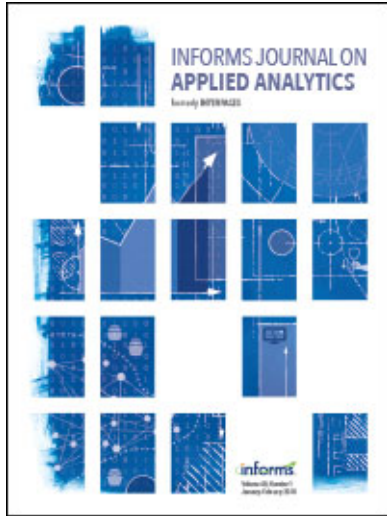




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LETTERS TO THE EDITOR

Concerning the "By-line Dilemma"¹

To the Editor

June 23, 1975

After having read about Professor Reisman's ethical and moral problems regarding the order of authorship by-lines on professional papers, I felt I could offer him some suggestions that might ease his dilemma somewhat. It seems that the crux of the problem is that there is a particular hierarchy inherent in the set of names involved. Once he has made the decision to give everyone meaningfully involved with the project some credit within the by-line, it is this hierarchy that he wishes not to violate. There are a number of ways of dealing with this; some are quite simple to implement, others are a bit more obscure but still, nevertheless, quite appealing conceptually. It is hoped that, with more potential advocates like Professor Reisman and myself, even the latter solutions could be put into practice.

One obvious way to observe the hierarchy and yet still retain a sense of democracy, is to include all the names — generalists, specialists, writers — but use different sizes of typeface to differentiate among them. Thus, we might have the following:

by Abercromby, Babbit, Cole, David, Einstein, Fagin, George, etc.

Should this look a little obvious, we could make subtle use of different shades of type boldness:

by Holmes, Isis, Jackal, Kolt, Lemon, Monroe, etc.

For a little variety we could broaden ourselves and include the italic typeface for further characterization. Or, perhaps it would be more proper to list all the names, but cast the generalists in upper-case Gothic, the specialists in lower-case Roman, and the writer in—what else—Old English.

Moving away from typeface variety, there are ways of indicating hierarchy in the actual physical placements of the names. For this, the language of mathematics can be quite helpful. The use of subscripts and superscripts, for example, might very simply serve to illustrate, as follows:

by Einstein^{Smith}_{Jones}, Franklin^{Blaine}, Marx^{Cole}_{White}, etc.

The main typeface might represent the generalists, the superscripts would be the specialists and, underpinning it all, the subscripts, i.e. the writers. Close-working teamwork could also be easily represented.

To put the generalists and specialists more on equal footing (and for the sake of additional compactness), this could be extended to the form

by $\frac{\text{Bell}_{\text{Jakes}}}{\text{Smith} + \text{Jones}_{\text{Banes}} + \text{Morley}_{\text{Taylor}}}$

where numerator and denominator (instead of type size) differentiate contribution to the project and/or paper.

The final extension of this goes one step further and gives everyone equal type size visibility. Mathematical formulation enters here again and allows us a handy way of indicating varying professional roles. This time, we borrow from integral calculus:

$$\text{by } \int_{\text{Jones}}^{\text{Galileo}} (\text{Fielding} + \text{Bender} + \text{Schmidt}) dt$$

The integral's lower limit is, of course, the writer (or writers) involved on the project; the generalist, the ultimate problem solver, shows up on the upper limit; and that leaves the specialists who do the heavy dog work over what often seem like infinitesimal periods of time (dt) and who are also responsible for integrating the pieces of the project into a meaningful whole.

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Hartsdale, New York

1. Reisman, Arnold, "The By-Line Dilemma", *Interfaces*, May 1975, Vol. 5, No. 3: 36-37.

To the Editor

In response to Reisman's request for help in solving the sequencing problem for by-lines for papers with multiple authors, I would like to suggest the following heuristic decision rule:

Denote the authors as $A_1, \dots, A_n$.

1. Permute the ordering to $A_{1'}, \dots, A_{n'}$, so that there exists j' such that for all $i' \leq j'$ author $A_{i'}$ is a major author and for all $i' > j'$ author $A_{i'}$ is minor. (This procedure may be generalized to finer graduations.) Consider j' to be a demarcation between the "major" group and the "minor" group.
2. Assign a utility number $U_{j'}$ (ordinal is sufficient) to each author according to the relative value to his career of having his name listed early.
3. Permute the ordering within the major and minor groups according to decreasing utility numbers.
4. In case of ties use a reversed lexicographic procedure.

I have never much cared for listed authors in alphabetical order.

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To the Editor

In a recent *Interfaces* article [1], Arnold Reisman calls attention to a problem spawned the first time two or more researchers (or a professor and one or more graduate students) hatched a collaborative research project and submitted the results to a scholarly journal. The essence of the by-line dilemma is: Whose names should appear in the by-line, what should be the order of appearance, and how should contributions by individuals who facilitated the research without actively engaging in the final stages be acknowledged?

Reisman is primarily concerned with the ethical and moral considerations of the by-line dilemma. However, we would like to point out that the issue has important economic and professional ramifications, especially for younger, untenured members of the OR/MS academic community. We refer to the increasing availability of citation indexes serving the field and their reported use for purposes not originally intended. Citation frequency is employed as a proxy for research quality, and name ordering seriously affects an individual's citation count.

Citation Indexes

A citation index [2] is an ordered list of references (cited works) in which each entry is followed by a list of authors, article titles, and journal titles (citing works) which have cited each entry. The original purpose of citation indexes was to facilitate accurate and rapid compilation of previously published research about a specific topic. In view of the exponential growth rate of published literature in most scientific fields [3], [4], any device that reduces literature search time is necessary and proper. However, citation counts are a tempting proxy for research quality for two reasons. First, a paper must satisfy, via the peer review process, the requirement that it is an original contribution of merit in order to be published. Thus, like publication counts, citation counts measure research productivity. Secondly, the references contained in the bibliography of a published paper are the equivalent of inputs to the knowledge-creating process resulting in a paper; those papers with the highest merit (citation rates) are clearly important contributions [5] to the research enterprise. Thus, citation counts are superior to publication counts in that they measure research utility as well as productivity.

Academia in Steady-State (or Worse)

If citation to a published work indicates merit or importance of the author's work, it stands to reason that frequency of citation is an accurate measure of researcher quality. Indeed, citation indexes were put to this task soon after their appearance [6], [7], [8]. But there are two catches here: (1) only the first named author will appear in the citation index [9]; and (2) during the current New Depression in higher education [10], citation counts are being used as evidence in promotion and tenure decisions at several universities [11].

We believe the uncritical use of citation counts for promotion and tenure decisions is deficient in several respects.

First, while it is undeniably true that high citation rates are fairly accurate reflections of a highly productive individual researcher's merit, it is also true that reputation is the cumulative product of many years of

scholarly inquiry and research productivity. In other words, research "stars" in a field can be identified by citation rates, but the dividing lines between "good", "solid", "average", and "sub-par" performances are not nearly so well defined.

Secondly, it has been shown that the modal number of lifetime scholarly publications of scientists in the physical sciences is zero [4]. The equivalent figure for researchers in the social sciences is unknown, but a recent paper suggests that zero is the modal number for Ph.D. graduates of prestigious economics departments [12]. To hold inordinately high expectations of publication activity for the current crop of promotion and tenure candidates — expectations significantly higher than those imposed on preceding generations of candidates — seems unfair. But to change the rules by asking that research work not only be published, but also be cited, must surely violate some standard of academic due process.

Third, decisions regarding promotion and tenure ultimately rest upon questions of judgment. Each candidate's past achievements, present capabilities, and future promise must be carefully weighed and evaluated. The resource crisis confronting most universities will tempt some administrators and/or committee members to use citation rates as evidence of an individual's merit; such applications are apt to produce the usual consequence of substituting a quantitative indicator for judgment.

The reader can envision all sorts of counter-productive "citation games" likely to spin off from such a use of citation counts:

1. You-cite-my-paper-and-I'll-cite-yours.
2. Let's write a really sloppy paper and have it accepted in a high-circulation/highly-read but poorly edited journal (we know of no such journals but would be happy to hear from readers who do).
3. Play a manipulative strategy system: coauthor a paper every year or so, insist that your name appear second, and cite every paper you have ever written in which your name appears first.
4. Change your name to Nicolas Bourbaki [13].

We remain convinced that citation indexes are useful for many purposes, but evidence for promotion and tenure decisions is not one of them, especially in the case of younger academicians. To the extent that this issue is related to the by-line dilemma, we have little to add to Reisman's decision rules other than to say that the first named author of this paper was the winner of a single hand of showdown poker.

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•We are not personally acquainted with any of the individuals listed above.

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