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Reflections on Copyediting II

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7号からの連載となります。SPARC Japanニュースレターの Webサイトには日本語訳も掲載しますので、併せてご覧ください。（動物学会事務局長　永井 裕子）

This is the second part of a two-part article on copyediting. The first part, which appeared in the previous issue of the SPARC Japan Newsletter, defined copyediting and outlined its place in the publication process, especially with regard to journals dealing with a high proportion of non-native writers — that is, authors writing in English but whose native language is not English. This part examines how journal format and style affect the process of publication and then ends with some general advice to authors.

●On journal format and style

When I was an undergraduate 40 years ago, professors generally required that the References section of term papers use the format specified in the *CBE* (Council of Biology Editors; now Council of Science Editors, or CSE) *Style Manual*. Though I thought that I was learning something lasting and useful, I was later astounded to learn that virtually every journal in fact uses a different reference format, and there are a lot of journals. Biological Abstracts (http://thomsonreuters.com/) now treats articles from over 4200 life-science journals from 100 countries. One would think it difficult to come up with 4200 different ways to format a scientific reference, but in fact, through varying punctuation, abbreviation, capitalization, word order, font, spacing, and citation style, the possible permutations run at least into the hundreds of thousands.

Astoundingly, I have not encountered a science editor who can provide a satisfactory answer for why every journal uses a difference reference format in what must be one of greatest wastes of time and effort in the history of the written word. If you have ever reformatted a References section from *Nature to Science* to *PNAS* (working down the ladder of impact factors or perceived prestige to publish a worthwhile result; insert any two or three journals you wish), you know what I mean. This incomprehensible situation may be perceived as existing to discourage trivial submission by exacting a penalty for recycling rejected articles, but in fact it does nothing of the sort. Authors will tend to submit first to the highest-impact journal with which they feel they have a chance of acceptance, and upon rejection will have no choice but to submit elsewhere. The entire submission process is tedious enough that it discourages frivolous submission; the only effect of the recycling penalty on references is to generate useless busywork for authors and copyeditors alike, and globally this busywork must add up to decades worth of wasted person-hours each year. Various brands of bibliographic software supposedly facilitate reformatting, but every time I have gotten tangled up with one of these, I have found it ultimately faster and more accurate to reformat references by hand.

The only conceivable reason for varying the reference style is to give each journal a unique identity. The degree to which journals strive for identity varies, but the more prestigious the journal, the more rigid are the overall formatting and style requirements. When I first began copyediting for *Zoological Science*, this journal had a loose, or open, format in which such things as the style and position of headings and subheadings, and the manner of labeling figures and figure panels, were not uniform or specified. There was nothing wrong with this approach, and indeed many small, regional society journals use it, but *Zoological Science* was no longer a small society journal; it was the most prestigious zoological journal in Asia. I reasoned that a signature appearance to articles in a journal raises reader perception of the overall quality of the journal, and might in some small way raise the citation index. After six months or so, I decided unilaterally to reformat all articles to a uniform style at the copyediting stage. I made the decision unilaterally because I was afraid it would otherwise require editorial board meetings and perhaps involve the advisory board as well, and could end in endless discussion and finally compromise or, worse, nothing at all getting done.*1

*1: Cases of editorial inertia are not unknown. For years the *Journal of Natural History* in the United Kingdom made available online an outdated version of Instructions to Authors that presented stylistic conventions the journal no longer used, which greatly increased the labor of the copyeditors.

Maintaining a consistent style extends to minutia of the text as well: for example, whether to use spaces around mathematical symbols and units (mean=20g versus mean = 20 g) and whether commonly used Latin fragments and abbreviations should be italicized (*i.e.* versus i.e.; *in situ* versus in situ). As copyeditor, I needed to know which way to edit these things for consistency, and again, I believed consistency to be important to reader perception. In these cases, I generally fell back on recommendations in *The Chicago Manual of Style* (15th Edition, University of Chicago Press). In addition, every year I worked for *Zoological Science*, the Editor-in-Chief asked for my input in updating the Instructions to Authors, and in this process we added a number of stylistic conventions to be followed by authors. This made my job easier, as it formalized some of the decisions I commonly had to make during copyediting.

What is right and what is wrong in terms of English usage, style, format, spelling, grammar, and punctuation? Nowadays, rules of the English language are determined by usage panels composed of people who use the language professionally. The renowned American Heritage Dictionary (AHD) Usage Panel, for example, consists of around 200 prominent linguists, writers, journalists, broadcasters, and academics. Panel members respond to questionnaires soliciting their opinion on controversial usages, and the usage preferred by the majority of panel members then becomes the recommended usage. Note, however, that if 70% of the panel favor one usage over another, up to 30% favor the alternative usage and will continue to use it in their own work. There is no black and white, but only blacker or whiter, and what is blacker in one generation can become whiter in the next.

The serial comma is a good example. From elementary school through high school, I learned to use a comma just before the "and" in a series of items (the serial comma), e.g., "I bought roses, violets, and tulips" rather than "I bought roses, violets and tulips." Sometime between the 1960s and now, this usage changed, so that omission of the serial comma is now the norm among writers and newspaper publishers. Nonetheless, this omission can lead to ambiguity. For example, the sentence

This formula is straightforward, concise, and simple.

has a different meaning from

This formula is straightforward, concise and simple.

The first sentence notes three characteristics of the formula: straightforward ... concise ... simple. In the second sentence, "concise and simple" elaborate on why the formula is straightforward. This distinction in meanings is possible only if the serial comma is used consistently. On this basis, I copyedited text in *Zoological Science* to include the serial comma. The *Chicago Manual* backed me up on this, despite the more common current practice of omitting this comma.

● Advice to authors

Articles I copyedited for *Zoological Science* varied widely in scope and quality. They spanned the range from short, specialized research articles submitted by graduate students writing professionally in English for the first time, to major research and review articles written by well-established biologists, including accomplished native and non-native writers of English. Needless to say, the amount of work I did as copyeditor varied inversely with the degree of writing experience and English proficiency of the primary author. In general, non-native writers of English all tend to repeat several types of common mistakes, such as those dealing with article and pronoun use. These aspects of English are highly idiomatic, but fortunately the corrections require mechanical editing that is relatively simple for a native editor. Substantive issues such as poor syntax and paragraph organization, resulting in lack of conciseness and in ambiguity, are more damaging to a manuscript; unfortunately, they are also more difficult and time consuming to edit. On the positive side, these flaws reflect inexperience in writing, and inexperienced writers, native and non-native alike, can learn to avoid them. In this section I offer some relevant suggestions that can help authors improve their writing at the substantive level.

Clear writing is an extension of clear thinking

If the author has not thought clearly about why s/he is doing a study or about analyzing and interpreting the results, s/he will be unable to write clearly about these things. Rather than viewing writing a research report as an onerous task following completion of a

study, the author should view it as an integral part of the study itself. Often when I am writing a research article, difficulty in presenting or explaining a result forces a reassessment, qualification, alternative presentation, and/or alternative explanation.

Criticism and editing provide means of improving writing skill

No one is born knowing how to write, let alone write well; as with any skill, the ability requires long and constant practice, with feedback. The best way for an inexperienced author to improve is to ask a more experienced writer to correct his/her manuscripts on a hard copy, and then to enter the corrections on the electronic file. In this process, the author will automatically learn to write more concisely and correctly. This applies to inexperienced native and non-native writers alike. Inexperienced non-native writers in particular should seek out experienced, preferably native writers to edit their manuscripts prior to submission. I was surprised to find that in many cases, articles written for *Zoological Science* by a non-native writer (the first author), but including at least one native writer as a co-author, had been edited scarcely or not at all by the latter. Non-native writers should specifically request that native-writing co-authors edit the manuscript as rigorously as possible, and then should go over the corrections in detail so as to learn.

When I published my first scientific paper as primary author 32 years ago, personal computers and word processing were things of the future. I wrote out the first draft by hand and typed out the entire submitted manuscript and each successive revision. A line omitted by mistake in the middle of a page required retyping the whole page. Not only is the physical process of writing and revision much easier now, but word-processing software incorporates powerful editing tools in the form of spelling and grammar check functions. The grammar check also constitutes a useful learning tool, as it identifies awkward syntax and suggests alternatives. The suggestions are not always useful, but authors can benefit from analyzing why the software identified certain sentences and phrases as problematic.

Authors should read and follow Instructions to Authors

There is nothing, absolutely nothing, more tedious than reading Instructions to Authors, which may be why some authors ignore them altogether. I argue, however, that authors who ignore the Instructions pay a penalty, and potentially a costly one. I estimate that roughly 5% of articles I copyedited for *Zoological Science* reached me with the References section formatted in a style obviously that of some other journal. Peer reviewers familiar with the format of *Zoological Science* might well notice this and conclude that 1) the article has been recycled after rejection from another journal, and 2) the authors did not care enough about their work even to format it properly. These conclusions could influence the outcome of a peer review; for example, reviewers might begin to look for why an article was previously rejected.

Zoological Science had no mechanism prior to the copyediting stage of ensuring compliance with the correct format. For more prestigious journals, with a higher ratio of rejected to accepted manuscripts, reviewing editors (or in some cases initial review panels) play a more active role. Submitting an obviously mal-formatted manuscript to major journals like *Science*, *Nature*, or *PNAS*, for example, will likely be an instant kiss of death. With hundreds of manuscripts arriving monthly, why should the journal bother with a potentially recycled article that the authors are too ignorant or careless to format properly? I don't know how far down the long ladder of impact factors rigor in formatting plays a role in acceptance, but it is logically an increasingly important factor the more manuscripts a journal receives relative to the number it publishes.

The cost to *Zoological Science* for authors ignoring the Instructions accrued in the form of extra work for the editorial staff, including the copyeditor. The journal paid me a flat rate for editing each monthly issue and so had little incentive to reduce my work. Nonetheless, my time was finite, and tedious mechanical formatting of references sucked effort away from the rest of a manuscript, potentially reducing overall quality. For journals that pay copyeditors on a contractual or hourly basis, extra editing work due to author negligence will result directly in higher costs to the journal.

Shorter is better

In writing, the fewer words one uses, the better. There is no finer example of conciseness in English than Samuel T. Coleridge's (English poet, 1688–1744) famous epigram defining epigrams:

> What is an epigram? A dwarfish whole, its body brevity, and wit its soul.

While scientific writing does not require the skill of Coleridge, excess words do require greater effort from both the writer and the reader and result in flat, pedestrian writing. In copyediting, I strove to eliminate extra words wherever possible. Consider the following two sentences, the first of which exemplifies the style I frequently encountered in inexperienced writers, and the second the edited version.

> There were two ways in which differential expression was demonstrated by the cortical cells. First, the fact that the cortical cells still retained the stain indicated that they were probably expressing mRNA from the gene that we examined.

By elimination of excess words (underlined), this can be shortened to

> The cortical cells demonstrated differential expression in two ways. First, since they retained the stain, they were probably expressing mRNA from the gene we examined.

The second sentence is better because it uses 13 (34%) fewer words than the first sentence to state the same thing, and consequently is much easier to read. Tricks to shortening exemplified here include using active rather than passive voice; changing the structure to permit the use of pronouns; and eliminating redundancy and the constructions "there are" and "the fact that." Ellipsis is another way to reduce words. Ellipsis refers to the omission of words that are unnecessary because they are implied from the context. For example, in the following paragraph, the underlined words can be omitted through ellipsis:

> The best fit model of DNA substitution by the Akaike information criterion (Akaike, 1974) was the Tamura-Nei model with invariant sites and the gamma shape parameter (TrN + I + Γ). However, the two best-fit models of DNA substitution were not congruent with each other. Of these, the more parameter-rich model of DNA substitution, GTR + I + Γ, was used to estimate ML distances.

With practice after becoming aware of word-heavy constructions, any author can learn to write concisely, saving him/herself, editors, and readers a great deal of work.

Inexperienced writers are also subject to large-scale redundancy. By this I mean duplicating sentences or even paragraphs verbatim, or nearly so, in two or more places in a manuscript. Large-scale redundancy stands out like a flashing neon sign, and the reader wonders, "Why am I reading this again?" A common mistake is to repeat chunks of the Introduction or Results section in the Discussion. Once an author has presented a result in detail in the Results section, s/he need only concisely paraphrase it in the Discussion, e.g., "My result showing an inverse relationship between water temperature and egg production means that ...".

Learning to structure paragraphs greatly facilitates clear writing

If good writing is clear and concise, then unstructured paragraphs are the very antithesis of good writing. A sure indication of lack of structure is when a reader must peruse a paragraph several times to understand what it is about. Lack of structure also often results in long paragraphs extending for several manuscript pages. Earlier in my career, when I read unstructured paragraphs, I would blame myself for being too stupid to understand them; I'm sure I also wrote such paragraphs. Later, in the process of trying to teach writing to undergraduates, I learned that good paragraphs all have a common, simple structure. With this knowledge, I instantly became a better writer and furthermore could more easily troubleshoot other writers' paragraphs.

The single simple rule for structuring paragraphs is this: every paragraph must have a topic sentence indicating what the paragraph is about, or its conclusion, and should include only information relevant to the topic (paragraph unity). The topic sentence can

vary in position, and sometimes it is split or repeated, but it should always be there. Figure shows various types of paragraphs defined by the position of the topic sentence. Other elements contribute to good paragraphs, such as using evidence or examples to support assertions (paragraph development) and linking sentences in logical order with transitional words and phrases (paragraph coherence), but without the topic sentence, a paragraph is doomed from the outset.

Variation in paragraph structure will lead to more dynamic, interesting writing. I remember one case in which a non-native writer had hired a professional service to edit his manuscript. The manuscript was nearly perfect and required little editing on my part. It stood out, however, because every paragraph in the long Results section was of the same type (C in Figure), ending with a topic sentence in the form, "These results show that ...". The writing was clear but extremely tedious.

For clear, dynamic paragraphs, one cannot go wrong in reading Stephen Jay Gould (1941–2002; evolutionary biologist and essayist), perhaps the finest biological writer of our time. The following paragraph is from the essay "Evolution as Fact and Theory" (http://www.stephenjaygould.org/library/gould_fact-and-theory.html).

> Well, evolution is a theory. It is also a fact. And facts and theories are different things, not rungs in a hierarchy of increasing certainty. Facts are the world's data. Theories are structures of ideas that explain and interpret facts. Facts do not go away when scientists debate rival theories to explain them. Einstein's theory of gravitation replaced Newton's, but apples did not suspend themselves in mid-air, pending the outcome. And humans evolved from apelike ancestors whether they did so by Darwin's proposed mechanism or by some other, yet to be discovered.

The topic sentence (underlined) comes near the beginning of the paragraph, followed by elaboration of the topic; this paragraph is thus of the type illustrated in Figure A.

● Concluding remarks

The goal of this article was to give the reader some insight into the process of publishing scientific articles, the role of the copyeditor in this process, and factors that affect the extent of copyediting. The demands on the copyeditor are greatest for relatively small international journals publishing articles in English written mostly by non-native writers, as these articles typically require both mechanical and substantive editing. How much editing is actually accomplished involves trade-offs among production costs (how much editing the journal is willing to pay for), editorial policy (how consistency in style and format affect the amount of editing needed), article quality (how polished an article needs to be), and expediency (the desire of authors to publish as quickly and cheaply as possible, and their selection of journals that maximally fulfill this desire). With rising publication costs and increasing pressures on authors to publish (especially in English in international journals) or perish, it will be interesting to see how the role of copyeditors evolves in the next decade.

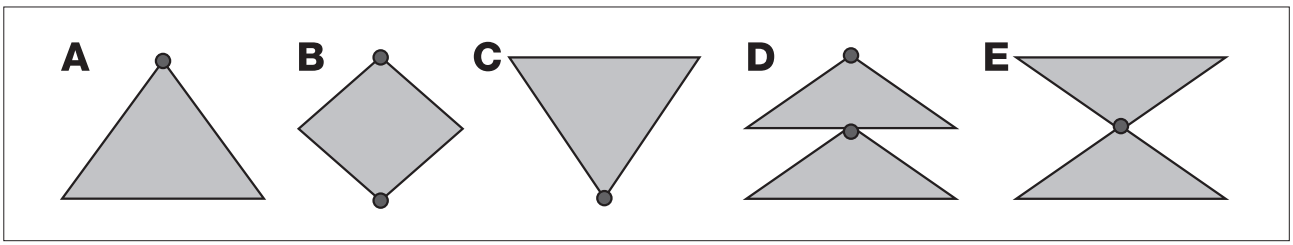

Figure. Types of paragraphs based on the position of the topic sentence (small circles). **(A)** The paragraph presents the topic sentence at or near the beginning, and then elaborates on it or provides supporting evidence. **(B)** The paragraph presents a general topic sentence early on, elaborates on the general topic, begins to focus on a specific aspect of the general topic, and finishes with a restatement of the topic sentence in terms of the specific aspect. **(C)** The paragraph starts with evidence or with a generality and condenses from this a conclusion or deduction, which comprises the topic sentence at or near the end. **(D)** The paragraph splits the topic sentence, first elaborating on one aspect of the topic and then another. **(E)** The paragraph introduces the topic with evidence or description, presents the topic sentence, and then elaborates further on the topic.

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