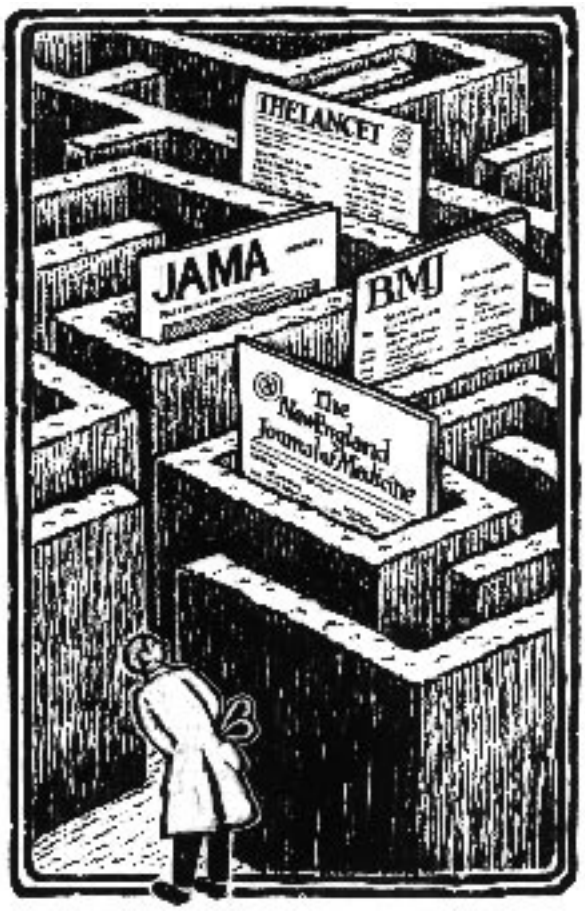

make efforts to tease out the "real" roles of authors behind the byline, but probably not all committees. To the extent, that academic promotion still depends primarily on inclusion in a published list of authors, the system of authorship credit is, indeed, broken—or, perhaps more correctly, it never functioned well in the first place.

How should we fix it? Being so intimately connected to authors, journals can help in promotion decisions, although they certainly can't do much on their own. Good promotion decisions, like all decisions, first require the gathering of reliable information (what Herbert Simon has called "intelligence" work). The most appropriate and important thing journals can do, therefore, is to establish new and better standards of disclosure about authors' contributions. Several jounals, including *The Lancet, BMJ, Annals of Internal Medicine*, and *Radiology* have already begun to do just that; it will be fascinating to see where this approach leads. With better information in hand, journals, academic institutions, funding agencies, professional societies, and various other stakeholders in academic work can then turn their reform efforts to designing standards (in effect, authorship policies) that define clearly the value of the many different contributions made to research.

Disclosure itself will be threatening to many, and the creation of authorship policies even more so: the existing non-disclosure and lack of authorship policies protects power relations that will be given up only reluctantly. Non-disclosure and absence of authorship policies are not, however, good long-term strategies for academic life. The entire scholarly enterprise will be enormously better off in the long run if we can stop denying the irrational and primitive nature of our present system for attributing authorship, and substitute one that actually gives credit where credit is due.

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The value of discrimination

Thomas Sherwood, Keith Peters

Plain answers were given by George Orwell to "Why I write":[1] sheer egoism first. Of course, there is also aesthetic enthusiasm (for medical writers, fun), historical impulse, and political purpose (medical intelligence). People in medical science are no different and point to published papers as exciting staging posts in their research. Appointment and promotion committees need such credit notes to do their jobs properly. It ought all to be a delightful continuum.

In fact, as is evident from this *Lancet* series, there is trouble. Editors are fussed about difficulties raised by multiauthorship in complex research projects, individual responsibility, fraud, &c. There has been a drive toward accountability. Contributors, not authors any longer, have to state what they did for the project. The model credits of the seminal paper in this drive show that everybody was involved in concept, development, or refinement—the prefix co appears 11 times among three authors, excluding "contributed", which appeared five times.[2] What should a promotion committee do with that? Adoption by the *British Medical Journal*[3] and *The Lancet*[4] of the practice shows that it can be made simpler. The *BMJ* also uses at least one guarantor to vouch for the whole work.

The editors' concern is with process, couched in the language of audit. For academic reward (as for George Orwell) the issue is merit and creativity. "My *Lancet/Nature/Cell/New England Journal of Medicine* paper" may be sheer egoism by the first author, but it is undisputed coinage. Appointment and promotion committees will wish to discuss details of the work, read the key paper (though often do not), and tease out academic excellence. They are influenced by number of publications (productivity), first authorship (independence), and journal quality (significance)[5] in varying degrees. The suspicion is that some of the present moves represent an unproductive self-analysis by editors not involved in the real hurley-burley of academic market forces. The publication apparatus has looked

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University of Cambridge School of Clinical Medicine, Addenbrooke's Hospital, Hills Road, Cambridge CB2 2SP, UK
(T Sherwood MB, K Peters FRS)
Correspondence to: Sir Keith Peters

creaky but not broke, needing oil rather than fixing. There is some thought in the academic community on the topic—logically, but probably hopelessly, trying to stem the tide of bibliometrics, impact factors, &c.[6]

Juniors seeking new appointments or promotions are especially hard-hit by the present confusion. Their place in the byline of a paper is important to them, and drowning somewhere in the small print of a contributors' list at the end is no substitution. A new problem is raised for them by instant electronic publication, such as the posting of "all but . . ." letters on the *BMJ* website.[7] Whether this will mean anything worthwhile for appointment and promotion committees is, at best, doubtful. Later, a surfeit of trivial publications, electronic or otherwise, will become a cause for regret.

Academic reward bodies must discriminate. They want hard currency for their task. The beginnings of the Euro as the universal coin for a continent were accompanied by images of people testing their Euros by biting. What the actual traders will do is certainly look at the international clout of the coinage (or journal), and study very closely the real figures on the piece put up for tender. If the exchange rules for those figures, the contributors of varying stoop, are to be rewritten, well, they will have to be plainer, as well as realistic about what we are after: academic value in research, not audit.

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Drafter and draftees

Eric J Topol

To draft can be interpreted as the composition of a manuscript or to stay close behind (another racer) to take advantage of decreased air pressure created by the leading racer.[1] Ironically, this double meaning is especially apropos to the principal difficulty of authorship in scientific research contributions. The drafter generally does the Yeoman's work of actually preparing the manuscript, and typically represents the principal force necessary for execution of the project. The remainder of the intellectual contribution may be ascribed to the senior (last) author who was responsible for the concept, design, or development of the research, and the second (and possibly third) author who may have also provided direct meaningful input in data analysis and manuscript preparation. The remainder of the authors commonly constitute an exceptionally long and, sometimes, preposterous list that may represent "draftees" who have been carried along by the contributions of the principal authors. One medical editor has appropriately referred to such a practice as the "carnival of science".[2]

Surely this practice represents a very substantial difficulty. Not only is the authorship of scientific publication trivialised, but the fundamental meaning of academic and intellectual effort is violated. The passive act of freeloading or drafting is, frankly, irresponsible. A gross lack of accountability commonly exists, since it would be very unlikely that more than a few individuals fulfilled the action criteria for authorship: conceive, design, analyse, interpret, compose, approve.

One notable exception to this abuse of authorship is related to the conduct of large-scale multicentre trials. Such research efforts are Herculean in nature and may involve the collective input of hundreds to thousands of investigators, along with the strong academic input from a steering committee for design, interpretation, and preparation of the data for dissemination.[3] Although the authorship of such trials is typically the acronym for the study group, the real contributors should be published with the article in an appendix. There is little incentive for investigators to participate in such work except for the recognition of being part of a large team, integral to data collection, and what may ultimately lead to a substantive advance in the field. Since large-scale trials are increasingly common and have the potential to reshape therapeutic approaches, publishing the contributor list is an important way to promote future projects. In opposition to the promotion of future large-scale clinical trials, the editors of the *New England Journal of Medicine* have developed a policy of refusing to publish the contributor list for multicentre trials, except those that can fit into a single print column.

What other steps can be taken to flush out ghost authors but simultaneously recognise the altruistic effort of contributors? Some journals have started to publish byline disclosure of multicentre trials containing the actual contribution of each author, and a list of clinicians and study-organisation contributors.[4,5] This initiative is excellent and long overdue. The discouraging of the draftees might also be facilitated by the requirement of a signed letter that attests of intellectual input, recognition that if a paper is accepted for publication, these names will be attributed to actions that were actually performed. Such a letter could be part of the submission requirement and would undoubtedly promote accountability. The rule of no more than 12 authors adapted by the *New England Journal of Medicine* is flawed since the correct number of authors should be indexed by the actual intellectual work. Promotion committees of academic institutions should count only the publications for which the candidate is the first, second, or last author. If all journals were to adopt publishing a byline disclosure of actual input, tenure committees would have a meaningful way to assess each paper in detail. Recognition of the dichotomy and the spectrum ranging from authorship to contributorship will be most helpful.[6] It is high time that the drafter receive the appropriate recognition and the draftees, who are exploiting them, start working on their own accord.

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Cleveland Clinic Foundation, Department of Cardiology, 9500 Euclid Avenue, Cleveland, OH 44195, USA (E J Topol MD)
(e-mail: topole@cesmtp.ccf.org)