

Shaping Scientific Authorship in the Twentieth Century

Instructions for Contributors to Journals

▼ **SPECIAL ISSUE** in *Scholarly Codes of Conduct in the Twentieth Century*

▼ **ABSTRACT** “Notes to contributors” and “author guidelines” will be a familiar genre for most readers of this journal. These documents help editors and publishers to shape the behavior of scientific authors by laying down rules about the use of symbols and units, the formatting of bibliographic references, the structure and language of the article text, and the presentation of supporting images or tables. These documents were not, however, common features of academic publishing before the twentieth century, but they emerged during a period of growth and internationalization of the scientific community. A change in tone by the 1970s reflects a shift from collegial and collaborative efforts to publish research, to a world in which editors wielded both the threat of rejection and demands for payments. Very few of these instruction documents attempted to help novice authors by demystifying the publishing or peer review processes. Rather, they trained researchers to prepare typescripts that editors and typesetters could process efficiently, they helped to inculcate standard practices around the use of nomenclature, units and abbreviations within international disciplinary communities, and they began to make explicit certain norms of research conduct around authorship, collaboration and publishing practices.

▼ **KEYWORDS** Academic publishing, twentieth century, scientific journals, authorship, codes of conduct

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Scholarly journals have been around since the late seventeenth century, and the importance of authorship to the persona of the “man of science” was well established by the late nineteenth century.¹ In the twentieth century, however, the numbers of authors, articles, and journals all exploded. Bibliometrics scholars have analyzed the scale and timing of this growth,² but we know much less about how the meaning and practice of scientific authorship was changing. This was, after all, a period when team-based research was becoming more common;³ when research communities were becoming more international;⁴ when university career structures were being formalized, and the “list of publications” was becoming overwhelmingly important to building those careers.⁵ Publishing in journals mattered more to academic authors than ever before, yet the relationships between authors, editors, and publishers were shifting, particularly as commercial imperatives replaced scholarly philanthropy as the dominant business model for journal publishing.⁶

The printed instruction documents issued to authors—by editors, publishers, and scholarly organizations—offer a novel perspective on twentieth-century scientific authorship: They reveal contemporary expectations of the practical aspects of scholarly authorship, amidst the efforts made by journal editors and publishers to control and standardize author behaviors. As we will see, these documents originated in the desire for a cost-effective and efficient editorial office. Instructing authors how to prepare their manuscripts “correctly” was an exercise in shifting labor from the journal’s editorial and production staff to the author and his or her institution. These instructions reveal an otherwise hidden aspect of the improving financial viability of journal publishing in the mid-twentieth century. They should also encourage us to ask why scientific authors were willing to (or were persuaded to) take on tasks that had previously been done by editors, copy-editors, and typesetters.

These instructions also draw our attention to hitherto invisible practices of science: Successful scientific authorship in the twentieth century was not simply a matter of being a well-trained, competent researcher with the ability to write; rather, scientific authors had to acquire practical skills in text and image preparation that were distinct from their core scientific expertise. The scientific author appears here not as heroic genius, but as someone (who ought to be) obsessed with punctuation, citation formats, and the best way to prepare graphs.

The instructions discussed in this paper range from the early 1900s to the end of the 1970s. So-called “irresponsible authorship” would become

1 Fyfe et al., *History of Scientific Journals*; Csiszar, *The Scientific Journal*.

2 Price, *Little Science*, ch. 1; Bornmann and Mutz, “Growth Rates.”

3 Larivière et al., “Team Size Matters”; Thelwall and Maflahi, “Research Coauthorship.”

4 Baker and Powell, *Global Mega-Science*.

5 Hamann and Kaltenbrunner, “Biographical Representation.” See also Csiszar, “How Lives Became Lists.”

6 Fyfe, “From Philanthropy to Business.”

a topic of editorial concern in the 1980s, but there were already signs in the 1970s that editors were feeling the need to establish expectations for responsible authorship practices.⁷ For instance, efforts to establish norms for the acknowledgement of research assistance, and for co-authorship practices, marked a (surprisingly belated) recognition that scientific authorship was more frequently collaborative, despite the emphasis on solo authorship constructed by nineteenth-century commentators on science.⁸ We also see editors responding to the proliferation of possible communication channels for scientific research by placing a more explicit emphasis on the need for “originality” and “exclusivity” in material submitted to academic journals.

In the decades that followed, journal editors and publishers would take the lead in identifying and responding to the behaviors that came to be labeled as “research misconduct.”⁹ Groups of editors developed shared approaches to dealing with ethical issues, authorship, retractions, and conflicts of interest. Prominent examples include the “Uniform Requirements for Manuscripts,” issued in 1979 by the group that became the International Council of Medical Journal Editors (ICMJE), and the “Guidelines on Good Publication Practice” issued by the Committee on Publication Ethics (COPE), in 1999. By the early twenty-first century, over 14,000 journals—including this one—had agreed to adhere to COPE’s guidelines, acknowledging the role of editors and publishers in establishing and policing standards of behavior for academics *qua* researchers (as well as *qua* authors). By exploring the expanding remit of editors’ (and publishers’) instructions to authors in an earlier period, this paper helps us understand how publishing companies have come to stand alongside universities, learned societies, and national academies in setting and policing expectations for the conduct of research in the twenty-first century.

Instructions to Authors

In the days before doctoral training programs provided workshops on “getting published,” novice authors had to learn how to write, present, and submit their papers through personal conversations, socialization, and reading. The advice offered by mentors or editors sometimes survives in private correspondence—for instance, Charles Blagden and George Stokes both wrote many such letters during their respective periods in charge of the Royal Society’s journals.¹⁰ During the twentieth century, there was increased provision of standardized, printed advice. Scholarly societies and subject associations were already active in standardizing the use of symbols and nomenclature, and sometimes offered advice on how to structure papers or prepare the illustrations. Journals began

⁷ Huth, “Irresponsible Authorship.”

⁸ Csiszar, *The Scientific Journal*, especially ch. 3 and Conclusion.

⁹ Roberts et al., “Integrating the History of Science.”

¹⁰ Fyfe et al., *History of Scientific Journals*, 194, 318.

to print “Notes to contributors,” “Information for authors,” or “Suggestions for contributors,” sometimes as editorial articles, or as separate documents available “on request,” or printed inside the journal covers. Some of the early examples have traces of the concerns of individual (frustrated) editors, but later examples tended to be more formulaic: sometimes compiled by editorial staff, or adapted from a template provided by a publisher. There was, of course, an overlap between these two sets of advice: Many scholarly associations were (and are) publishers of journals, and many journal editors were (and are) themselves researchers and members of scholarly associations.

I began by searching digitized journal archives, and the shelves of my own university library, for instructions to authors, broadly defined. I originally hoped to compare practices in the natural sciences with those in historical studies, but, with a few notable early exceptions, it proved difficult to find editorial instructions in the humanities that ran to more than a couple of sentences.¹¹ This points to the different chronological development of journals in the humanities. This paper will draw on three types of documents: first, advice offered by learned or professional organizations—particularly the (UK) Royal Society—that was aimed at researchers more broadly than just those submitting to a particular journal; second, the forty instruction documents uncovered in my initial search, from a selection of UK and US science, engineering, and medical journals; and third, for the 1970s, these are augmented by two collections gathered by staff at the US National Cancer Institute: The later (1979) collection includes printed instructions from over 200 biomedical journals, mostly in the English-speaking world but including some European journals that accepted papers in English.¹² My sample is highly dependent on the serendipity of what could be found, but the patterns are suggestive. A study of instructions from journals beyond the medical sciences, in the 1970s and 1980s, would be a valuable addition.

The earliest examples that I have found were produced by scholarly organizations in the first half of the twentieth century. The *Annual of the British School at Athens* published a “Notice to Contributors” as early as 1908;¹³ the Philadelphia-based Wistar Institute of Anatomy and Biology first issued its *Style Brief: a guide for authors* in 1910; the American Psychological Association issued “Instructions in regard to preparation of manuscript” in 1929; the Royal Society issued “Notes on the preparation of papers” in 1939; and the Institute of Electrical and Electronics Engineers issued “Instructions for IEEE Authors” in 1965. Some of these public-facing documents drew on earlier, internal documentation—for instance, the Royal Society had circulated a memo requesting

11 The earliest instructions I have found for *Past & Present* are from 1989, see “Notes for Contributors,” while those for *English Historical Review* seem to have been introduced by a new editor in 1996, see “Guide to Authors”.

12 The copies of these compilations held at the University of Michigan have been digitized by Google Books.

13 British School at Athens, “Notice to Contributors.”

its fellows to type their papers in 1896, and had been printing “Explanatory Notes” on the preparation of papers in its *Yearbook* since 1897, but the 1939 pamphlet seems to be the first time this information was prepared for circulation beyond the fellowship.

A prominent concern for scholarly organizations, especially in the early twentieth century, was establishing standard practices. The 1908 guidance from the British School at Athens specified the notations to be used when transcribing text from ancient monuments, while the Royal Society coordinated an agreement on the *Symbols, signs and abbreviations recommended for British scientific publications* (1937). By the 1950s, much of this had become normalized, codified in international standards and incorporated into university training programs.¹⁴

Scholarly organizations might also offer developmental advice to junior researchers. For instance, advice to authors submitting to British scientific journals in the 1950s advised them to start by jotting down headings, and then draft the synopsis; next, they should prepare the tables and figures, and “build the text around them”; then ask “colleagues who are not familiar with the details of the work” to read a draft. After revising the draft, it would be wise to “leave it aside for a short time” before coming back to it.¹⁵ The IEEE recommended the use of sections to structure the text, and to help its authors communicate their results “efficiently and effectively.”¹⁶ This sort of advice also started to appear, at greater length, in separate advice manuals, such as Robert A. Day’s *How to write & publish a scientific paper* (1979) and Edward Huth’s *How to write and publish papers in the medical sciences* (1982).

Journal-specific instructions tended to be just a few pages in length, and rarely offered developmental advice. They did regularly specify their preferred symbols or abbreviations, although in some fields the codification of international standards allowed editors to save space by directing their authors to the *International Rules of Botanical Nomenclature* (1935) or the *Notations and Symbols* of the International Astronomical Union (1939), as appropriate.¹⁷ In newer fields, however, journal editors continued to be actively involved in establishing standard abbreviations, such as those for deoxyribonucleic acid or adenosine triphosphate.¹⁸

The main focus of all instructions to authors—whether issued by scholarly organizations, publishers, or individual journal editors—was the correct preparation of manuscripts. In 1948, a Scientific Information Conference held in London had recommended that “scientists, as potential authors” should be better “trained in the initial preparation of manuscripts designed for publica-

¹⁴ Chang and Rocke, *Global History*.

¹⁵ Royal Society, *General Notes* (1950), 2–3.

¹⁶ “Information for IEEE Authors,” 112.

¹⁷ A long list of standard conventions appeared in Royal Society, *General Notes* (1950), 15–21.

¹⁸ International Steering Committee of Medical Editors, “Uniform Requirements for Manuscripts.”

tion.”¹⁹ This may be what stimulated the proliferation of journal instruction documents in the 1950s and 1960s. Preparation of the manuscript went far beyond the common request for papers to be typed, double-spaced on standard-sized paper, with generous margins and page numbers. The aim was for authors to submit papers in a form that was as close as possible to what the typesetters in the printers’ workshop needed. Authors were instructed at length about punctuation and italicization, the formatting of bibliographic references, the preparation of graphs and images, and the insertion of equations, chemical formulae, and tables of data. If authors followed these instructions, there would be less work for the journal’s editor (and assistants), and hopefully fewer printers’ errors.

To prepare their manuscripts correctly, authors had to acquire practical skills separate from their core disciplinary expertise. The Royal Society’s *General Notes* explained how to insert a callout for a table, how to use the appropriate symbols when correcting proofs, and the best method for producing neat line graphs (by transferring a curve from graph paper onto “Bristol board” using “blue carbon paper and a hard pencil”).²⁰ In 1972, similar advice from the editor of *BIOS* to “young authors” was accompanied by photographs illustrating how to use masking tape, T-squares, and pressure-sensitive numbers (e.g. Letraset) to prepare their graphs.²¹ Authors did not necessarily have to acquire all these skills personally: The *General Notes* were also addressed to “typists copying papers” and “draughtsmen preparing illustrations,” but insisted that “the author is responsible for putting a paper into correct form.”²²

Journal instructions also laid down typographical conventions for punctuation, capitalization, the use of italics or underscore, and the presentation of bibliographic citations. The desire for the consistent application of typographical elements had its origins in the codification of rules for typesetters working at a particular press. The influence of the University of Chicago Press’s 1906 *Manual of Style* encouraged American presses and journals to talk of “house style” or “journal style,” though this usage did not replace the notion of “correct form” in the UK until the later twentieth century.²³ In academic publishing, “form” and “style” came to include the presentation of bibliographic citations.

The diversity of forms of bibliographical citation required authors (and their typists) to learn different conventions for different journals, even in the same field. Typists found this frustrating, and researchers found it inefficient. Delegates at the 1948 Scientific Information Conference agreed

19 Royal Society, *Recommendations*, 7–8.

20 Royal Society, *General Notes* (1950), 12.

21 Self, “The Scientific Manuscript.”

22 Royal Society, *General Notes* (1950), 1, 3.

23 On the US origins of “style,” see *Oxford English Dictionary*, “style sheet,” last updated March 2026, <https://doi.org/10.1093/OED/4596188404>. Oxford University Press’s “Hart’s Rules” were first published in 1904.

that “uniformity of bibliographical citation” would be highly desirable, but it proved very difficult to achieve.²⁴ Even though the Royal Society successfully brokered conventions for the use of symbols and units, successive editions of its *General Notes* accepted that the editors of UK scientific journals would lay down their own “system of references.”²⁵

The effort to develop shared conventions for citations seems to have gone more smoothly in the USA. The Modern Languages Association (MLA) achieved early success in 1951 when it persuaded 78 journals, from 33 different presses, to agree to use a shared style sheet.²⁶ In the 1960s, several US medical journals agreed on shared conventions, and those efforts ultimately led to the creation of the “Uniform requirements for Manuscripts” issued in 1979 by the group of editors that became the ICMJE. That group included editors from UK and Canadian (as well as US) journals, making it the earliest example I have yet found of an international agreement on citation styles.²⁷ Despite these efforts, as readers will doubtless be aware, citation styles have not yet been standardized, and continue to be a source of frustration to authors.

We should pause to reflect on the fact that the onus was laid on authors—rather than the editorial team or the publisher—to prepare the manuscript for the press. It could have been argued that the application of house style was “a subeditorial domestic chore” that authors should not need to worry about. This was, indeed, the position taken by the then-editor of *The Lancet* in 1971, but his attitude was made possible by his situation as a full-time professional editor, with a paid editorial staff.²⁸ Journals run by full-time academics with minimal paid assistance were less willing to spend their limited resources on something that authors (or their typists) might be persuaded to do.

The insistence that initial submissions should be ready for the press is also a legacy of a time when there was little expectation of authors revising their papers between submission and publication (and when few papers were rejected). In the nineteenth or early twentieth century, even if the editor suggested revisions, they would be of a nature that could be made by annotation on the existing typescript. This must have been changing toward the end of our period, given the increasingly formative approach of referees, and the rising use of “revise and resubmit”—but it does not appear to have led to any change in expecting authors to present their initial submission as if ready for the press.²⁹

²⁴ Royal Society, *Recommendations*, 9.

²⁵ Royal Society, *General Notes* (1950), 7–8 (repeated in 1965 and 1974 editions).

²⁶ On the work behind the MLA Style Sheet, see Dow, “Uniform Style,” 113.

²⁷ A frustrated typist is part of the origin story of the shared conventions for medical journals that led to the “uniform requirements,” as recounted by Huth and Case, “The URM.”

²⁸ *Lancet* instructions, in National Cancer Institute [hereafter NCI], *Compilation* (1971), 41.

²⁹ On these editorial shifts, see Merriman, “Peer Review.”

Persuading Authors to Follow Instructions

Putting their expectations into a standard, printed document enabled journal editors and publishers to raise awareness, and thus increase the chances of their rules being followed. But there were also some more explicit efforts to persuade authors to pay attention to these time-consuming details. In general, editors relied on moral suasion, appealing both to an author's sense of duty to their scholarly community, and to their self-interest. There were only occasional reminders of the power imbalance between editor and author, such as the Royal Society's 1951 threat that papers submitted to its journals that failed "to conform with a minimum standard of clarity" would be sent back "for re-typing."³⁰

The tone of the instructions in the 1950s reflected a sense of collegiality between authors and editors, as members of a shared scientific community. For instance, the Royal Society also reminded authors that "many editors of journals are working scientists, and time spent on editing is time taken away from their research."³¹ In 1955, the editors of the new US journal *Micropaleontology* asked their contributors to follow the style rules in the interests "of maintaining the editors' health and peace of mind."³² If authors and editors were part of the same community, then following the instructions was the professionally respectful thing to do.

Alongside these appeals to the greater good, journal instructions routinely appealed to author self-interest. The most common claim was that preparing manuscripts and illustrations correctly would speed up the publication process, which, it was assumed, was something authors wanted.³³ (In the 1950s, the Royal Society began publishing statistics on the average "time from receipt to publication" at each of its journals—a move that added to the perception that speed mattered.)³⁴ The link between well-prepared manuscripts and speed of publication could be made in bold, as the *Journal of Experimental Biology* had done when, in 1935, it used larger, bold font to tell contributors that they could "avoid delay in the publication of their work by conforming with the following arrangements..."³⁵ Three decades later, the *Journal of General Microbiology* (UK) also used bold face: "Failure to conform with these instructions may lead to delay in publication."³⁶ There was general agreement that a "well-prepared" manuscript meant that "less time will be spent on editorial preparation and

³⁰ Royal Society, *Notes on the Preparation*, verso of title page.

³¹ Royal Society, *General Notes* (1950), 3 (amended in 1965 to "time taken away from their normal professional activities," see Royal Society, *General Notes* (1965), 4). See also Royal Society, *Recommendations*, 8.

³² "Suggestions to Authors," *Micropaleontology*, 95.

³³ On speed of publication, see Baldwin, "'Keeping in the Race.'"

³⁴ Fyfe et al., *History of Scientific Journals*, 464–65, 495–96.

³⁵ "Contributors can avoid delay..." *Journal of Experimental Biology*.

³⁶ *Journal of General Microbiology* instructions, in NCI, *Compilation* (1979), 303.

in the composing room.”³⁷ In 1971, the editor of *Cancer Research* promised to work with authors to “minimize the time required”: Authors should follow the instructions on manuscript preparation, and, in return, the editor promised that papers would be “reviewed as promptly as possible.”³⁸

Editors in the early-to-mid-twentieth century had expected to accept most papers, but by the 1970s, this seems to have begun changing. A survey of (mostly US) journal editors in the late 1960s revealed rejection rates of around 20% to 30% in the natural sciences.³⁹ Even though these rates are far lower than they would become in the late twentieth century, the possibility of rejection had certainly become more prominent in journal instructions by the late 1970s. Several editors now explicitly “reserved the right” to reject, and added clauses about the return of rejected manuscripts. That some authors would be disappointed is clear from *Nature*’s 1979 insistence that the editor’s “decision on acceptability is final,” and that “editorial staff cannot discuss decisions over the telephone.”⁴⁰

This meant that good writing style shifted from a desirable to an essential feature for authors hoping to get their paper accepted. Back in 1950, the Royal Society had pointed out that readers might “doubt the scientific value” of an “obscurely written” paper, but did not suggest that such a paper was unpublishable.⁴¹ By the 1970s, authors were being warned that they needed to think about the very specific group of readers with the power to decide whether to publish or not: The *Lancet* warned that “needless complexity” of language could arouse “suspicion that the writer has something to hide or is uncertain what he means,” and this would not predispose “the editorial subconscious...in their favour.”⁴² Similarly, in 1979, *Biochemistry* warned its contributors that “editors, reviewers and readers tend to be biased against results reported in complex or excessively verbose language.”⁴³ And some journals even threatened to reject manuscripts “on the basis of poor English” or “lack of conformity to accepted standards of style.”⁴⁴ In an increasingly competitive academic world, authors who did not follow journal instructions risked not just delays, but their chance of acceptance.

Despite the efforts to appeal to self-interest or collegial duty, the real reason that the journal instructions spent so much time trying to train authors to prepare their manuscripts “correctly” was financial. Processing a poorly prepared manuscript required the publisher or sponsor to expend more resources, from

37 Royal Society, *Notes on the Preparation*, verso of title page; see also “Information for IEEE Authors,” 111.

38 *Cancer Research* instructions, in NCI, *Compilation* (1971), 15.

39 Zuckerman and Merton, “Patterns of Evaluation,” 75–78. Compare Fyfe, “Rejection Rates.”

40 *Nature* instructions, in NCI, *Compilation* (1979), 386. See Baldwin, “Credibility, Peer Review.”

41 Royal Society, *General Notes* (1950), 3. This wording was retained in 1965 and 1974.

42 *Lancet* instructions, in NCI, *Compilation* (1971), 41.

43 *Biochemistry* instructions, in NCI, *Compilation* (1979), 82.

44 *Infection and Immunity* instructions, in NCI, *Compilation* (1979), 225. See also *Journal of Endocrinology* instructions in the same volume, 298.

the paid work of typesetters and printers to the work done by unpaid academic editors or low-paid editorial assistants. Asking—or requiring—authors to submit manuscripts that were ready for the press was a way of shifting labor from the journal to the author. Authors who followed the instructions were helping their journals “avoid wasteful expense.”⁴⁵

We can, however, detect a change in the tone of the financial concerns, and it reflects the shifting business model of journal publishing in the decades after 1950.⁴⁶ In the first half of the twentieth century, an article with higher-than-normal production costs had been an added burden on a learned society or journal publisher that was probably struggling to break even, and authors were expected to care about the sustainability of the journals in their field. In 1934, the Wistar Institute noted that authors who followed the “uniform methods” explained in its *Style Brief* would “materially reduce the cost of publications,”⁴⁷ and *Micropaleontology* made a similar point in 1955, noting that following standardized instructions helped with “keeping down printing costs.”⁴⁸ When the *Canadian Journal of Public Health* pleaded with its authors, in 1948, to help in “conserving space” and “reducing printing costs,” it did so by explaining that printing costs had doubled since before the war and that the journal simply could not afford to print as many pages as it had once done.⁴⁹ In none of these cases was there any threat of charges for those who failed to follow the instructions (nor, indeed, any suggestion of page charges, even though the American Institute of Physics had introduced this method of journal financing in the early 1930s).⁵⁰

By the 1970s, higher-than-normal production costs had become something that could be charged to the author, their institution, or their funder. This reflects the increasingly commercial approach to journal publishing in the postwar period, and seems to have been particularly pervasive among US journals. Journal instructions now informed authors of the specific charges that they would have to pay for tables and figures beyond a certain (variable) number, and for alterations to proofs that went (by some amount) beyond what counted as printers’ errors. One journal allowed proof alterations of up to \$10 before imposing charges;⁵¹ another would charge the author once the costs for “tables, black and white figures and authors’ alterations” passed \$75.⁵² The *Annals of the New York Academy of Sciences* warned that color images were “extremely expensive,” perhaps even “as much as \$1,600 or more per plate.”⁵³

45 *Cancer Research* instructions, in NCI, *Compilation* (1971), 15.

46 On the pressures facing society publishers in the 1950s, see Fyfe, “Self-Help.”

47 Wistar Institute, *Style Brief*, 4.

48 “Suggestions to Authors,” *Micropaleontology*, 95.

49 “Suggestions to Authors,” *Canadian Journal of Public Health*, 113.

50 Scheiding, “Paying for Knowledge.”

51 *American Journal of Clinical Nutrition* instructions, in NCI, *Compilation* (1979), 19.

52 *Arthritis and Rheumatism* instructions, in NCI, *Compilation* (1979), 76.

53 *Annals of the New York Academy of Sciences* instructions, in NCI, *Compilation* (1979), 51.

“Every author should make sure he has funds available” to cover all these charges, advised the *American Journal of Clinical Nutrition*.⁵⁴ Regardless of how often these charges were in fact imposed, the threat gave US authors a strong incentive to follow the rules.

The older assumption of collegiality and shared interests between authors and editors had not completely disappeared by the 1970s, but there was a stronger emphasis on the power of the editor, and a transactional relationship with the publisher. The 1979 decision by the medical editors to establish “Uniform Requirements,” rather than offering “notes” or “suggestions,” made that power imbalance clear.

Responsible Authorship

Another new feature in the journal instructions of the 1970s was the appearance of concerns about the originality and exclusivity of papers, and the responsibilities of (co)authors. In these cases, editors and publishers began to use journal instructions to influence the behavior of researchers in ways that went beyond the direct preparation of their manuscripts. This would lay the ground for editors and publishers to become powerful brokers of research integrity.

The idea that papers submitted to academic journals should not have been previously published nor submitted elsewhere is commonly (and especially in the biomedical sciences) described as the “Ingelfinger rule,” thanks to an editorial in the *New England Journal of Medicine*, written by Franz Ingelfinger in 1969.⁵⁵ Ingelfinger was well aware that there was nothing new about an expectation that authors should submit only “original” papers. It had, for instance, been a requirement for the Royal Society’s journals since at least the late eighteenth century,⁵⁶ and the very first section in *General Notes* (1950) had dealt with “originality.”⁵⁷ However, journal instructions typically asked for “original papers” or “original research” without explaining what that meant in practice—and this was what Ingelfinger sought to clarify. He made allowances for results that appeared in abstract in a conference program, but otherwise insisted that appearing in any kind of publication—whether a non-specialist magazine, a newspaper, or an internal house journal—would count as “previously published.” It was a response to the expanding range of communication channels available to scientists, and an attempt to enforce the primacy of the academic research journal.

⁵⁴ *American Journal of Clinical Nutrition* instructions, in NCI, *Compilation* (1979), 19.

⁵⁵ [Ingelfinger], “Definition of Sole Contribution.”

⁵⁶ Fyfe et al., *History of Scientific Journals*, 190.

⁵⁷ Royal Society, *General Notes* (1950), 3. In the 1965 revision, the discussion of “originality” was merged into the Introduction, see Royal Society, *General Notes* (1965), 1-2.

In the 1970s, more editors followed Ingelfinger's lead and sought to define what "original" meant. *Nature* still asked only that papers should "contain original work," but *Hormone Research* expanded on this to say that "no substantial part" of the paper should have already been published, and *Molecular Pharmacology* explained that originality applied to both "the manuscripts and the results they contain."⁵⁸ The fact that editors (or publishers) were developing these definitions suggests there were concerns about researchers inflating their publication lists by duplicating material in multiple articles. By the 1980s, this would be seen as an example of "irresponsible authorship and wasteful publication."⁵⁹

This new attention to originality was accompanied by requests for exclusivity. Again, this was not new in itself: The 1950 *General Notes* had stated that submitted papers should be "not under consideration for publication elsewhere"⁶⁰—a request that surely originated as a form of responsible citizenship to protect the limited resources of learned journals (by not wasting editorial effort on reviewing and processing a paper that would ultimately be published elsewhere). The older phrasing had typically stated that submissions should not be "under simultaneous consideration,"⁶¹ but during the 1970s, some journals began to use the language of newspapers, and to ask for papers to be submitted "exclusively."⁶²

This emphasis on originality and exclusivity emerged around the same time as a new attention to copyright. In earlier eras, both US periodical publishers and UK scholarly societies had regarded the reprinting of their work as a valuable means of circulating information rather than an infringement of their rights.⁶³ This changed with the shift to a commercially-focused business model for journal publishing, coupled with revisions to the US Copyright Act in 1978 and the UK Copyright Act in 1988. The journal instructions from 1979 reveal that many publishers had introduced copyright transfer forms. To sign such a form in good faith required an explicit statement from the author that the written work was indeed new and original (and could be protected by copyright). A long-standing scholarly etiquette around "originality" was being transformed into a contractual requirement.

The language of the journal instructions presented originality and exclusivity as existing tacit norms that were now being made explicit, as if to ensure that all researchers were indeed aware of them. For instance, in 1979, one biomedical journal informed would-be authors that the act of submitting a

58 All examples from NCI, *Compilation* (1979), 386, 212, 384.

59 Huth, "Irresponsible Authorship," 257; Jefferson, "Redundant Publication," 136.

60 Royal Society, *General Notes* (1950), 3.

61 NCI, *Compilation* (1971), *passim*.

62 For example, the instructions of the *Journal of the National Cancer Institute* in NCI, *Compilation* (1971), 38, and the instructions of the *American Journal of Obstetrics and Gynecology* and the *British Medical Journal* in NCI, *Compilation* (1979), 30 and 119.

63 Fyfe et al., "Credit, Copyright." See also Sherman and Wiseman, "Fair Copy."

manuscript was “regarded as tacit declaration that” it had not been previously published.⁶⁴ Similarly, the “Uniform Requirements” explained that editors accepted papers for review “with the understanding that” they were unpublished and not under consideration elsewhere.⁶⁵ What is striking, of course, is that the editors now felt it necessary to make these “understandings” explicit—which implies that they were not in fact “understood” by all potential authors. The expansion of graduate training programs was helping to socialize junior researchers into disciplinary norms, but as research communities became larger, and more socially and internationally diverse, it may have been more necessary to explain the unwritten rules.

Another set of issues that appeared in the journal instructions in the 1970s was related to the growth of collaborative research, and the need to establish the responsibilities of co-authors and the appropriate forms of acknowledgment for other contributors. (The journal instructions do not, in this period, offer much insight into the development of different disciplinary conventions for the ordering of co-authors.)⁶⁶

One issue was about who should count as a co-author, and whose assistance could merely be acknowledged in a footnote. “Authors” were variously defined as those who had been “direct participants,”⁶⁷ or who had “made significant (not merely administrative, technical, or supervisory) contributions to the content of the paper.”⁶⁸ The *Journal of the American Veterinary Association* offered a distinction between “those who have contributed substantially to the work” (who should be “listed as co-authors”) and those who had only “contributed materially to the technical content” (who should receive “footnote acknowledgement”).⁶⁹ “Technical assistance” (including “aid in technical fields, animal care, photography, stenography, and other areas”) was widely agreed to deserve acknowledgment, but not as authorship.⁷⁰ And despite that mention of “stenography” (shorthand), several journals stated that “editorial and secretarial assistance” need *not* be acknowledged.⁷¹ Thus, although technicians were (now) visibly acknowledged, their contributions continued to be valued less than those of researchers. Meanwhile, the work of countless (mostly female) typists and secretaries remained invisible.⁷²

64 *Journal of Infectious Diseases* instructions, in NCI, *Compilation* (1979), 314.

65 International Steering Committee of Medical Editors, “Uniform Requirements for Manuscripts,” 522–33.

66 For an early study, see Zuckerman, “Patterns of Name Ordering.”

67 *American Journal of Clinical Pathology* instructions, in NCI, *Compilation* (1979), 20.

68 *Journal of the National Cancer Institute* instructions, in NCI, *Compilation* (1979), 332.

69 *Journal of the American Veterinary Association* instructions, in NCI, *Compilation* (1979), 250.

70 *Journal of the National Cancer Institute* instructions, in NCI, *Compilation* (1979), 332.

71 For example, instructions for *Journal of the American Veterinary Association* and *Laboratory Animal Science*, both in NCI, *Compilation* (1979). For the long influence of the tradition of not acknowledging copy-editors or the staff at the press, see Chacko and Stark, “No Thanks.”

72 Bangham et al., *Invisible Labour*.

Journal instructions also began to insist that there were responsibilities, as well as rewards, associated with being an “author” of a paper. By the 1980s, the public debates in the USA about “scientific misconduct” would include concerns about the involvement (or lack thereof) of all listed co-authors: Would some of the allegedly fraudulent results have been caught before publication if all those named as co-authors had read the paper carefully?⁷³ The ICMJE was one of several organizations to issue definitions of “authorship” in this period.⁷⁴ But already by 1979, over a dozen journal instructions were expressing “the understanding” that “all persons listed as authors have given their approval for the submission” of the manuscript.⁷⁵ Another journal asked that “a copy of the final manuscript” should have been “seen” and “approved by all authors.”⁷⁶ The “Uniform Requirements” agreed, and recommended that cover letters should include “a statement that the manuscript has been seen and approved by all authors,”⁷⁷ while the *BMJ* went even further by requesting that the statement be signed by all authors.⁷⁸

The perceived need to make certain assumptions explicit was presumably a response to the increasingly international nature of late-twentieth-century science, where it could not be assumed that every researcher had been trained in the same unwritten rules. Making the rules explicit helped to raise awareness, but we can also see that some editors—at least in the biomedical sciences—feared that this would not be sufficient. The requirement for explicit (signed) statements—whether for copyright or co-authors—was an attempt to force researcher-authors to behave in ways that journal editors and publishers regarded as appropriate. And it is notable that these were behaviors not directly involved with the preparation of manuscripts, but with academic behavior more broadly. This is even more striking in those journal instructions that began to express the expectation that “authors of papers... will have followed all ethical and legal standards for pursuing original experiments on man,” or that demanded statements to “indicate whether” the experiments had indeed followed the appropriate “ethical standards.”⁷⁹ Such demands show how editors and publishers were setting standards for the conduct of researchers that went far beyond typographic conventions.

73 Chubin and Hackett, *Peerless Science*, ch. 5.

74 See Huth, “Irresponsible Authorship”; Huth and Case, “The URM”; and Bošnjak and Marušić, “Prescribed Practices.”

75 For example, instructions for *Analytical Biochemistry*, *Cellular Immunology*, and *Ultrasonic Imaging*, in NCI, *Compilation* (1979), 39, 142, and 426.

76 *Journal of Biological Chemistry* instructions, in NCI, *Compilation* (1979), 258.

77 International Steering Committee of Medical Editors, “Uniform Requirements for Manuscripts.”

78 *BMJ* instructions, in NCI, *Compilation* (1979), 119.

79 *Clinical Pharmacology and Therapeutics* instructions, and “Uniform Requirements...,” both in NCI, *Compilation* (1979), 159 and 47.

Conclusion

The emphasis on “correct” presentation in the early “instructions to contributors” drew on scientists’ efforts to establish international conventions for symbols, units, and nomenclature, as well as publishing firms’ efforts to establish “house styles” for punctuation, capitalization, and citation formats. Asking authors to take on more of the responsibility for manuscript preparation reduced the labor of copy-editors and typesetters, but added to the workload of scientists (and their typists). In the early-to-mid-twentieth century, scientific authors appear to have been willing to be persuaded that close attention to manuscript preparation was in their best interests. Editors repeatedly promised speedier and more accurate publication, while some journal instructions also appealed to authors’ sense of professional responsibility, or good academic citizenship, by encouraging them to do their part to help keep struggling learned journals afloat.

After the Second World War, journal instructions became increasingly detailed in their requests, yet the documents show very little sign of the extent to which scientific authorship was changing. It is true that there was some acknowledgment of the complexities of co-authorship, and of the wider array of communication options available to scientists. And the growing possibility of papers being rejected was certainly visible in the instructions by the 1970s. That shift in the power balance between editors and authors affected the tone of the instructions to authors, for editors who were confident of receiving more than enough good submissions could take a stricter line: They could state their “requirements” rather than offering “guidance.”

The technologies of publishing were also changing, though their effect on authors would only become fully apparent in the closing decades of the twentieth century. The development of computerized software for typesetting and word-processing in the late 1970s would make it possible for publishers to ask even more of authors. By the mid-1980s, some journals were accepting “manuscripts” submitted as electronic files on floppy disk, and online submission would follow by the late 1990s. Submitting LaTeX files undoubtedly allows physical and mathematical scientists to lay out their equations nicely, but it also shifts yet more labor and expense away from the publisher and onto the author. The adoption of offset lithographic printing techniques, in the 1950s, had made it possible for publishers to ask for camera-ready copy, but as long as that copy was prepared by typewriter, the technique was not widely used for text (though it was adopted for images, which is why the journal instructions placed so much emphasis on image preparation).

Exactly who is benefiting from scientific authors’ care and attention to detail depends very much on the ownership of the journal involved. With the increasing commercialization of academic publishing in the second half of the twentieth century, authors’ willingness to carry out, for free, tasks that would otherwise have to be done by paid typesetters and copy-editors may carry a

different meaning than it did in the first half of the century. Instructions to authors have long been a mechanism to cut editorial and production costs, but they may now be acting to benefit the profit margins of a shareholder-owned company—or they may continue to help learned societies and subject associations make ends meet. The need to help scholar-led publishing organizations make the transition to open access might be as powerful a reason for authors today to take responsibility for more elements of the publication process as it was for their predecessors.

The normalization of the practice of issuing “instructions for authors” during the middle decades of the twentieth century illustrates one way in which journal editors and publishers have come to acquire so much power to set and police standards of behavior for researchers in the late twentieth and early twenty-first centuries. The existence of instructions for manuscript preparation meant that when editors began to encounter duplicate authorship, arguments between co-authors, or accusations of misconduct, they had an established means by which to share their “assumptions” about appropriate behavior to authors. Just as editors had earlier worked together to agree shared conventions around the use of scientific units or nomenclature, the 1980s and 1990s would see editors working together internationally—through ICMJE and COPE—to develop shared approaches for dealing with newly recognized problematic behaviors. Although there has been recent scholarly attention to the history of “research integrity,” there is still work to be done on the role of publishers in influencing those approaches.

Finally, it is striking how little some of the journal instructions have changed over the decades, despite the huge changes in the technology, business practices, and cultural role of academic publishing. For instance, even though twenty-first century papers almost always go through a review process that requires the author to make (sometimes substantial) revisions, authors are still requested to present their initial submissions in a form ready for the press. Even the technological transformations of the late twentieth century have had remarkably little impact on the way in which authors are asked to prepare their so-called “manuscripts.” At some journals, the instructions about line-spacing, typeface, font, margins, and the choice of endnotes or footnotes seem to have been preserved in aspic for decades. And the continuing insistence that authors should present their citations in a different bibliographical style for each journal—despite over half a century of attempts at standardization, and the creation of DOIs—suggests that “journal style” has become a cultural marker of a journal’s identity, rather than something that is actually necessary for the production process. If nothing else, this paper should make all journal editors look closely at their own journal’s instructions, and question whether those instructions are in fact fit for purpose in the twenty-first century. And they—and authors—should ask whose purpose and interests are being served by obeying the instructions to the letter.

About the Author

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