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### On Peer Review Standards For the Information Systems Literature

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## On Peer Review Standards For the Information Systems Literature

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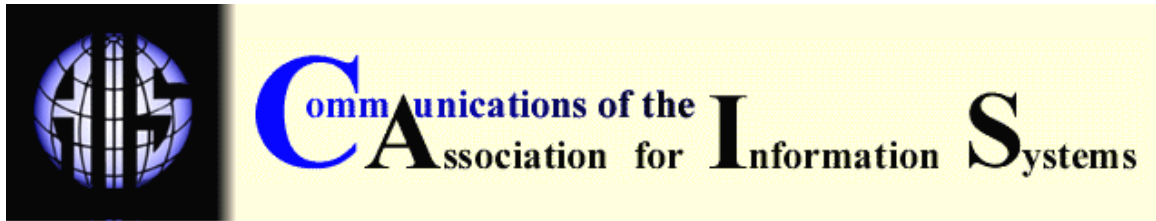
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## ON PEER REVIEW STANDARDS FOR THE INFORMATION SYSTEMS LITERATURE

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### ABSTRACT

The quality of research published in journals is not only dependent on the work performed by authors, but also on the service undertaken by peer reviewers. In this paper, we take a two-pronged qualitative approach to establish an integrated set of criteria for reviewers, for the reviews they produce, and for the papers they review in the IS domain. These criteria are intended to be of value to three sets of stakeholders: authors, reviewers and editors. Authors should find them useful as they write, knowing in advance how reviewers are evaluating their work; reviewers should find them useful to improve the quality of the reviews of manuscripts; editors should use them to ensure that manuscripts are well written and that reviewers performed their tasks effectively. We discuss the implications of these criteria for the review process and identify areas for future research.

**Keywords:** peer review, information systems, review assessment criteria

### I. INTRODUCTION

The goal of academic enquiry is to find ways to increase the likelihood that people will survive and thrive. As academics, in service of that goal, we seek to make sense of the world in which we find ourselves and to publish our findings for the general good of society. However, it is axiomatic that the sense-making mechanisms of the human mind are fallible. Therefore, researchers use

epistemologies<sup>1</sup> and research methodologies to reduce the likelihood that they will draw, and then publish, erroneous conclusions that may at best have no value, and may at worst bring harm.

The academic community widely adopted peer reviewing<sup>2</sup> as a way to remove flaws from research reports prior to their publication so as to ensure that only high quality research findings are disseminated. Hence, the quality of the articles published in our academic journals and conferences depends not only on the quality of the effort made by authors, but also on the quality of the effort made by reviewers [Weber, 1999; Koh, 2003].

The primary purpose of peer reviewing is to ensure high standards of quality control in research publications [Foerster, 2001; Horrobin, 1990]. Peer reviewing is a self-correcting mechanism for scientific enquiry [Wilson, 2002]. The 1989 cold-fusion fiasco illustrated how seriously things can go wrong if a thorough peer-review protocol is not followed. In that case, research results were reported before peer-review could take place [Huizenga, 1993; cf. Wilson, 2002]. Yet even in that case, the peer review system eventually flushed out and corrected the error. In another example, in 2005 reports from South Korea indicated remarkable progress being made in human stem cell research. However, by the end of the year, news reports emerged indicating that some of the data reported was fabricated and some authors were asking that their names be removed from the article that has appeared in the journal *Science*. The role of the peer review system in this situation was unclear at the time of publication, but we expect that further developments will emerge..

A high quality peer review system (PRS) benefits all stakeholders involved in the production, dissemination, and use of scientific research results. Good reviews provide constructive feedback that strengthens authors' current work [Waser et al., 1992; Cummings and Rivara, 2002]. If a reviewed paper is ultimately not accepted for publication, the PRS still provides authors with expert advice that may improve their future work [Cummings and Rivara, 2002; Wilson, 2002]. Solid reviews can save authors from publishing reputation-damaging, and potentially harmful research. The PRS may also shield authors from undue pressures from administrators, politicians, and the public in choosing research projects or presenting particular results because research that becomes distorted by such pressures is likely to be blocked from publication by forthright and thoughtful peer reviews [Judson, 1994].

The PRS also provides value for the reviewers, who can sharpen their own writing and research skills by reviewing the work of others. Strong performance as a reviewer may also pave the way for professional advancement [Cummings and Rivara, 2002; Waser et al. 1992].

Editors benefit greatly from the PRS because there are now more papers submitted than a single person could evaluate, [e.g., Sambamurthy 2005]. Both editors and the journals they serve are under pressure to facilitate a publishing process that is objective and fair [Foerster, 2001]. Soliciting reviews from a number of peers facilitates these requirements. A variety of viewpoints can be compared and a final decision can be reached by the editor [Foerster, 2001; cf. Churchman, 1971; Popper, 2002]. Furthermore, journals that provide high quality reviews to authors may encourage these authors to submit more work and hence improve the quality and standing of the journal [Cummings and Rivara, 2002].

Ultimately, the PRS is designed to benefit the readers of the journals in which the reviewed research is published [Cummings and Rivara, 2002], since a quality PRS will help assure that

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<sup>1</sup> Epistemology is defined by the Wikipedia (<http://www.wikipedia.org>) as "Epistemology, from the Greek words episteme (knowledge) and logos (word/speech) is the branch of philosophy that deals with the nature, origin and scope of knowledge. Historically, it has been one of the most investigated and most debated of all philosophical subjects. Much of this debate has focused on analysing the nature and variety of knowledge and how it relates to similar notions such as truth and belief" (<http://en.wikipedia.org/wiki/Epistemology>).

<sup>2</sup> Peer reviewing is defined formally at the beginning of Section II.

accurate information is available to guide public policy [Waser et al., 1992] and shield people from being harmed by poor quality research [Goldbeck-Wood, 1998]. The PRS provides readers with some assurance that they can use published work with confidence, and use the works of others as stepping stones and corner stones for advancing new concepts and insights [Wilson, 2002].

The IS literature already paid some attention to the quality of reviews. For example, Straub [1994] and Lee [1995] suggest normative standards for reviews. Nevertheless, no thorough, generally accepted standard for peer reviewers emerged, and the criteria for judging the quality of reviews are not prominent in our collective discourse. It is notable, for example, that the Management Information Systems Quarterly presents a 'Reviewer of the Year' award, presumably as a way of rewarding one excellent reviewer and thereby encouraging other reviewers to perform at similarly high standards. However, the definition of what, precisely, a good-quality review looks like is not specified, nor are examples of the excellent work made public. Without exemplars it is difficult for reviewers who aspire to excellence to learn from those who achieved it.

### **THE APPROACH AND GOALS OF THIS PAPER**

In this paper we take a two-phase qualitative approach to establish:

- a common understanding of what constitutes good performance by a reviewer,
- what constitutes a good review, and
- what constitutes a good manuscript.

First, we describe the peer review system and explore the literature on peer reviewing to compile a set of concepts that offer directions and insights on aspects of peer reviewing. Next, we call on the editors of leading IS journals to validate, revise, and extend the collection of concepts. Our goal is to develop a set of criteria that

1. editors can use to assess review quality;
2. reviewers can use both to evaluate manuscripts and to improve their own performance; and
3. authors can use to evaluate both their own work and the reviews they receive.

We also hope to stimulate a debate on the nature and quality of our discipline's practices for evaluating and reporting our research results.

### **ORGANIZATION OF THIS PAPER**

The remainder of this paper is structured as follows. In the next section, we present background information about the peer review system. In Section III we compile a set of quality concepts for reviewers and reviews from the existing literature. In Section IV we report the results of the validation and extension of those concepts by the editors of IS Journals. Finally, we discuss the implications and contributions of this work, identify its limitations, and propose future research directions.

## **II. BACKGROUND**

We define a peer review as

*"a critical assessment by knowledgeable scholars of the quality of a scholarly article submitted for publication to a scholarly journal".*

Although the PRS is now a de facto norm in the scientific publishing process, this norm has only been the case for a few decades [Foerster, 2001]. Historically, scientific results were presented

and discussed at society meetings<sup>3</sup>, in effect a forum of scholars in the same field [Foerster, 2001]. Later, when the first journals emerged, papers were selected for publication by the editors themselves. Peer reviewing began when the specializations of science increased and the administrative burden for the journal editors exceeded the capacity of a single individual. The introduction of the peer-review concept is ascribed to the Royal Society of London which started publishing the *Philosophical Transactions* in 1752 [Kronick, 1990].

The wide-spread institutionalization of the PRS occurred after the Second World War for two key reasons:

1. a need to handle an ever-larger number of submissions and
2. a demand for expert authority and objectivity in increasingly specialized areas of research [Burnham, 1990].

Given the continuing increase in the number of journals and the increasing number of submissions to those journals, improving the quality of peer reviews is more important than ever [Davidoff, 1998].

Four types of peer reviewing are identified by Davidoff [1998], each involving a different level of anonymity afforded to the various stakeholders:

1. *Double-blind* reviews where both authors' and reviewers' identities are withheld. Double-blind reviewing aims to ensure reciprocal anonymity [Garfield, 1986] to eliminate reviewer biases with respect to the author and the author's affiliation, and to ensure that reviewers feel free to offer open, probing critique without fear of subsequent acrimony or retaliation from the authors [Davidoff, 1998].
2. *Masked* reviews where the authors' identity is withheld from the reviewers. The goal is to reduce bias with respect to authors in evaluating the submitted work. It should, for example, prevent 'celebrity endorsement' of research.
3. *Blind* reviews where the reviewers' identity is withheld from the authors. The goal is to protect reviewers from retributions from disappointed or frustrated authors.
4. *Open* reviews where both authors' and reviewers' identities are known. The main reason for making the review process completely open is that it may stimulate authors and reviewers to take more care over their writing [Garfield, 1986].

### III. SYNTHESIZING THE EXISTING PRS LITERATURE

In this section we compile a set of quality concepts for a peer review system from the existing literature on that topic. Toward that end we gathered papers on peer reviewing from several domains, including Biology, Clinical Psychology, Information Systems, Management, Medicine, Science and Engineering. A number of common themes were found in these papers. The content fell readily into three general categories:

1. the attributes of a good reviewer,
2. the contents of a good review, and
3. evaluation criteria for good academic papers.

From the published papers we compiled a list of reviewing concepts in each of the three categories. Some of the concepts were directly stated by one or more authors (e.g. "A reviewer should be constructive"). Other concepts were derived as the inverse of negative statements. For example, from the statement like, "A vaguely worded comment is not actionable", we would derive the concepts that a critique should be both specific and actionable. Still other concepts we drew as inferences from author statements. For example, if an author stated, "It is difficult for a

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<sup>3</sup> The classic example is the Royal Society in London which began meeting in the 1660's.

reviewer to detect fraud; a reviewer can only evaluate the methods and data as presented in the paper”, we would infer that a review should incorporate evaluations of research methods and evaluations of the data an analysis.

## THE ATTRIBUTES OF A GOOD REVIEWER

A number of authors discuss the qualities and attitudes that a reviewer should manifest. This section synthesizes that discussion into a set of attitudes that characterize an excellent reviewer.

*Humane.* A reviewer should be humane. Comments should be kind, respectful and polite, tactful and non-confrontational [Cummings and Rivara, 2002; Lee, 1995; Waser et al., 1992]. Comments should be constructive, directed toward improving both the paper and the author, rather than destructive, tearing down the paper and the author [Black, et al., 1998; Cummings and Rivara, 2002; Davidoff, 1998; Weber, 1999].

*Competent.* For a given paper, a reviewer must also be competent both to evaluate the methods used and to understand the content of the paper [Wilson, 2002]. A reviewer must be aware of existing literature on the topic [Relman, 1990] so as to readily distinguish between contributions to and rehashes of knowledge. A study by Black, et al. [1998] showed that reviewers with topic-specific knowledge relevant to the paper were more likely to do a good job.

*Open.* Reviewers must be open to non-traditional, out-of-the-box, unconventional ideas [Garfield, 1986; Horrobin, 1990; Weber, 1999; Wilson, 2002].

*Unbiased and unprejudiced.* A reviewer must be free of biases and prejudices [Davidoff, 1998; Weber, 1999, Horrobin, 1990], like ethnocentrism and conformism, as well as methodological and epistemological myopia [Horrobin, 1990].

*Ethical.* Reviewers must be ethical [Davidoff, 1998; Wilson, 2002], free of conflicts-of-interest, unswayed by unsubstantiated personal opinions and preferences in their evaluations of the methods, logic, and content of the papers they review. They must keep the manuscript confidential, not disclosing its contents [Cummings and Rivara, 2002], nor misappropriating the ideas for their own purposes [Wilson, 2002]. A reviewer must not be unjustifiably critical, nor unduly lenient. Siegelman [1991] classifies such reviewers as

- Demoters
- Assassins
- Pushovers
- Zealots

Demoters reject more frequently than the quality of papers would warrant, whereas pushovers recommend acceptance more frequently than sound papers are submitted. Assassins are extreme demoters, whereas zealots are extreme pushovers.

*Timely.* Reviewers must deliver their reviews in a timely manner, so as not to harm the career aspirations of authors, nor to distract editors with tracking down late reviews [Davidoff, 1998; Waser et al., 1992].

*Persuasive.* A reviewer must be persuasive, explaining the logic and offering supporting evidence for their criticisms [Lee, 1995, 1999; Wilson, 2002], and, wherever possible, working from within the set of assumptions proffered by the authors [Lee, 1995, 1999].

*Diligent.* They must also be diligent, willing to shoulder the heavy load demanded by the review process [Goldbeck-Wood, 1999; Hoppin, 2002]. A study by Black and his colleagues [1998] showed that the quality of a review increases with the amount of time spent, up to 3 hours. As time is often a reviewer’s most scarce resource, thoroughness and thoughtfulness may be sacrificed in a bid for speed. This problem may be exacerbated because reviewers receive little recognition for the quality of the work they do, other than the reward of an increasing number of opportunities to do the same.

## CONTENTS OF REVIEWS

A number of authors also prescribe content for a complete, good quality review. In this section we compile a list of these concepts.

*Summary.* The review should begin with a summary *of the paper* [Lee, 1995], both for the editor, who may not be expert in the subject matter, and for the author, who wants assurance that the reviewer grasped the essence of the paper [Lee, 1999]. The review should also provide a general, overall assessment of the paper for the editor [Lee, 1995].

*List Strengths.* The review should list the strengths of the paper, both to allow the editor to evaluate its merits, to demonstrate to the author that the reviewer is fair and even handed, and to soften the blow of subsequent critique [Black, et al., 1998; Lee, 1995, 1999; Waser et al., 1992].

*Point-by-Point List, Actionable Advice.* The review should provide a point-by-point *list of* specific intellectual, technical, or presentational *weaknesses* of the text, tables, and figures [Black, et al., 1998; Lee, 1995, 1999; Waser et al., 1992]. Each comment should be clearly linked by page number or some other means to the specific text in the manuscript where the problem manifests [Lee, 1995]. The reasoning and logic behind each critique should be articulated, to help educate the author and to help persuade the author that the problem is genuine and worth fixing [Lee, 1995, 2000; Waser et al., 1992]. Each problem should be accompanied by specific, actionable, achievable advice for resolving the difficulty [Black, et al., 1998; Lee, 1995, 1999; Waser et al., 1992].

*Future Research.* The review should also suggest future research that might further inform the questions the manuscript seeks to address. This is particularly useful where the reviewer recommends against acceptance.

*Citations.* The review should provide *complete* citations for literature that might help the author better understand or resolve the problems of the manuscript [Cummings and Rivara, 2002; Lee, 1995].

*Date.* Finally, Lee [1995] recommends that the *date* on which the review was completed should be included with the review, to motivate all participants in the review process to act on the manuscript promptly.

## EVALUATION CRITERIA FOR PAPERS

Many authors propose standards by which manuscripts can be judged. In this section we compile a list of criteria in the form of questions that a reviewer could use to evaluate a submitted manuscript. As above, some of these items are drawn directly from the cited papers, while others are either reframed or inferred from the contents of the cited papers.

- Is the phenomenon the paper studies important and interesting in the domain where it is manifested? [Black, et al., 1998; Wilson, 2002]. The authors must make the case that some element of society would benefit from a better understanding of the phenomenon under study.
- Has the phenomenon already been fully explained in the existing literature? [Black, et al., 1998; Cummings and Rivara, 2002; Elliot et al., 1999; Wilson, 2002] The author must argue that manuscript makes an original contribution to knowledge.
- Is the topic appropriate to the journal where the manuscript was submitted? [Wilson, 2002]. Each journal's mission is unique, and accepted papers must help fulfill that mission.
- Is the manuscript sufficiently detailed? [Relman, 1990; Wilson, 2002]. The article must contain sufficient detail that reviewers can detect flaws in research methods, design, and data analysis. Data must be reported in sufficient detail that reviewers can judge whether inferences and conclusions are justified. The detail must be sufficient that others can replicate the study to validate its findings.



- Are ethical standards upheld? [Elliot et al., 1999]. Are research participants and subjects treated ethically? Are there indications of plagiarism [Kock and Davison, 2003]?<sup>4</sup>
- Are the research methods appropriate to the research challenge? [Black, et al. 1998; Elliot et al., 1999].
- Are data collection methods valid? [Straub, 1989]
- Are data analyses logically and/or mathematically correct? [Cummings and Rivara, 2002].
- Are inferences and conclusions justified by findings? [Black, et al., 1998; Cummings and Rivara, 2002; Elliot et al., 1999; Wilson, 2002].
- Are the limitations of the study acknowledged? [Wilson, 2002].
- Are references appropriate and up to date? [Cummings and Rivara, 2002; Lee, 1995, 1999].
- Is the presentation clear, readable, and grammatically-correct? [Cummings and Rivara, 2002; Elliot et al., 1999; Wilson, 2002].
- Are the concepts and arguments well-organized, well-structured, and defensible? [Bacharach, 1989].
- Are the findings appropriately situated with respect to the existing literature? [Cummings and Rivara, 2002].

### SYNTHESIS

This synthesis of reviewer attributes, review contents, and evaluation criteria suggests that the reviewer's job is not trivial. Reviewing is a skill that neither develops overnight, nor can be learned at the drop of a hat. Traditionally, reviewers learn how to review in three ways:

1. just by doing it;
2. by receiving reviews written by other reviewers about their own papers;
3. by comparing their review of a paper to other reviews of that same paper [Hoppin, 2002].

### III. VALIDATING INSIGHTS WITH EDITORS

For the second step of our two-part effort to converge on an integrated set of quality concepts for the peer review system, we asked the editors of leading journals that publish IS research to validate, revise, and extend the concepts we abstracted from the literature<sup>5</sup>. Journals were selected based on recent rankings from three objective sources. We contacted 46 recent editors-in-chief, senior editors, and associate editors to solicit their participation. To those who agreed to participate we sent the aggregated set of concepts and asked them to:

- review the list,
- augment it when they saw fit, and
- suggest where items could be removed, merged, or otherwise improved.

Twenty of the editors (44%) responded with feedback. Some offered a few lines of thoughts, others annotated the list, and two wrote many pages of opinion about the topic. The feedback contained many commonalities. Several new concepts were added to those extracted from the literature; several closely related concepts were combined. Tables 1, 2 and 3 present the convergence of the literature sources and the responses of the editors into a single, integrated set that is that is intended to be of direct value to editors, reviewers, and authors.

Table 1 presents a set of attitudes and attributes that reviewers are advised, in the literature, to adopt throughout the reviewing process. Table 2 presents a set of content that should be included in all reviews.

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<sup>4</sup> A detailed code of ethics and discussion of plagiarism are included in CAIS Volume 13, Articles 1, 2, and 3 published in January 2004.

<sup>5</sup> The journals surveyed are listed in Appendix I.

Table 1. A Summary of the Attributes and Attitudes of a Good Reviewer

Humane	Kind, respectful, polite, tactful, careful not to insult or demean	
	Constructive, seeking ways to improve rather than reject	
	Non-confrontational, not given to polemic	
Competent	Understands the epistemology	
	Understands the methodology	
	Understands the content and concepts	
	Knows the existing literature	
Open-minded	Considers new, non-traditional, unconventional ideas	
	Not risk averse	
Free of Biases and Prejudices	Not ethnocentric	
	Not conformist	
	Epistemologically pluralistic	
Ethical	Free from conflicts of interest – if the paper were published, certain reputations would neither be harmed or enhanced:	Co-authors
		Colleagues
		Friends
		Self
	Not unjustifiably critical or lenient (consistent with standards of the outlet). Does not play favorites. Not swayed by past animosity with authors.	
	Maintains confidentiality of manuscript	
	Does not misappropriate unpublished ideas	
	Is not swayed by personal opinion or preference	
Does not block publication for personal gain		
Persuasive	Explains the logic of and evidence for critiques	
Timely	Delivers reviews on or before promised date	
Decisive	Makes clear, strong recommendations to editors	
Diligent	Willing to commit required time and effort to complete a good review	
	Responds to the paper as written, especially in the face of a strong emotional response that could cause misinterpretation	
	Reflects on review before submitting it	

Table 2. The Contents of a Good Review

1. A summary of the paper
2. The expertise of the reviewer with respect to the subject matter and methods
3. A general, overall reaction to and assessment of the paper
4. A list of the strengths of the paper
5. Numbered, point-by-point comments about specific problems or weaknesses
6. Links from comments to specific parts of the manuscript where problems manifest
7. Persuasive explanations of the logic of and evidence for criticisms
8. Substantive, specific, actionable, realistic, and achievable advice for improving each problem or weakness of the manuscript
9. A set of citations that may improve the paper or the author's skills
10. Recommendations for future research to better address the research question (especially when the reviewer recommends that the paper be rejected)
11. Suggestions for better outlets if the paper is rejected for lack of fit
12. The date on which the review was completed

Table 3 presents a set of evaluation criteria for scholarly manuscripts. These criteria are meant to be useful for works using any epistemology or methodology. These criteria are meant to be useful for works using any epistemology or methodology.

Reviewers should find all three tables useful as they prepare for, and then complete their reviews. Editors should find Table 1, A Summary of the Attributes and Attitudes of a Good Reviewer, particularly useful when considering which reviewers to use again and which reviewers to recommend for promotion to associate editor. Authors will find Table 3 particularly useful for evaluating their own work before submitting a manuscript.

The PRS is a venerable institution, honed over the course of many years. It is widely used in academic publishing. Indeed, it can be argued that the PRS is a major contributor to the credibility of academic journals and their publishers. Nevertheless, the PRS is not without flaw. Occasionally poor papers, or even auto-generated gobbledygook, can slip through the review process and be published [Reid, 2005]. By the same token, it is probable that, from time to time, deserving papers are rejected without receiving a fair reading. Some journals tend to reject in case of doubt, a tendency that may well be motivated in part by the large number of submissions received, and the impossibility of publishing all submissions, regardless of their quality. It is likely to be the case that all researchers received, at one time or another, a review that they felt was unreasonable, uncaring, ill-considered, or downright bad.

It is a fundamental assumption of this study that, given the limitations of human attention resources, there are too many quality concepts in the PRS for reviewers and editors to keep track of them all informally. It is therefore likely that many reviews are not as effective or complete as they could be. The integrated standard offered here, deemed acceptable by editors of the leading journals in our field, may therefore be a useful memory cue for those participating in the PRS. Use of such a standard should raise the quality of reviews, and thus the quality of research in our field and thereby the quality of our journals.

It is not our intention, however, to tie the hands of reviewers with these concepts nor to insist that research should conform to a narrow and inflexible set of principles. Nor do we hold that researchers should be strait-jacketed by them. Rather, we seek to raise awareness of basic principles with all stakeholders. We would advocate that the concepts are best applied with intelligence and compassion guided by experience on a case-by-case basis.

Table 3. Evaluation Criteria for Scholarly Manuscripts

1. Is the phenomenon the paper studies important and interesting in the domain where it is manifested?	
2. Has the phenomenon already been fully explained in the existing literature?	
3. Is the topic appropriate to the journal or outlet where the manuscript was submitted?	
4. Are the title and abstract consistent with the manuscript?	
5. Is the manuscript sufficiently detailed?	a. To detect flaws in research methods and design,
	b. To detect flaws in data analysis
	c. To judge that inferences and conclusions are justified
	d. To replicate the study to validate its findings
6. Are there ethical concerns?	a. Treatment of participants or subjects
	b. Plagiarism
7. Are the theoretical foundations and arguments sound?	
8. Are hypotheses logically derived from theoretical propositions?	
9. Are the research methods appropriate to the problem being studied?	
10. Is the research design adequate for the research question?	
11. Are data collection methods valid?	
12. Are data analysis techniques appropriate to their purposes?	
13. Are data analyses logically and mathematically correct and correctly interpreted?	
14. Are inferences and conclusions justified by findings?	
15. Are the limitations of the study acknowledged?	
16. Are the references appropriate and up to date?	
17. Is the presentation clear, readable, and grammatically-correct?	
18. Are the concepts and arguments well-organized, well-structured, and defensible?	
19. Are implications for research and practice discussed?	
20. Are the findings appropriately situated with respect to the existing literature? How do they fit with the field as a whole?	
21. Is the length of the manuscript appropriate to the journal?	

The senior and associate editors who validated and extended the set of quality concepts also identified a systemic weakness in the peer review system. They observed that many members of editorial review boards find little or no time to do reviews, or at least to spend a sufficient amount of time and energy to produce a thoughtful, thorough review. This lack of time appears to be a perpetual bug-bear of academic life in general, by no means one restricted to reviewers. Indeed,

it is also one that afflicts authors, many of whom also refuse to do reviews, though they in the same breath ask that their own papers be processed with alacrity. In general, it appears to be the case that too few people write good reviews, yet at the same time too many papers are being submitted for review. This situation is clearly unsustainable. It is unreasonable to expect a proportionately dwindling band of good reviewers to shoulder all the reviewing load.

One solution that the editors proposed for this problem is to make reviewing a mandatory condition of acceptance. Since most submitted papers are evaluated by 2-3 reviewers, a good rule of thumb might be to require that, for each paper an author submits, the author should be prepared to review 2-3 papers in turn. That should balance the load and ensure a reasonable state of equilibrium in the PRS. If such an equilibrium cannot be attained, then a breakdown in the process as we know it is likely [Goodstein, 1995]. We suspect that this solution would spread the burden of reviewing more evenly among our community, and may serve to keep publishing authors more fully in tune with ongoing work in our field. Some raise the concern that reviewers for journals to which they submit their own works face a conflict of interest because they are competing for limited page-space with the authors of the paper they review. However, we note that while this practice may put the interests of authors and reviewers in conflict, the interests of the journal, the peer review system, and society at large would be served, rather than harmed by this practice, because reviewers would be motivated to deliver thorough reviews. We experimented with this approach, mixing disinterested reviewers with competitive reviewers, and found that:

- the competitive reviews tend to be no more negative than those of a disinterested reviewer (which, sadly tend to the negative in our discipline), and
- the reviews of competitive reviewers tend to be more thorough, more carefully considered, and more timely than those of a disinterested reviewer.

We find it easy as editors to take the vested interest of the reviewer into account when interpreting their contribution to the peer review process.

Another solution currently being tested by a small handful of conferences in our field is to require that authors pay a submission fee, and to use this money to pay professional reviewers. We suspect that the charging of submission fees might be detrimental to our field, because good ideas from authors with few resources could be blocked from publication. Further, the sense of volunteerism and shared responsibility that now prevails could give way to a commercial gun-for-hire mentality. We call for open debate among our colleagues about this approach, and for other solutions to be proposed and debated.

We hope that the concerns we raised will resonate with the research community: authors, reviewers and editors. We also hope that you will be encouraged to consider your reviewing practices. In principle, all papers are worthy of a quality review, no matter how weak their adherence to methodology, how poorly expressed the problems, how ineffectual the presentation. A review does not need to be five or ten pages to be useful – a single constructive and sympathetic page may be far more useful than ten pages of unanswerable polemic or destructive criticism.

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## APPENDIX I. JOURNAL AFFILIATIONS OF SAMPLED EDITORS

The journals with which the 46 editors in chief, senior editors, and associate editors, we emailed are affiliated, are listed in alphabetical order:

- Academy of Management Journal
- Academy of Management Review
- Communications of the ACM
- Communications of the AIS
- Decision Support Systems
- European Journal of Information Systems
- Group Decision & Negotiation
- Information & Management
- Information & Organization
- Information Systems Journal
- Information Systems Research
- Information Technology & People
- Information Technology for Development
- International Journal of Electronic Commerce
- Journal of Database Management
- Journal of Management Information Systems
- Journal of Strategic Information Systems

- Journal of the AIS
- Management Information Systems Quarterly
- Management Science
- Organization Science
- The Database for Advances in Information Systems

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**Gert-Jan de Vreede** is Kayser Professor at the Department of Information Systems & Quantitative Analysis at the University of Nebraska at Omaha where he is director of the Peter Kiewit Institute's Program on E-Collaboration. He is also affiliated with the Faculty of Technology, Policy and Management of Delft University of Technology in the Netherlands from where he received his PhD. His research focuses on field applications of e-collaboration technologies, the theoretical foundations of (e)-collaboration, the (un)successful implementation of e-collaboration technologies, the development of practitioner-driven collaborative processes, facilitation of group meetings, and the diffusion of collaboration technology. His articles appear in journals such as *Journal of Management Information Systems*, *Communications of the ACM*, *DataBase*, *Group Decision and Negotiation*, *Journal of Decision Systems*, *Journal of Creativity and Innovation Management*, *International Journal of Technology and Management*, *Journal of Informatics Education and Research*, *Simulation & Gaming*, *Simulation*, and *Journal of Simulation Practice and Theory*.

**Robert O. Briggs** researches the cognitive foundations of collaboration and learning, and applies his findings to the design and deployment of collaboration and learning technologies. He is the author of more than 90 refereed scholarly works on these topics. He is co-inventor of the thinkLets concept and co-founder of the emerging discipline of collaboration engineering. He is associate professor of Systems Engineering at Delft University of Technology in the Netherlands, and is a visiting research professor in the Center for Distance Education, College of Rural and Community Development at the University of Alaska Fairbanks. He earned his Ph.D. in Management with an Information Systems emphasis and a Communication Minor from the University of Arizona in 1994.

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