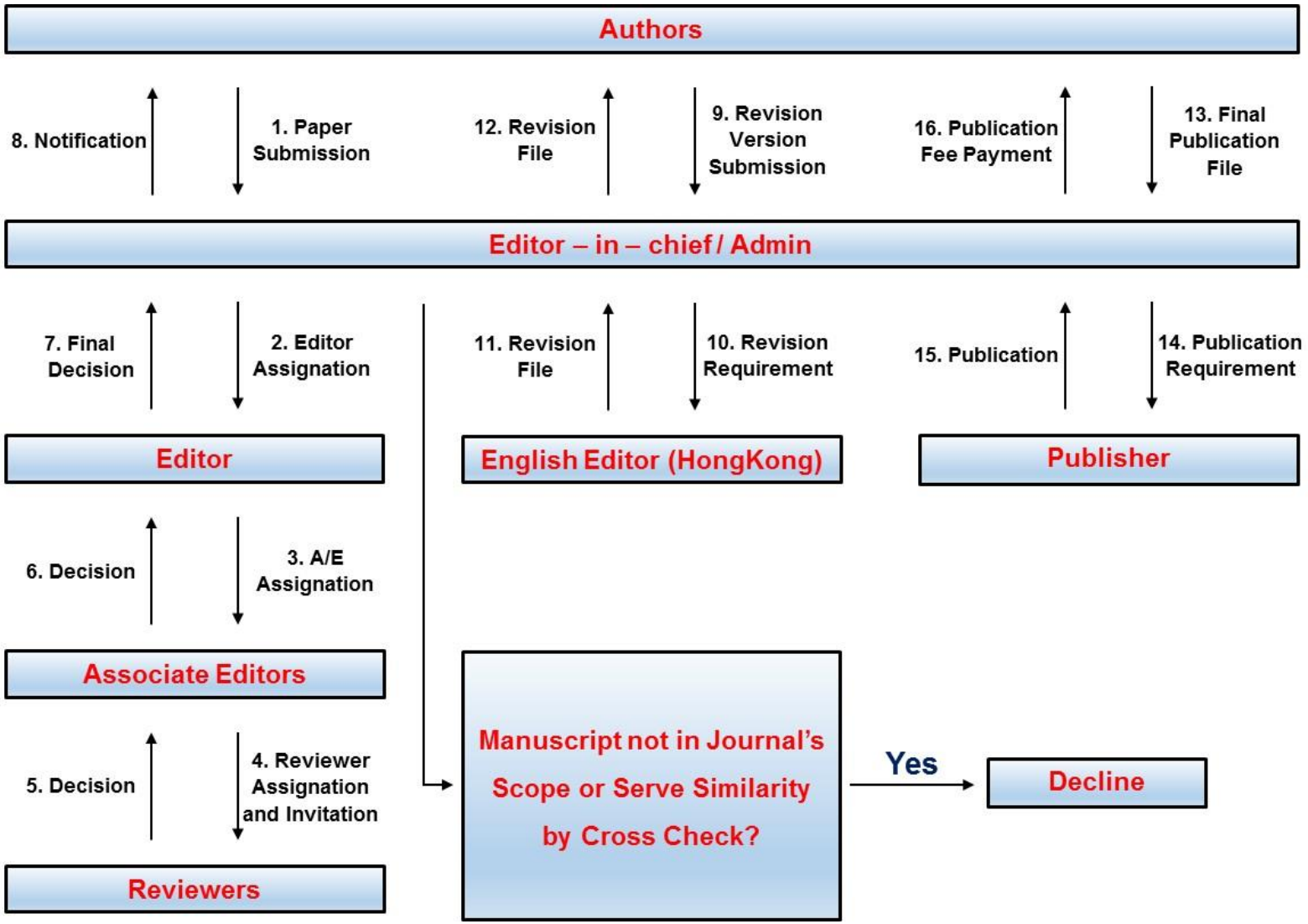
KIEE

pISSN: 1975-0102
eISSN: 2093-7423

http://home.jeet.or.kr/

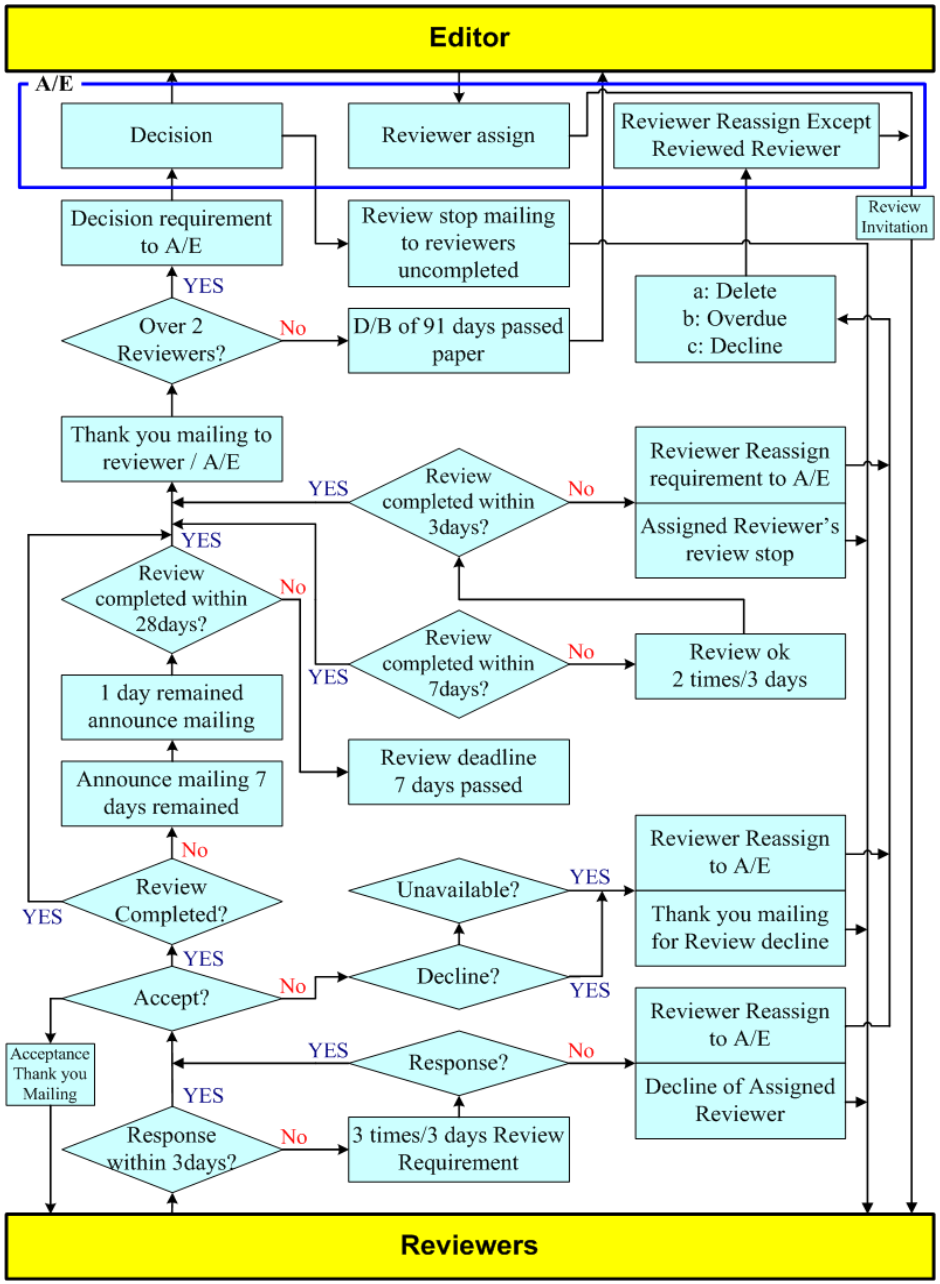
Review Process of JEET

JEET Peer Review Process (www.jeet.or.kr)



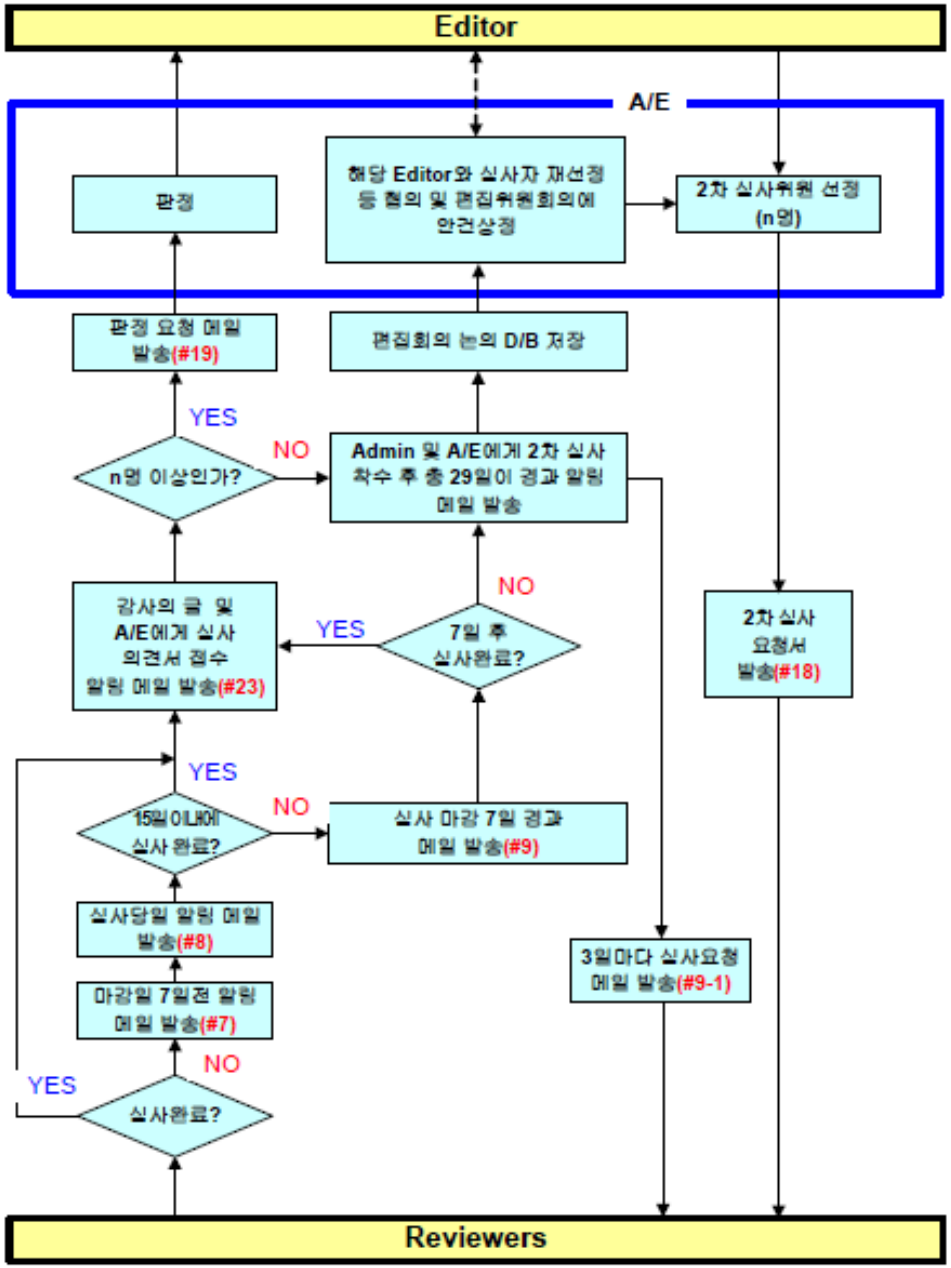
A/E-Reviewers Flow Chart

(1st Review Mode)

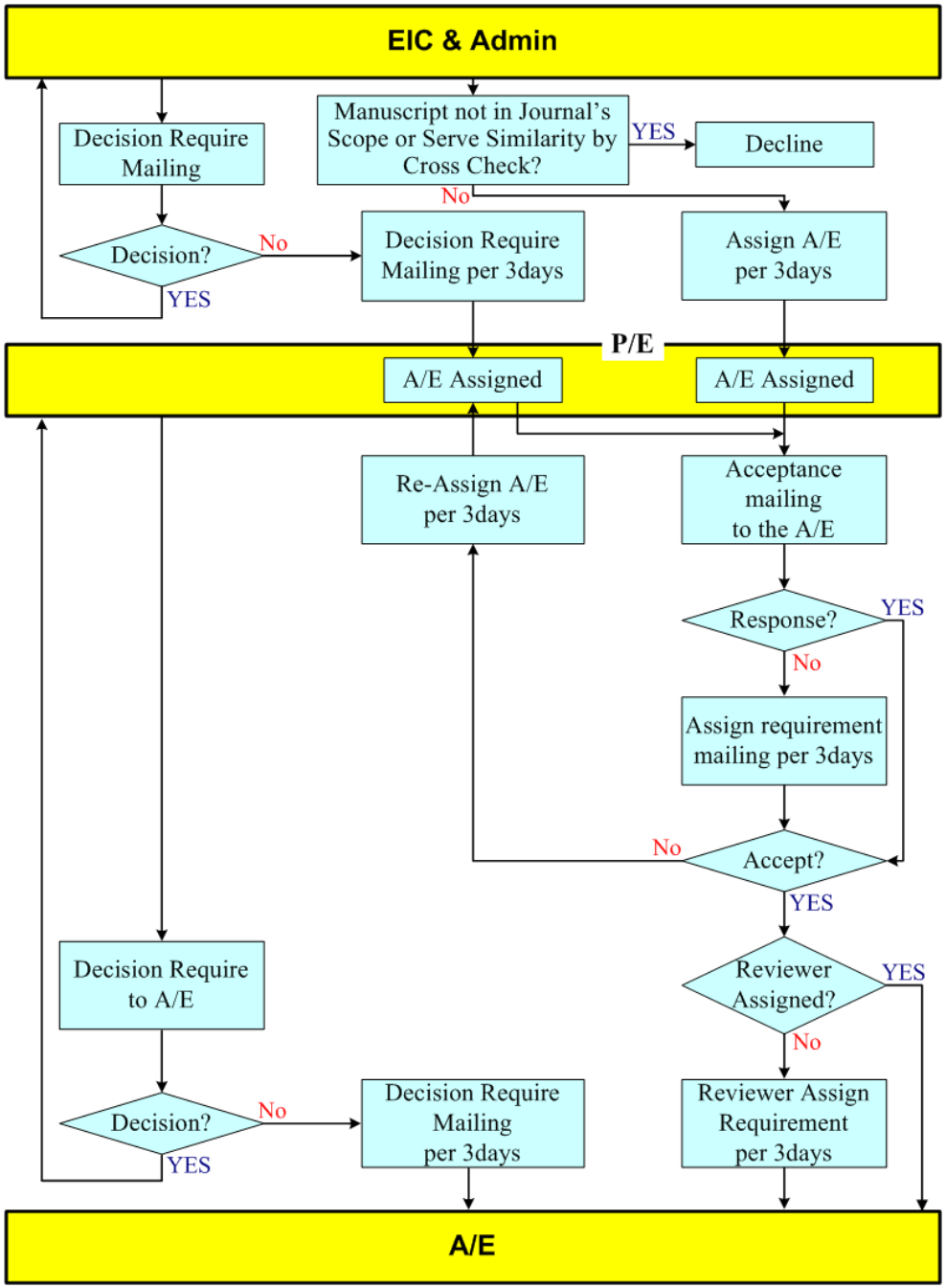


A/E-Reviewers Flow Chart

(2nd Review Mode)



EIC & Admin - P/E - A/E Flow Chart



VII. Discussion

Pros and Cons of Peer Review?

Future Peer Review System?...

- ✓ **Focused on Customers(Authors)**
- ✓ **Self Standing & Feedback System**
- ✓ **Effectiveness**
- ✓ **On Line Real Time**
- ✓ **Else etc.. Your Opinion & Idea ???**

Peer Review?

- It’s not perfect—grist for a lot of mills
- The Web has made it less of a obstacle to access
- Different disciplines have different perspectives—different issues
- Pedagogical yardstick for students

Peer review on the Internet

- Using email

  e-mail based online peer review

  See Peer Review of Scholarly Publications in Health, Online Manuscript Peer Review and Tracking Systems and Physics of Plasmas Online Manuscript Submission and Peer Review

- Discussion approach

  better interaction among authors, reviewers and the editorial body

  JIME – Open Peer Review Process

- Wikis

  Immense potential to conduct peer review

- Blogs

  post publication comments

  See Article Note: On Blogging as Tool, but Really About Using RSS

Global benefits

- Worldwide increase in access to scientific literature
- Increased opportunities for collaboration among experts worldwide
- Increased speed to disseminate scientific literature with electronic communities
- More informal peer reviews
- Quality needs to be maintained
- See Scholarly Electronic Publishing Weblog

Design Your Peer Review System

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