Afterword
Why Peer Review Journals?

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More than 50% of academic libraries' budgets are spent on peer review journal subscriptions [1]. One may wonder why these publications (often) with plain and dull covers (unlike those attractive, colorful magazines on newsstands), small subscription base and specialized readership carry such importance. The reason is simple.

Publishing a journal for interested researchers, academics, and practitioners benefits the advancement of knowledge. To be recognized as an academic subject, a discipline must publish a peer review journal. Unlike magazines with short shelf lives for general reading, peer review journals are archived and referenced within a discipline. These journals serve as a forum for professional intellectual exchange, and as a platform to present cutting edge research. Peer review (refereed) journals give direction to the field and industry. They also help researchers strengthen their academic careers and seek research funding. This article will review basic definitions of peer review and then discuss in detail issues and concerns that emerged in the editing of this issue.

Quality and Standard

What then exactly is "peer review" and why does a journal like IJAC - International Journal of Architectural Computing engage in a rigorous peer review process?

The peer review process has long been the mechanism of ensuring high quality research in academia. Peer review lies at the core of science and academic life [2]. The "invisible hand" of the peer review process is a labor-intensive quality control and certification system [3]. Printing and distributing journals is expensive and time consuming. Therefore, attempts are made to limit the volume of published material to only high quality manuscripts. The peer review process is a means to assure that the journals act as a repository of information relevant to the discipline. Protecting literature from the pollution of erroneous claims also led to the practice of peer review. Such selectivity ensures that the material is correct, as well as relevant, original, and well written for the readers.

Publish or Perish

It's no secret that survival in academia depends on publication. Even in fields such as architecture where creative work is recognized, universities generally use a candidate's authorship of printed refereed papers as part of their tenure and promotion criteria and standards. Non-refereed publications such as articles in professional magazines or newspapers do not usually count as scholarly work. Papers carrying the greatest weight are those published in leading scholarly peer review journals. A candidate's degree of national or international recognition, and the significance, influence, accomplishments and promise of their scholarship is judged by their publication volume and citation of their work by others. The peer review system performs a valuable screening function. It ensures that the authors have not overlooked anything substantial, the material is correct and significant, and based on solidly established research.

The field of Computer Aided Architectural Design has not had a dedicated peer review journal. Research in architectural computing mainly appears in conference proceedings (with varied acceptance rate) from international organizations - ACADIA, eCAADe, CAADRIA, SIGraDi and CAAD Futures Foundation. To deepen the understanding of the foundations of digital systems for architectural design and the technologies enabling their development and application, IJAC is founded to be a dedicated journal for research and development of computer-aided architectural design.

Nuts and Bolts

The peer review process varies slightly from journal to journal. In general, manuscripts are submitted to an editor. The editor selects two or three recognized experts in the field as reviewers to evaluate the manuscript

submissions [4, 5]. These reviewers evaluate the manuscripts for accuracy, clear and succinct writing, proper references, and significance to the field. Detailed reviewer comments and acceptance-revision-rejection recommendations are returned to the editor. The editor assembles the results and informs the author of the publication decision. About 20 - 50% of submissions are typically rejected. Lower acceptance rate (10 - 20%) is practiced in well-established disciplines that have a large number of people affiliated with the field [6, 7]. Others are accepted with the condition of revision according to the reviewers' comments. Unlike conference proceedings, manuscripts for journal publications are seldom accepted 'as is.' The rigorous review process and reviewer's comments and suggestions provide a unique opportunity for authors to significantly improve and enhance their paper with additional material and insights. The turn-around time from initial submission to publication is usually several months. Using on-line document management tools may shorten the time frame in review process [8-10].

Blind Reviews

Work should be judged by its merits, not authorship. All manuscripts should be reviewed following a defined, formal process with uniform criteria and standards. Blind reviews are often performed to further ensure fairness in the review process. "Blind" means the exclusion of identifying information such as names, affiliations, and geographic locations. Reviewers can be 'blinded' from knowing the author names. Authors can also be kept from knowing the identity of the reviewers. This lead to the practice of single and double blind reviews.

A "single blind" review means that reviewers know the identity of the authors, but the identity of the reviewers are not disclosed to the authors. In a "double blind" review, authors are asked to prepare the manuscripts with anonymity and the reviewers' identities are also not disclosed to the authors. This issue, #2 of IJAC, uses a double blind review process. Only the editors have access to the identities of both the authors and the reviewers.

Peer review doesn't necessarily mean anonymous submissions. Some journals send out manuscripts for peer review without removing author names and affiliations. Others ask for extreme concealment of identity from the body of the paper. Some blind reviews support a model that only requires authors to remove identities from the title and header of the paper. Further obscuring the identity in the submission is left to the authors' discretion [11]. It is difficult for editors to screen submissions for uniform compliance. Some authors object to the anonymity requirement because they don't believe bias is a problem, or because their style or research is well known and easily identified, and thus the extra work to obscure identity has little effect. It's not easy (sometimes even impossible) to remove all traces of identity and it may require masking and editing photos,

screenshots, production of videos to the extent that it may even obscure core aspects of the submission. Some authors consider their identity a legitimate aspect of their work, and object to being required to obscure it. One study showed that authors or affiliations can still be identified for about 40% of the blind submissions due to personal knowledge of the discipline or writing style of the manuscripts [12].

Some journals removed double blind review requirements because they found no relation between double blind review and paper acceptance results [13]. Other studies show that articles published in journals using blind review were cited significantly more than articles published in journals using an open peer review process [14]. We chose the double blind review process for IJAC.

Being an Editor or a Reviewer

Reviewing is more than just grading or gate-keeping. It is a means of improving the manuscript; it is a service to the intellectual community. Reviewers are given criteria to guide their comments and evaluations. (A copy of a reviewer form for this issue of IJAC appears in the appendix to this article.) Reviewers act as a representative of the field for the journal. Therefore, reviews should be constructive, firm and polite. Detailed evaluation of the merits and deficiencies of the paper is needed so that editors can better assess the reviewer's acceptance recommendation, and for authors to make appropriate revisions. Even when a paper is not accepted, the work may be published elsewhere and can benefit from reviewer's constructive suggestions. Authors often appreciate careful and detailed critique and suggestions even if their paper is rejected. The main purpose of peer review is to improve the quality of published papers and to facilitate dissemination of accurate and valid knowledge to the field (and to humankind). In medical research, for example, the fundamental purpose is to present ways to cure, relieve and comfort patients [15]. Surveys indicate that authors given acceptance with revisions were satisfied with the peer review process because it led to improvement in their manuscripts [16]. Rejected authors (who may resubmit with revision) also believed that the peer review process improved the quality of subsequent manuscripts. Thus, peer review is not merely a hurdle to get over. It is as much an opportunity to obtain advice, support and assistance from colleagues.

It's clear that the field in general as well as individual authors benefit from the peer review process. What's in it for an editor or a reviewer? It is a gratis job. Managing manuscript submissions, finding peer reviewers, and handling correspondence with authors are time consuming and labor intensive. Why would anyone with a full-time job and busy schedule take on such tasks? Serving as an editor or a reviewer is a service responsibility to the community, to contribute expertise to the field. The roles indicate achievement and recognition, and offer an opportunity to give direction to

an emerging discipline and a growing academic community. For the editor or reviewer, it is a nourishing experience to shepherd the manuscript revision, to reflect a vision of learned inquiry, to witness professional acculturation, and to foster scholarly communications through the peer review process.

Conflict of Interest

Conflict of interest concerning submissions and reviews can arise for authors, editors, and reviewers in several ways. Authors, reviewers or editors may be biased or inappropriately influenced in publication decisions when they (or their affiliations) have certain financial or personal relationships with other persons or organizations.

Financial sponsorship can shade how a study is conducted or reported. Imagine a software grantee writes a paper detailing an empirical study showing how this particular software performs better than other products. The research methods and results may be valid. However, it's the authors' responsibility to declare sponsorship support from industry, government agencies, foundations or other sources in their manuscript. Failing to disclose the information in the review process could undermine the credibility of the journal, the authors, and even the field of discipline. Research sponsorship may result in outcomes favorable to the sponsor's product [17]. Industry sponsors may design the study, control the data, suppress dissent, exert editorial power, and withhold permission to publish. Easily identifiable conflict of interests in financial relationships include employment, consulting, stock ownership, and patents [18].

Reviewing a paper makes one privy to as-yet-unpublished results and may create competing conflicts of interests. For example, a reviewer might reject a paper and then use the 'insider' information to his/her own benefit (suppress competition, or claim ownership of ideas). A reviewer's deliberate rejection of a competitor's paper based on one's own (financial) advantage is certainly misconduct [12]. A journal could establish a policy to solicit declaration of competing interests from all involved parties. One third or less of all medical, biology and economic journals have written conflict of interest policies and the establishment of such policies and published statements increase significantly with circulation size [19]. Agencies such as the National Institute of Health (NIH) and the National Science Foundation (NSF) have a clearly defined policy for grantee institutions to declare financial interests [20, 21] and list relevant resources on the web [22]. A policy for panel reviewers is also established and used in grant review functions [23].

Conflict of interest can also arise if an editor uses his/her position to circumvent or control the review process. Does editing a journal preclude any publications authored by the editor? Publication of a substantial number of articles authored by the journal editor would certainly raise legitimate questions about possible conflict of interest. However, absolute prohibition of an editor's authorship is too severe because it can unfairly penalize the

co-authors (colleagues, collaborators and graduate students) and prevent high quality papers from appearing in the journal. It could also result in a disincentive for experts in the field to serve as editors. While it may appear inappropriate to allow publications authored by an editor, extreme prevention would also be unproductive. All manuscripts should undergo the same rigorous review process and adhere to the same academic standards. It's not surprising that an organization like ACM - Association of Computing Machinery - with over 75,000 members, seventeen refereed journals and over 180 refereed conference proceedings each year would adopt a policy allowing for publication of papers authored by the editors [24].

Simultaneous Submissions

In general, journals require that manuscripts submitted for publication should be original work that has not been previously published elsewhere. If an article has been previously published or is concurrently submitted to any other peer review publication, substantial additional material should be included to warrant consideration [25]. "Substantial" generally means that at least 25% of the paper is material not previously published [26]. A paper presented at a workshop or conference without formally reviewed proceedings, a paper posted on a web site, or printed as a technical report, however, does not disqualify the paper from a journal publication. Once submitted for review, the paper should not be submitted to another venue until the acceptance/rejection decision is known. However, submission of synopses of manuscripts currently in preparation, under review, or accepted for publication elsewhere (as extended abstract or poster) is often permitted.

Requesting reviewers to evaluate papers that are being reviewed for publication elsewhere wastes scarce reviewer resources. Waiting for reviews can improve the paper and prevent the authors from receiving similar recommendations from different sets of reviewers. Submission of full-length papers currently under review for other publication is improper and may jeopardize publication in both venues. One should notify the editors when such a situation occurs and either withdraw the paper from one publication venue or ensure substantial difference between the two papers. When a paper with similar content but substantially revised is published, any prior publication should be noted in the paper. Some journals' policy may not prohibit simultaneous submissions or may invite papers from certain conferences for special issues of the journal (with or without substantial revision). Editors have discretion in determining the circumstances for republication or simultaneous submission of a paper.

Citation Index

How do we know if a research paper published in a journal made an impact to the discipline? Can we identify the frequency of which papers are cited in the literature (over a chosen period of time) to provide an objective criterion?

Citation data is the evidence of whether a certain paper is read, and used by other researchers. References in a document or footnotes of a paper are called citation. Each citation presents the bibliographic description of the source (author, year, title, publisher, etc). The process of indexing these citation data is called "citation index." A citation index links an article with its cited references. The goal of the compilation of an organized list of source paper with citing articles is to facilitate information retrieval, and literature search [27, 28]. Citation index is useful for analysis of the contributions of a paper as well as identifying the research trends in the academic field. It provides researchers a way to navigate through time - backward to the cited source, and forward to the subsequent citing article of this current paper [29]. Citation index provides an opportunity for analysis and evaluation of individual papers, authors, and journals. The quantifiable statistical data such as Total Cites, Impact Factor (cited frequency), Immediacy Index and Article Count, etc. present information of the relevance of journals within a field [30]. A journal would be recognized as a more valued carrier of relevant information if its articles are more frequently cited. Higher impact factor creates higher prestige for the journal and the paper.

The Institute for Scientific Information (ISI) produces current and retrospective (as far as 1945) citation indexes of approximately 8,500 of the most high impact journals in the world into several categories - Science Citation Index Expanded, Social Sciences Citation Index, and, Arts and Humanities Citation Index [30]. Citation Indexes have traditionally always been manually constructed with information collected from scholarly and technical journals. To improve efficiency of dissemination and feedback of scientific literature, an automatic citation indexing system CiteSeer was implemented to extract citation information and provide reference linking [31, 32]. The system searches the web for electronic files (e.g., postscript files, pdf, etc.), identifies citations, builds a database and creates the links between source and citing article created [33]. It also provides the context of the citation (text in which the citations are located), full text indexing, linking to related, or similar documents, and autonomous location of articles. A CiteSeer analysis of more than 100,000 conference articles in computer science and related disciplines showed that the number of citation to online articles are 2.6 times more than the number for offline articles [34].

CumInCAD is a cumulative index of publications about computer aided architectural design [35]. It is digital library set up in 1998 to serve the CAAD community as an important source of scientific information [36]. It includes bibliographic information about over 3000 papers from journals and conferences, as well as 200 theses and dissertations. All papers include full abstracts, and the full texts (pdf format) of many papers are also available. Researchers can use CumInCAD to find publications by keywords,

titles, or author names, as well as finding where the publications are being cited. This issue of IJAC includes an article describing current status and future directions of CumInCAD [37].

Open Access

Quality information access supports learning and scholarship. We are entering the post-Gutenberg era of print journals. With digital technologies and networked communications, information is no longer restricted to printed material. Multi-Science, the publisher of this journal, provides the option of a traditional print journal, on-line access and print on demand paper delivery. Scholarly communication is evolving into the hybrid of paper material with electronic publishing (or completely digital). Open Access is an alternative to the traditional, subscription-based, publishing model. The rationale of Open Access is to provide a cost-effective way to use and disseminate information. The Association of Research Libraries has undertaken compilation of initiatives and proposals concerning open access [38], including "Framing the Issue: Open Access" [39], "On the Transition of Journals to Open Access" [40], and "Core Metalist of Open Access E-Print Archives" [41].

The essence of the Open Access Initiative is to permit users to read, download, copy, distribute, print, search, index or link to the full texts of works for academic and non revenue-generating purposes. It operates within the current copyright law framework. It is concerned with providing scientific and research texts to the community, including peer-reviewed journal articles, preprints, preliminary findings, and data sets. Open access does not exclude the practice of peer review. Peer review is medium-independent. Both online and print journals can perform the peer review process with the same efforts. Many Open Access proponents argue for the continuing role of the traditional peer review system for journals [42]. Professional societies, such as ACM, are establishing policies on refereed electronic publications to warrant that electronic publications meet the traditional scientific and academic standards and criteria of peer review [26].

The possibility of electronic dissemination of research is endless. It's an exciting new world for community exchange of information. Let's find inspiration from the man who set the kite high in the sky:

> *Either write something worth reading or do something worth writing.*
> – Benjamin Franklin (1706 - 90)

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Note: this article has not been peer reviewed.

Appendix:
Review Comment Form

(Nancy Yen-wen Cheng and Ellen Yi-Luen Do)

International Journal of Architectural Computing
Review Comment Sheet

Paper Number:

Paper Title:

Reviewer name:

Accept / Accept with noted changes / Reject

Please write your review below, addressing each of the points noted.

Except for confidential note (6), review comments will be sent to the authors. Reviewer's names will be held in the strictest confidence.

1. Summary

- Briefly state in your own words what this paper is about.

2. Originality / Significance

- Importance of the paper's contribution and relevance to architectural computing (Why does it matter?)
- Benefit to others (new insights, potential for building on this work)
- Contextual framework (Are the citations adequate to establish how this paper goes beyond previous work?)

3. Methodology

- Does the approach fit the question? Is it clearly described?
- Does the project have a sound conceptual framework
- Does the paper draw logical conclusions from sufficient evidence?
- Does the paper explain technical aspects clearly?

4. Presentation

- Is the paper clearly structured with well-developed, logical points?
- Are the illustrations (diagrams, images) appropriate and sufficient to support the paper?
- Explain which parts of the paper or illustrations could be

strengthened, restructured or omitted.

- Do the authors follow the reference instructions? (http://www.multi-science.co.uk/gen_authors.htm)
- Note locations of misspellings and grammatical errors.

5. Additional comments and suggestions to the author(s):

6. Comments only to Editors (not to be forwarded to the Authors)

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