

# **Improving Peer-Reviewing: A Case Study Triggered by the Acceptance of a Bogus Paper**

Nagib Callaos

President of International Institute of Informatics and Systemics (IIIS, [www.iiis.org](http://www.iiis.org))

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Organized and facilitated by Professor T. Gordon Gill, *University of South Florida*, USA

## **Purpose:**

The objectives of this very short paper is 1) to briefly describe the sequence of the search/research activities that were triggered by the acceptance of a fake paper submitted to WMSCI 2005 and 2) to present the different reports that were generated by means of a) literature search regarding this kind of problem, b) the published potential solutions, and c) the implemented solution, which was identified by a methodological research fundamentally based on *action-research*, *action-design*, and *action learning*. At least 3000 hours (of senior academics, conference organizers, and journal editors) have been invested in this case study.

In this short paper, we will make a very short description with links to other detailed and larger papers which are being generated as a consequence of this case study and the tentative solutions that has been implemented, which in turn might provide input for more case studies regarding this important issue of improving peer reviewing processes.

## **Main Events**

The respective main events and search/research activities have been, up to the present, the following:

1. Randomly generated papers were submitted to WMSCI 2005. Some of them were identified as such by their respective reviewers and were rejected. No reviews were received for one of them and then according to the published policy of the Organizing Committee, the paper was accepted as a *non-reviewed* one, because of the CVs of its respective authors (three MIT's PhD students). They were told that the paper will be included in the proceedings (with an explicit note) as a *non-reviewed paper*, but if the Organizing Committee received reviews recommending the acceptance of the paper then its status would change to a peer-reviewed one. A more detailed description, where facts were separated from reasoned opinions and judgments, can be found at [www.iiis.org/wmsci2005-facts-and-reasoned-judgements](http://www.iiis.org/wmsci2005-facts-and-reasoned-judgements) (15 pages)

2. All hell broke loose after the email acceptance was sent. Reuter distributed the news as “a computer generated paper was accepted for presentation at a computer science conference.” BBC, CNN, Boston Globe, etc. published the news. Half truths and blatant smearing and lies, as well as personal attacks invaded the blogosphere related to Computer Science.
3. Our huge surprise was that, even after the above mentioned events, we received reviews recommending the acceptance of the gibberish paper. This event couldn't be more astonishing and disconcerting to us. ***Was something wrong (unethical) with some of our reviewers? Was something wrong with our reviewing methodology? How could we have a more effective reviewing methodology?***
4. Point 3 triggered a search process for more information and the more information we gathered the more certain we were that we needed a reviewing methodology different to the traditional and most used one. Parallel to the literature search (not research), we organized conversational sessions and focus groups in the context of the 2006, 2007, and 2008 conferences. Interested attendees of these events were asked the questions that our search was producing. Results of these conversational sessions were included as appendixes of the document posted at <http://www.iis.org/nagib-callaos/peer-review/> (pages 76-107).
5. Results of the processes described in point 4 triggered action-research processes which produced action-design and action-learning processes, in the context of an incrementally-evolutionary methodology to identify the ways of improving traditional double-blind peer reviewing methods.

## **Conclusions of the Search/Research**

1. The most essential conclusions were as follows
  - a. *A high level of agreement among reputable journals' editors* regarding the low effectiveness, weaknesses, and high frequency of failure in peer-review methods. Combining these opinions, perceptions, and facts with the huge amount of time spent (invested?) in peer reviewing, it is easy to conclude that we are facing an important problem that require some solutions. It is estimated that 15.000.000 of yearly hours of work are used in peer reviewing processes (more than what the USA invested in the whole Genome Project); about one billion dollars each year while (according to a survey of members of the Scientific Research Society) “only 8% agreed that ‘peer review work well as it is’.” So, is peer-reviewing cost-effective? Details regarding the high level of agreement regarding the low level of effectiveness of peer review can be found in pages 1-20 of the report posted at <http://www.iis.org/nagib-callaos/peer-review/>
  - b. No agreement regarding a standard peer-reviewing methodology.
  - c. Lack of agreement regarding the meaning of “Peer” and “Peer-Review.” More details at <http://www.iis.org/nagib-callaos/meaning-of-peer-review> and at <http://peerreviewing.wordpress.com/2012/05/19/meanings-of-peer-and-peer-review/>

- d. Lack of agreement about what a conference is and what are, or should be, conferences' objectives. In one extreme, some conferences have peer reviewing standards similar to journals in the respective discipline. In the other extreme, there are reputable conferences with no peer-review at all. Examples are the meetings of the American Mathematical Society: AMS, The Southeastern International Conference on Combinatorics, Graph Theory, and Computing, etc. (<http://blog.computationalcomplexity.org/2007/11/unrefereed-does-not-equal-bogus.html>). Different disciplines have different conceptions regarding this issue. Then, **what should a multidisciplinary conference do with this regard?**
- e. Lack of explicitly written information regarding what a conference's proceedings is and what it should contain.
- f. Disagreement among different disciplines with regards to their conceptions of what "conferences" are for and what is, or should be, the functions of their respective proceedings. Consequently, **what should a multidisciplinary conference do regarding this issue?**
- g. A more adequate reviewing methodology was needed, especially for multi-disciplinary conferences organized for inter-disciplinary communication.

### **Potential solutions:**

With the above mentioned results of our search, we tried to design and implement a *Reviewing Methodology for a multi-disciplinary conference* and to explicitly publish what we understand by each of the concepts, objectives, functions, and notions where no explicit standards or implicit agreement exist. The meta-methodological process we have been (and we are still following) following is based on a combination of *action-research*, *action-design*, and *action-learning in the context of an evolutionary, incremental, and cybernetic process*.

Up to the present we obtained the following results

1. We identified the objectives of peer-reviewing: pages 20-35 of the report posted at <http://www.iis.org/nagib-callaos/peer-review/>
2. We identified the meaning of Peer-Review, or what we understand by it, and published in the IIS's conferences web sites and at [www.academia.edu/4437203/Meaning\\_of\\_Peer\\_Review](http://www.academia.edu/4437203/Meaning_of_Peer_Review)
3. We proposed possible solution in pages 35-39 of the document mentioned in point 1. This solution has already been implemented with a reasonable level of effectiveness and success.
4. We proposed A Systemic Model of Scholarly and Professional Publishing and the architecture of its respective supporting information system in pages 39-61 of the document mentioned in point 1. (also at [http://www.academia.edu/4437267/Systemic-Cybernetic\\_model\\_for\\_reviewing\\_and\\_publishing](http://www.academia.edu/4437267/Systemic-Cybernetic_model_for_reviewing_and_publishing)). We implemented about the 80% of what

has been proposed but because of financial lack of support the proposed system has not yet been completely developed.

5. We proposed and we are working with a three-tier reviewing methodology:
  - a. Traditional double-blind with a minimum of 3 reviewers and with an average of about 4 actual reviews as reported in the forewords of the respective proceedings.
  - b. Non-anonymous, non-blind with a maximum of three reviewers.
  - c. Peer-to-peer reviewing (the reasoning supporting this kind of review is presented in pages 61-67 of the above mentioned document).

More details regarding this methodology can be found in “A Multi-Methodological Reviewing Process for Multi-Disciplinary Conferences” that is being posted at all conferences sites, e.g. <http://www.iiis2014.org/wmsci/Website/MMRPfMDC.asp?vc=1> A short description of a basic two-tier methodology has been posted at <http://iiis.org/peer-reviewing.asp>

6. We posted in all conferences sites what are, for us, the objectives of conferences and the functions of the respective proceedings. What we posted was the results of many conversational sessions and focus groups with attendees of our conferences. <http://www.iiis2014.org/wmsci/Website/FunctionsofConferencesProceedings.asp?vc=1>
7. We have been successfully using a newly designed two-tier methodology for Peer Reviewing in which we combine *traditional double-blind* peer reviewing as a ***necessary*** condition, but not as a ***sufficient*** one. A *non-blind* peer reviewing is also required in the methodology we are using since 2006. A short description of this methodology can be found at page <http://www.iiisci.org/Journal/SCI/Methodology.pdf>

*We posted in the web as many documents as we could in order to continue with the collective efforts of the IIIS's members and its conferences' attendees in contributing for a continuing improvement of the effectiveness in peer reviewing and in adapting the objectives of the conferences and the functions of its respective proceedings to the users of our conferences, who are their actual attendees. Continuing with this process is the essence of the meta-methodological process we are following which combines action-research, action-design, and action-learning in the context of an evolutionary, incremental, and cybernetic process, by means of collective contributions to this process.*

### **A Significantly Indicative Event Happened After the Presentation Was Made at the Workshop** (which was resumed above)

The peer-reviewing methodology, briefly described above and in the linked references seems, to have been quite ***effective*** especially if we take into account that “The publishers Springer and IEEE are removing more than 120 papers from their subscription services after a French researcher discovered that the works were computer-generated nonsense.” (<http://www.nature.com/news/publishers-withdraw-more-than-120-gibberish-papers->

[1.14763?WT.mc\\_id=TWT\\_NatureNews](#)). Since 2006, all fake papers we received were identified by our two-tier methodology which is described with more details at <http://www.iiisci.org/journal/sci/Methodology.pdf> and <http://www.iis.org/acceptance-policy.asp>. Even we cannot prove that our methodology is more effective (but less efficient because it requires more persons-hours in peer reviewing and acceptance processes), we have several reasons and indicators to believe that it is definitely more effective. One of this indicators is the recent news regarding prestigious publishers trying to remove about 120 fake papers from their publications, while no case has been presented up to the present with our two-tier methodology.