

In Referees We Trust? The Origins of Peer Review

Melinda Baldwin, University of Maryland College Park

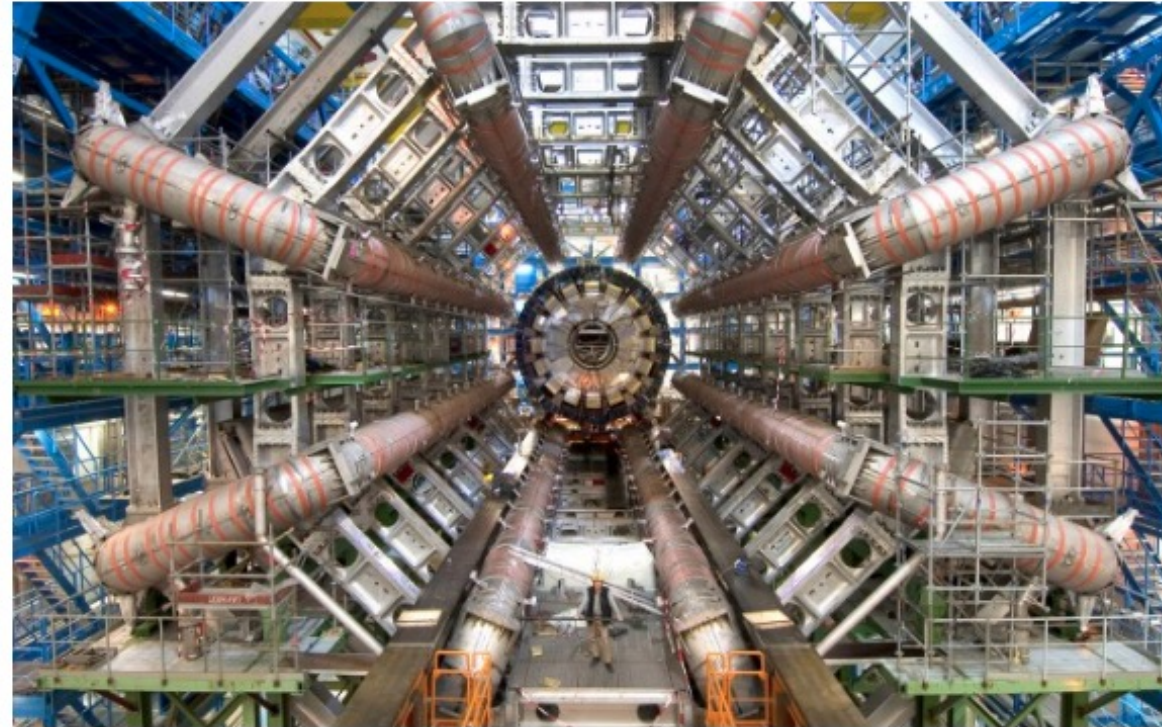
The Value of Research: Open Science Between Publicity and Publication

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CERN's Higgs boson discovery passes peer review, becomes actual science

By Sebastian Anthony on September 10, 2012 at 10:46 am | [35 Comments](#)



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CERN's announcement on July 4 — that experiments performed by the Large Hadron Collider had discovered a particle that was consistent with the Higgs boson — has passed a key step towards becoming ratified science: Its findings have been published in the peer-reviewed journal *Physics Letters B*.

A quick history of refereeing

- First systematic refereeing: 19th century
 - Mostly at periodicals affiliated with scholarly societies
 - Less common outside English-speaking world
- Funding bodies less likely than journals to employ external referees
 - Funding body employees have significant power
 - Expectation that referee identities—and comments—will remain confidential
- Not a requirement for scholarly legitimacy until the late C20

Expansion of refereeing in US after 1945

- Pressure on journal editors from increase in submissions
- *Science* editorial board minutes, 1955: “the job of refereeing and suggesting revisions for hundreds of technical papers is neither the best use of [the board’s] time nor pleasant, satisfying work”
 - Solution: Begin asking more outside referees to help
- New federal agencies, NIH and NSF, incorporate expert advice from scientists on which proposals to fund

Rise of the term “peer review”

- Used first to describe professional review bodies in medicine (early 1960s)
- Later used to describe expert review at grant funding agencies (~1965), then to refereeing at journals (~1975)
- Seems to have started as an Americanism
 - Lord Zuckerman, *Nature*, 1972: “what the Americans call ‘peer review’”

An American obsession?

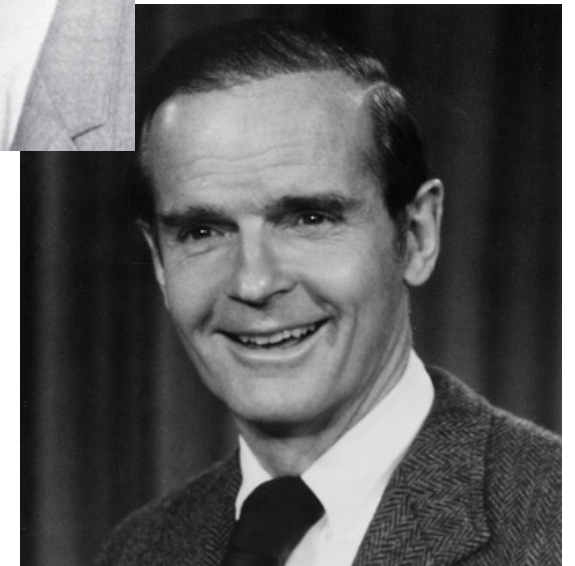
- Frustration with slow and burdensome American journals
 - Chemist Howard K. Zimmerman: I will “publish all my work that I consider to be of any consequence in foreign journals”; “[American] editors are either incompetent or afraid to make their own decisions” (1962)
- View that Americans place more emphasis on peer review
 - *The Lancet*, 1989: in the US “far too much is being asked of peer review”

NSF refereeing, 1950-1975

- National Science Foundation, founded 1950
- Two types of refereeing: Panel review or “ad hoc” mail review
- Program directors make final choices
 - Program directors: NSF employees, often with advanced degrees in the field they oversee
- Applicants not given copies of referee reports
 - Applicants do receive a summary generated by NSF employee

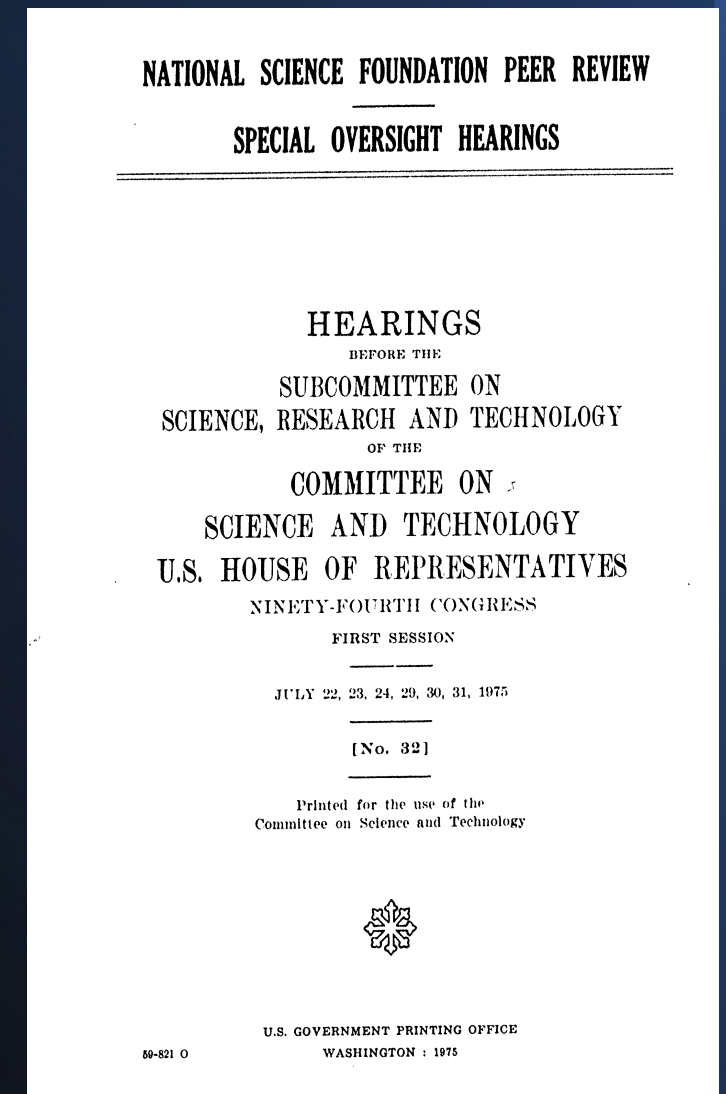
NSF Criticism

- Rep. John Conlan (R-Arizona, top), Rep. Robert Bauman (R-Maryland), Sen. William Proxmire (D-Wisconsin, bottom)
 - Conlan and NSF education programs
 - Bauman Amendment to 1976 NSF Appropriations Bill
 - Proxmire's Golden Fleece Award



Peer review hearings

- July 22–31, 1975
- Conlan: NSF should have more legislative oversight
 - NSF's review process is secretive, unfair
- NSF leadership: “Peer review” is the only valid way to select which grants are funded
 - NSF's review process is the standard in science
- US scientists use “peer review” to defend their role in decisionmaking at NSF
- Outcome: More emphasis on referee opinions at NSF; Bauman amendment scrapped



Conclusions



Sign from the 2017 "March for Science"

- Biggest change in the 1970s was perhaps not to the practice of peer review, but to the language surrounding it
 - This is the moment when “peer reviewed” came to mean “actual science”
- Increased emphasis on peer review in the US came out of desire to balance scientific autonomy and public accountability