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Source: *The American Statistician*, Vol. 40, No. 4 (Nov., 1986), pp. 310-312

Published by: American Statistical Association

Stable URL: <http://www.jstor.org/stable/2684615>

Accessed: 04/11/2009 09:20

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# COMMENTARIES

Commentaries are informative essays dealing with viewpoints of statistical practice, statistical education, and other topics considered to be of general interest to the broad readership of *The American Statistician*. Commentaries are similar in spirit to Letters to the Editor, but they

involve longer discussions of background, issues, and perspectives. All commentaries will be refereed for their merit and compatibility with these criteria.

## Some Notes on Refereeing

LEON J. GLESER\*

### 1. INTRODUCTION

Statistical journals and their editors face the constant problem of obtaining prompt reports from referees. Editors tighten time guidelines to referees in order to increase the pressure for quicker response, but the problem of tardy referee's reports continues.

Time guidelines by editors are an attempt to legislate away the problem of slow refereeing. As is the case with most legislation that fails to address the causes of a problem, such attempts are unlikely to be successful. Two major reasons for slow referee's reports are (a) a misconception by many referees of the nature of the task they are asked to undertake and (b) little tangible reward for doing that task well and promptly. In the present article, some guidelines for referees are given in the hope that a better understanding of the referee's role will promote better, and more prompt, reports. The question of rewarding referees is more difficult. Some suggestions are made as to how journals might reward or honor referees for their services, but in the final analysis it is argued that refereeing is part of one's professional responsibilities.

### 2. THE NEED FOR PROMPT REPORTS

Why do editors want quick reports? First, authors demand it. Nothing is more irritating to an author than to have a good paper lost in the editorial process of a journal while new research appears that destroys the timeliness and impact of the author's work. This annoyance may be forgotten if the paper is accepted; but if the paper is rejected, the author is furious (and the poor editor usually becomes the target of that fury). On the other hand, quick rejections are usually accepted more or less gracefully by good researchers because the promptness of the reply gives them a chance to publish their work elsewhere while it is still of interest. An author who gets slow replies from a journal on several papers usually stops sending papers to that journal.

Second, journals receive a continual flow of new manuscripts. If previous submissions are not cleared off an editor's desk promptly, the editor's task becomes overwhelming.

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Every delayed decision on a paper means extra correspondence—with the author, with the associate editor, and with the referee(s).

Finally, the quality of a journal depends on an editor's decisions. If the editor is burdened with correspondence because of slow referee's reports, there is little time for the careful and unhurried thought needed to make good editorial judgments. The editor winds up reacting situation by situation, rather than providing coherent editorial guidance, and the quality of the journal suffers.

### 3. THE ROLE OF THE REFEREE

Why are so many referee's reports slow in coming? In some cases, the referee is simply irresponsible. A manuscript arrives, is tossed into a pile, and forgotten until enough letters and phone calls arrive to shame the referee into writing a report. If the referee is not willing to do a prompt job, it would be fairer to the author and the editor to return the manuscript on the day it is received.

In many cases, however, the referee is conscientious but has a misconception of the task to be undertaken. This false view states that the manuscript must be checked line by line for errors. The referee sees that this will take several days of careful reading and continually puts off the task as other responsibilities call for attention.

Although I cannot speak for every editor and associate editor, I believe that most would reject this view of a referee's task. Indeed, I would say that *the referee's most important contribution can be made under the assumption that the manuscript is entirely free from errors*. What an editor would like a referee to do is to give the manuscript the quick once-over reading that he or she, as an expert in the area of the paper's contribution, would give to a paper if it had been published in that journal. In so doing, a referee should ask the following questions:

1. Are the problems discussed in the paper of substantial interest? Would solutions of these problems materially advance either theoretical or methodological knowledge?

2. Does the author either solve these problems or else make a contribution toward a solution that improves substantially upon previous work?

3. Are the methods of solution novel? Do they hold promise of being of use to solve other unsolved problems of interest?

4. Does the exposition in the paper help clarify our understanding of this area of research? Does it hold our interest

and make us want to give the paper the careful rereading that we give to important papers in our area of research?

5. Do the topic and nature of this paper seem appropriate for this journal? Could typical readers of this journal who are less expert than we are in the given area of research read this paper with profit and interest?

All but the last question are probably the chief questions we ask ourselves when we skim a new paper. In so doing, we usually assume that the results in the paper are correct. Question 5 merely asks us to take a less global view and put ourselves in the place of the subscribers of the journal. Most journals usually publish a statement of editorial policy inside the front or back cover of each issue. If a referee is unsure of the kinds of papers that are of interest to a given journal, reading the latest statement of editorial policy given by the journal, plus one or two papers published by the journal in the general area of the paper under review, will usually clarify matters.

The weights that a referee should give to Questions 1–5 in arriving at a recommendation on a paper depend on the nature of the journal for which the referee's report is to be written. For example, a journal that specializes in technical papers on statistical theory is likely to place greater weight on a "Yes" response to Question 3 than would a journal whose major focus is on the development and application of statistical methodology. Again, familiarity with the editorial policy stated in a journal, and with past papers published in that journal, is the best guide to the weights to be applied.

In fact, a referee can greatly help an editor by giving "the sufficient statistic" of his or her responses to Questions 1–5, as well as the decision recommended. That is, a brief review of the major merits and/or demerits of a paper in the light of the guidelines provided by Questions 1–5 can give an editor (and also the author) insight into the considerations that led to the referee's recommendation. If a referee recommends rejection and the author disagrees with the reasons given for rejection, the issues are clearly drawn, and the editor can more easily adjudicate the dispute.

Many referees seem to feel that a paper must contain at least one major error before it can be rejected. This is certainly not the case. (Although, of course, an error that destroys the validity of the major conclusions in a paper is certainly adequate grounds for rejecting that paper.) In fact, the major statistical journals receive many more manuscripts than they can eventually publish and, consequently, have a high rate of rejection. (The *Journal of the American Statistical Association*, for example, rejects nearly 80% of all papers sent to them.) Thus many papers that contain no serious errors are rejected. Looking for errors "puts the cart before the horse." If a paper does not measure up to the screening imposed by Questions 1–5, it should be rejected *even if the manuscript contains no errors*.

If the paper passes the initial screening described previously, it is then time to consider its correctness. Most experts in a subject area have a "sense of the probable." On a second, somewhat more careful reading of the paper they look at the *key steps* of the argument and ask if the assertions make sense in the light of the preceding arguments in the paper, their knowledge of similar results in the field, and

their sense of what is reasonable to expect. This is the way most gross and serious errors are spotted. The alternative way, in which proofs are followed step by step, can actually miss such errors, since one is "sucked" into the author's view and, in addition, fatigue from such a line-by-line approach deadens one's reasoning. One does not have to redo an author's work to spot errors—and correcting proofs is an author's job, not the referee's. The referee's task is to provide the author with an independent judgment or a different perspective, and thereby flag points of development that are of doubtful validity.

I should add that several papers that I have refereed and rejected have had entirely correct (except for typos) proofs, but the proofs established results that were not identical to the assertions originally stated by the author. Since I concentrated on results, rather than proofs, I spotted the error, whereas the author, who was concentrating on the proofs, never saw the discrepancy.

If a paper has passed the tests of quality, appropriateness, and correctness, it should be accepted. There is one more step, however, that a good referee will take—namely to suggest ways to tighten the writing, clarify points that caused difficulty when the paper was read, and perhaps highlight the points of the paper that interested the referee but that were not emphasized by the author. Such comments should not be overdone, or the author will become defensive. But if a referee can point out the parts of a paper that most need rewriting, and give a few clear brief suggestions, both the author and the journal will be appreciative.

The entire refereeing task need not take very much time. The initial screening stage takes half a day for reading the paper and thinking about its contents, maybe an hour or two to check related references to verify that the results are novel, and an hour to write up the report. Checking for gross errors (needed in less than half of all refereed papers) may take one or two extra days. If the refereeing is begun promptly upon receipt of the paper, the report can be finished within one to two weeks.

#### 4. REWARDS FOR REFEREEING

I have often heard the half-humorous advice to "sit on a referee's report, or else you'll become too popular as a referee to do any other work." The warning has a grain of truth to it, for good prompt referees are prized by editors. Most editors are too smart, however, to overuse their referees (and when they do, their gratitude can be very flattering to one's ego). Further, one can always decline to referee manuscripts.

Actually, few of the individuals who give that advice actually follow it. They know that aside from their own work, refereeing is the chief influence they have on the direction and progress of research in their field. When a referee becomes an editor's key expert in a given area, he or she gets the best and most important papers to read, thereby getting the inside track on new developments. In some cases, a key referee actually makes the editor's decisions as to what types of paper in an area to favor, since the editor will defer to the referee's judgment in most cases. Outside of being an editor oneself (and this really means you can do little other work!), being a popular referee is

the next most powerful role one can have in shaping the editorial policy of journals in one's field.

## 5. MORE TANGIBLE REWARDS

Editors are well aware that refereeing (and also editing) is a thankless job. Being listed as an editorial collaborator in a journal is a rather obscure and intangible acknowledgment for one's services. On one's vita, the statement that one has refereed, say, 20 papers in a year gains little attention, and good refereeing seldom if ever leads to promotion or extra pay.

It would be nice if referees could receive more tangible awards. *Biometrika*, for example, pays its referees a small fee out of a trust established for that purpose. Few journals, however, can afford to establish such a reward system.

*Mathematical Reviews* keeps a fixed list of reviewers, and rewards them by reduced rates on subscriptions. This is a possibility that might be considered by the major statistical journals as a way to reward referees who do more than two or three reviews in a year.

One reward that might particularly help motivate junior professionals to do more and better refereeing would be if journals made it an announced practice to select their editors and associate editors from among their best referees. Al-

though good refereeing sometimes can prompt the recommendation from a departing editor that "so-and-so would make a good editor because he (or she) is an excellent referee," in my experience this happens only in exceptional cases. Although it would seem to be a reasonable supposition that prompt and insightful referees are likely to make good editors, editors and associate editors are more often chosen on other grounds (e.g., research productivity). Since most universities, and a good many nonacademic institutions, regard appointment to visible editorial roles as grounds for promotion or increased pay for their employees, knowledge that good refereeing could lead to editorial appointments could serve as a strong incentive for junior professionals.

Limited monetary awards, subscription discounts, or even the chance for an editorial appointment cannot fully recompense referees for the task of refereeing. In the long run, a good job of refereeing must be its own reward. Agreeing to take on refereeing jobs is part of the payment we give for having our own efforts refereed and for participating in the community of scholars. Although money and prestige are desirable, an equally deep satisfaction comes from the pride one can have in a job well done. Perhaps that is all the reward that is needed.

[Received January 1986. Revised June 1986.]