In Praise of the Unabbreviated

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In biological writing the key goal is clarity. In biological publication an important goal is economy. Some instances where these goals can conflict are the use, misuse, and abuse of abbreviations. There seem to be many cases in which abbreviations, acronyms, and symbols are so overused in biological writing that clarity is compromised.

There are, of course, several sorts of abbreviated usages (I will use the term abbreviations to include acronyms and symbols). The first sort we can call the Vernacular Language Abbreviations. These are the ones used in everyday speech. There is no loss of clarity in writing a.m., Ph.D., Dr., Ms., e.g., or FBI. However, although such abbreviations are clear to American readers, in the increasingly international venue of scientific communications, even well-used vernacular abbreviations lead to a lack of clarity. Good examples are the state abbreviations, which are well known in the United States but can be a source of vexation to international readers.

The second sort we can call Common Scientific Abbreviations (CSA). These are abbreviations that scientists can clearly interpret (NIH, NSF, H_2O, etc.). Metric abbreviations are a different matter, especially since in their SI standardized forms they have become symbols rather than abbreviations. The two-letter symbols, such as cm, km, and ml are usually clear. The one-letter symbols, such as m, l, and s, may require a contextual interpretation leading to hesitation and confusion. Is the meaning of "100 s" instantly clear? Common Scientific Abbreviations may be perfectly unambigious but in some cases may lead to a lack of clarity. The point here is that the writer and editor, knowing their readership well, should be aware of possible instances where clarity might be compromised by common abbreviations. That the *CBE Style Manual* (1) devotes one chapter and parts of two others to how to use such abbreviations demonstrates how elusive is clarity in the midst of abbreviated style.

The third sort we can call Field Jargon Abbreviations. These are understandable to a varying subset of biologists who may use them regularly. Some are as commonly used and as easily understood as the Common Scientific Abbreviations by members of the field. However, to outsiders they are less familiar and to many they are unintelligible. Usually these are defined once within the body of the article and thereafter are used with abandon. Unless the writing is an informal piece directed exclusively at the users of that terminology, such writing may put clarity at risk.

It seems inconsiderate for the writer to expect the reader, with whom he or she wishes desperately to communicate, to memorize new abbreviations and to remember them unambiguously in order to follow the story line. The more abbreviations that are used in an article, the more difficult it becomes for the average reader.

The use of such abbreviations is intimately related to the larger issue of the use and abuse of jargon, which carries the appearance of authority and knowledge but gets in the way of clear expression and unambiguous communication. It would be best if jargon of all types were used sparingly. The use of full terminology is the more desirable writing style when this is physically possible. Should a word be absolutely unwieldy, such as a chemical formula, full names and abbreviations might be interspersed in text as a reading aid. In tables and figures all but the most common abbreviations should be identified. The main point is that the editor should be wary of barriers to clear communication outside a specialized clique caused by the use of abbreviations that may be perfectly clear to the well-intentioned author.

The fourth sort we can call Writer Originated Abbreviations (WOA). These are usually but not always defined once in an article and then used thereafter. Sometimes they are clear to a very small segment of workers, but often they are invented for an article. They lend a degree of authority and mystery and may even be an attempt to define and proselytize for a new term. They certainly can be a severe impediment to unambiguous communications. Although CSA may be clear, WOA should never be tolerated, even if they do save a little space. (How is that for an annoying sentence, the meaning of which depends on the mildly interested reader remembering today's WOA?)

The fifth sort, actually a form of Common Scientific Abbreviations, is the journal title. It is here that ambiguity reigns supreme. There is, of course, a small industry associated with standardizing periodical abbreviations (2,3). Such abbreviations may be fine for the bibliophile but often lead to a lack of clarity in communication. Perhaps it is not always fully appreciated how critical the reference list is as a form of communication. The reference list is the linkage of the paper to the discipline and to the current paradigms that make the paper publishable. There can be no room for lack of clarity in referencing. Editors would not tolerate ambiguity in author's names, changing titles by abbreviating words, or getting the page reference wrong. Why do we tolerate, and even demand, that the journal names be abbreviated, sometimes very confusingly? How many readers know whether "Nat." is Nature, Naturalist or National? Is not the saving of a few spaces an insufficient justification for ambiguity? I suspect that many have had the experience of supplying an abbreviated journal reference to their interlibrary loan librarian, who returned it for more information, and these are the journal professionals.

The downside of the use of abbreviations is not unappreciated. The *CBE Style Manual* notes that they slow down reading and can even lead to unintelligible writing (1). However, the *Manual* also devotes considerable space to try to unravel the mystery of abbreviations. When so much explanation is needed, perhaps there is something fundamentally at odds with clear expression.

To the extent that clear communication is desirable and communication across disciplines similarly desirable, abbreviations can easily get in the way. Unless strong editorial discretion is exercised, the trend toward the increasing use of abbreviations of various sorts will overwhelm scientific communication. For support, I suggest perusal of any prestigious journal outside or on the periphery of one's field to see how clear it really is. The space constraints for these popular journals are understood, but to what extent is the goal of clear communication compromised.

This note is not a plea to do away with abbreviations. That end is neither desirable nor possible. It is, however, a plea to pay more attention to instances where clarity of communication is at risk. It is also a suggestion to reconsider journal stylistic conventions that encourage ambiguity through abbreviation. Clarity remains that combined responsibility of the writer and the editor. For writing and editing clearly, benefits may derive from carefully considering the use of unabbreviated terms.

References

1. CBE Style Manual Committee, CBE Style Manual. 5th ed. Council of Biology Editors, Inc., Bethesda, MD. 1983.

2. BIOSIS List of Serials. BioSciences Information Services, Philadelphia, PA. 1991.

3. American National Standard for Abbreviation of Titles of Periodicals. American National Standards Institute, New York, NY. 1974.

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