Revising Manuscripts for Publication

Marilyn A. Dyrud
Oregon Institute of Technology
marilyn.dyrud@oit.edu

Abstract

University-level instructors who aspire to tenure must establish a legitimate publication record and develop credible credentials in their fields. Publishing, however, may be a major obstacle for those who are technically adept but linguistically challenged, for non-native speakers of English struggling to develop an academic voice, and for those who become discouraged when their work is returned for revision with copious reviewer comments. The keys to publishing involve perseverance and an understanding of revision techniques. While tenacity involves personal character traits, this paper can help with the latter by explaining revision strategies regarding grammar, structure, source usage, graphics, and ethical considerations.

Introduction

Clear writing in the engineering professions—industry and academia— is a necessity, for both pragmatic purposes and more ethereal considerations; engineering poetry, for example (Poetry, 2013). Writing is not ancillary to the field; to the contrary, it is crucial for documenting technical and design processes that result in an enhanced quality of life as well as generating the "body of knowledge" of a particular area.

"Engineers are artists," suggests *AutomationWorld* contributing editor James Koelsch, "even if they don't fit the popular notion of the term. It's just that their medium is mathematics, rather than paint or words" (2011). In fact, the Greek root of "technology," *techne*, translates as "art" or "craft" (Definitions, 2001-2018), and the Latin root of "engineer," *ingenium*, means "maker" or "ingenious," specifically, a clever maker of war machines (What, n.d.) As ingenious artists, engineers create with words and visuals in addition to mathematics. And writing creates knowledge (Winsor, 1990). Engineering innovation is for naught if not communicated.

Traditionally, engineers publish in conference proceedings, trade journals, and professional journals, among others, such as lower-circulation, company-specific publications. Virtually anyone who has submitted a manuscript to a publishing venue has received the judgment "revise and resubmit," along with reviewers' comments dissecting the paper. Especially for new authors, this may be disappointing. Authors like to think that their writing is clear, original, and engaging. To find that readers think otherwise is discouraging.

Reviewers, who are usually content area experts, read a submission with several criteria in mind, such originality/contribution to the field, scholarship, research methodology (if appropriate), audience appeal, length, and appropriateness of graphical materials (AJAE,

n.d.). They have several possible recommendations: publish as is (very rare), publish with minor revisions (less rare, but still uncommon), revise and resubmit (the most common), and reject (usually reserved for papers that are poorly written, inappropriate for the journal, or have major flaws). The revise and resubmit category also involves another round of peer review.

"R & R" is shorthand to inform authors that reviewers see potential in the manuscript and are giving writers another chance to clarify the information. A revision can range from grammatical tidiness to a major overhaul. Generally, reviewers offer constructive criticism intended to strengthen the paper as well as reflect positively on the publication.

This paper gives detailed information, with emphasis on IAJC journals, about revising a manuscript for publication and looks at writing style, structure, source usage, graphics, and ethical considerations. While much information is available in print and online about the mechanics of writing, reviewers of manuscripts submitted for publication may question whether authors actually access those materials, given the overall quality (Schultz, 2010). Based on the author's more than three decades of experience as a manuscript reviewer, technical editor, and proceedings editor for several technical organizations, this paper offers a quick, easily digestible guide to revision strategies.

While many authors tend to regard revision as a mechanical task that primarily consists of cosmetic changes, they can benefit by considering the act as a noun: RE-vision—seeing the work anew from an aesthetic distance. Revision involves much more than mastering comma usage; it, like the original draft, manifests the Aristotelian concept of *inventio*, or "discovery" (Aristotle, trans. 1954), the primary act of rhetoric. Engineers practice *inventio* in relationship to physical objects, but they also engage in discovery by writing about those objects.

The Importance of Grammar

While engineers are stereotypically perceived as unimaginative writers, an average engineer spends 50% of his/her work time writing or otherwise communicating, producing many types of documents, including technical reports and papers, memoranda, email, proposals, in addition to presentations (Smelser, 2001). Just as engineers view details as essential to the design process, the same holds true for the writing process. This is especially applicable to grammar.

Grammar is the structural component of language that produces meaning. Grammar captures a writer's thoughts and conveys an interpretation of those ideas to a specific audience. Thus the ability to manipulate and control language is an essential characteristic of meaningful communication. As Jana Johnson suggests, "Just as an improperly configured telephone wire can cause static during a phone conversation, improper grammar can likewise affect the meaning and clarity of an intended message" (2014).

Static includes linguistic anomalies such as improper word choice, awkward sentence structure, and punctuation errors that affect meaning, as in this viral Internet example: "Let's eat grandma" and "Let's eat, grandma" (2015). The comma makes the difference between

cannibalism and a pleasant family dinner. As the caption reads, "Punctuation saves lives!" While this example is amusing, it effectively makes the point that a tiny punctuation mark can make a world of difference in meaning. Hence authors must familiarize themselves with basic punctuation and acknowledge that a slip can produce an unintended result. In areas such as software engineering, correct punctuation is critical (Stotts, 2013).

Non-native speakers of English (NNS), in particular, may have difficulties writing in a foreign language. This is a significant issue, as 2010 statistics from a National Science Foundation report indicate that 49% of engineering faculty and 51% of computer science faculty were born outside of the US (2014), speaking a language other than English. As Belcher notes, most academic journals require fluency in English and act as linguistic "gatekeepers" (p. 1), to the disadvantage of international authors (2007). While the situation may change in the future and enfranchise more NNS, at this time editors must contend with the status quo, which requires a high level of competency in English.

The following examples from technical manuscripts demonstrate a number of representative linguistic anomalies that authors exhibit; unless otherwise noted, all examples are from papers submitted for publication.

Example #1: Repetitive Phrases

> **"Using these technics, students were able to come up with different styles of illustrations to come up with the final proposal."**

Using the same verb twice in a sentence is not necessary; the author needs to find a synonym, perhaps more vibrant than "come up with." Since Word includes a thesaurus, this is not a difficult task. Perhaps the writer was rushed and did not carefully proofread the paper or lacked another verb possibility. Also, "technics" refers specifically to a firm that manufactures speaker systems, amplifiers, turntables, and other products relating to music. As a short form of "techniques," it is inappropriate for a scholarly paper.

Example #2: Using an Incorrect Word

> **"Rote learning is a type of learning in which students literately memorize key fac**ts."

The word "literately" is incorrect; the author apparently means "literally." Again, careful proofreading is necessary before submission.

Example #3: "ESL" Errors

> **"There were different evidences that showed how successful this project was."**

Adding a plural ending to a "noncount noun" is a common mistake in papers written by NNS. "Evidence" is spelled the same whether it is singular or plural. Other common noncount noun errors in technical papers include "softwares," "researches," "equipments," and "informations."

"First row and first column are reserved as a way of checking for coding errors."

"At the end, this project represented a good preparation for all the to better access the job market."

Omitting or adding articles is another very common error in NNS writing. For native speakers, articles are more intuitive than prescriptive, but NNS may speak languages that do not include "a," "an," or "the," making it very difficult to understand usage (Miller, 2005). A typical rule of thumb involves countability; use articles for words that can be made plural and not for collective nouns. However, this often changes according to context (Mitchell, 2004) and is not a reliable guideline.

Example #4: Published Samples

"While systematic depicted above is worried about how things are different, practical science is worried about how things are indistinguishable." (Someswar & Anjaneylul, 2017)

"Recent years, with the increase of Oil-gas long distance pipeline constructions, then the water and soil disaster is concerned gradually by employees." (Zhan, Chen, Tang, Shi, 2017)

Both sentences are excerpted from articles published in open-access, online journals, often the choice of NNS, due to a less rigorous—or, more likely, non-existent—peer review process. These journals have proliferated in the last decade and engage in little, if any, editing activity. Both of these sentences are jumbled English: in the first one, science cannot "worry"; that is a human characteristic. The second is very difficult to understand, and most readers probably would not wade through the entire article.

All of these examples exhibit the need for more careful writing, proofreading, and, in the case of NNS, assistance from a native speaker, preferably someone who has a publication record, a facility for writing, and is willing to help fledgling writers. Another alternative is to consult a short, reader-friendly grammar guide such as Strunk and White's *The Elements of Style* (2000) or William Bradshaw's *The Big Ten of Grammar: Identifying and Fixing the Ten Most Frequent Grammatical Errors* (2012). The advice in these is much easier to digest than longer, very detailed grammar handbooks.

Faulty Paraphrasing

Some articles show a high percentage of matching text in computer scans because of the writer's inability to appropriately paraphrase. Most authors learn that paraphrasing consists of rewriting a passage "in your own words" but not the extent of the revision.

For example, an editor was researching a reference in a submitted manuscript because the reference was not in the required format; the following example is the opening paragraph of the manuscript:

"A Health Safety and Environment (HSE) survey found that a third of accidents in the chemical industry were maintenance-related. Lack of, and deficiency in permit-to-work systems was cited as the largest contributing factor."

To the editor's surprise, she discovered a nearly identical paragraph in the cited article:

"An **HSE** survey found that a third of accidents in the chemical industry were maintenance-related. Lack of, and deficiency in**,** permit-to-work systems was cited as the largest **single** contributing factor."

Changes are minimal, limited to spelling out the survey title, wrongly deleting a comma, and deleting a word. The rest of the article followed a similar pattern. Rather than writing, this author was simply assembling paragraphs from several websites, practicing what is dubbed "patchwork plagiarism" (Direct, 2018).

Paraphrasing poses a challenge in engineering, since the literature of any given technical field is littered with commonly used phrases (see, for example, Most, 2018). While writers cannot avoid the phrasing, they can avoid mimicking the sentence structure of the original. Computer scans, however, will flag the phrases as plagiarism. Conscientious editors will ignore the highlighted text.

Real paraphrasing consists of retaining the central idea but using different words; if that is not possible, adding quotation marks around borrowed phrases signals to the reader that those words belong to the original author. According to the federal Office of Research Integrity (ORI), "The ethical writer takes great care to insure [sic] that any paraphrased text is sufficiently modified so as to be judged as new writing" (Office, Examples, n.d.).

Many university library websites offer useful information regarding paraphrasing. The Purdue OWL, for example, suggests a simple process. Although this is written for students, faculty new to publication may also benefit:

1. Reread the original passage until you understand its full meaning.
2. Set the original aside, and write your paraphrase on a note card.
3. Jot down a few words below your paraphrase to remind you later how you envision using this material. At the top of the note card, write a key word or phrase to indicate the subject of your paraphrase.
4. Check your rendition with the original to make sure that your version accurately expresses all the essential information in a new form.
5. Use quotation marks to identify any unique term or phraseology you have borrowed exactly from the source.
6. Record the source (including the page) on your note card so that you can credit it easily if you decide to incorporate the material into your paper (Paraphrase, 2009-2018).

Appropriate Structure

Structure refers to the organization of content. Some papers, such as empirical research-based papers, follow a predictable formula that includes these headings: Introduction, Methodology, Materials, Results, Discussion, Implications for Future Research (if appropriate), Conclusion, References. These types of papers are common in engineering and science fields, as writers continue to develop technical knowledge.

Not all papers, however, involve reporting data gleaned from experiments or surveys. Some are simply expository: explaining the development of a new course or curriculum, detailing a case study, describing accreditation challenges, and a myriad of other topics. Such diverse subjects do not conveniently conform to a pattern, as do research studies. Authors need to ensure that sections logically flow, always keeping the purpose of the paper and potential readers at the forefront.

Reviewers may ask authors to engage in substantive editing, which involves reconsidering elements larger than grammar and punctuation. In fact, according to Provenzale and Stanley's thoughtful piece on peer reviewing, several reasons for a manuscript receiving a "revise and resubmit" decision involve substantive issues: " first, the reported data need to be analyzed in a different manner; second, additional data are needed; third, the authors have failed to appropriately take certain study factors into account; or fourth, the authors have not appropriately discussed their results against the background of previous studies" (p. 96, 2006).

The latter point is particularly important. A literature review is necessary for context; indeed, authors should always conduct a thorough review of available literature prior to writing. Since most editors are interested in publishing articles that advance knowledge in the field, papers that simply reinvent the wheel, due to the author's lack of research, are probably destined for the reject bin. For example, assume that an engineering instructor adds a writing-across-the-curriculum element to a sophomore project course. She considers that this is a unique approach to linking communication skills with technical content. However, a simple Google search yields an unfiltered score of 122 million sites. This is hardly a "unique" approach. Conscientious writers will exercise due diligence in background research.

Technical writer Kathleen Frost offers a thorough checklist for substantive editing, including the following:

- Organization (logical)
- Complete information, with "appropriate level of detail for the audience"
- Clear context
- Appropriate graphics that "enhance and clarify textual information" (n.d.)

Substantive editing also includes adhering to the publication's prescribed format and ensuring that reproduced graphics are used by permission.

Outside Source Usage

Acknowledging outside sources is a professional obligation, and the literature about plagiarism is replete with examples of those who have ignored this responsibility. For example, historian Stephen Ambrose, author of *Band of Brothers* and dozens of other books, experienced heavy criticism when his curious writing style was exposed. He would use the words of others and then add a footnote indicating the source. Those words, however, were unadorned with quotation marks, so a casual reader—which includes most of Ambrose's audience—would naturally assume the writing to be that of "Uncle History" (Plotz, 2002). While Ambrose initially blamed the incident on "faulty attribution," subsequent investigation revealed a distinct pattern: stealing the words of others *was* Ambrose's writing style. *Slate* magazine's David Plotz equates this activity to vampirism: "The plagiarist violates the essential rule of his trade. He steals the lifeblood of a colleague" (2002).

Editors tend to assume that authors are acting responsibly, although many recent cases, including some reported by reviewers, have resulted in the use of detection software to scan incoming submissions. Therefore, it behooves authors to be meticulous about references and include citations, in the appropriate style for the publication, for any material from outside sources, and to be conscientious about clearly marking quotations. IAJC journals require APA style.

Authors unfamiliar with a particular style should not simply guess but rather consult a reliable website for examples. The Purdue OWL (owl.english.purdue.edu/owl), for example, gives sample entries in three different styles: APA, MLA, and Chicago. It is a very handy reference. Authors should also note that editors and reviewers have little patience for those who ignore directions and use IEEE style instead of APA.

Reference all materials used as sources, including quotations, paraphrases, and summaries taken from published items or unpublished conference papers, PhD dissertations, master's theses, speeches, etc. This includes the Internet; in fact, under the provisions of the 1989 Berne Convention, *everything* on the Internet is protected by copyright, whether or not the copyright symbol appears (Skvarka, 1996). However, there is no need to reference tools used, such as software programs, or incidental mentions of technology, such as a programmable logic controller. Simply stating the manufacturer and product model number is sufficient.

Graphical Elements

In addition to text, authors need to carefully consider graphical materials, which constitute another language in technical writing and is essential in design documents. US copyright, in addition to specifying allowable amounts of text that authors can freely use, also limits use of graphics without permissions:

> Copyright protection subsists, in accordance with this title, in original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either

directly or with the aid of a machine or device. Works of authorship include the following categories: (1) literary works; (2) musical works, including any accompanying words; (3) dramatic works, including any accompanying music; (4) pantomimes and choreographic works; (5) **pictorial, graphic**, and sculptural works; (6) motion pictures and other audiovisual works; (7) sound recordings; and (8) architectural works. (US Copyright, 2016, p. 8; emphasis mine)

The law further delineates the items listed in 5 above as "diagrams, models, and technical drawings, including architectural plans" (p. 108), which includes graphics in technical papers and books. Figure 1 shows an example of a graphical aid from a paper submitted for publication. While it does include a caption, the source of the photos does not appear, leading readers to assume that the author is the photographer. Even if the caption includes a reference, that is insufficient: the author needs explicit permission to avoid accusations of copyright infringement. Journals cannot reproduce graphics owned by another copyright holder.
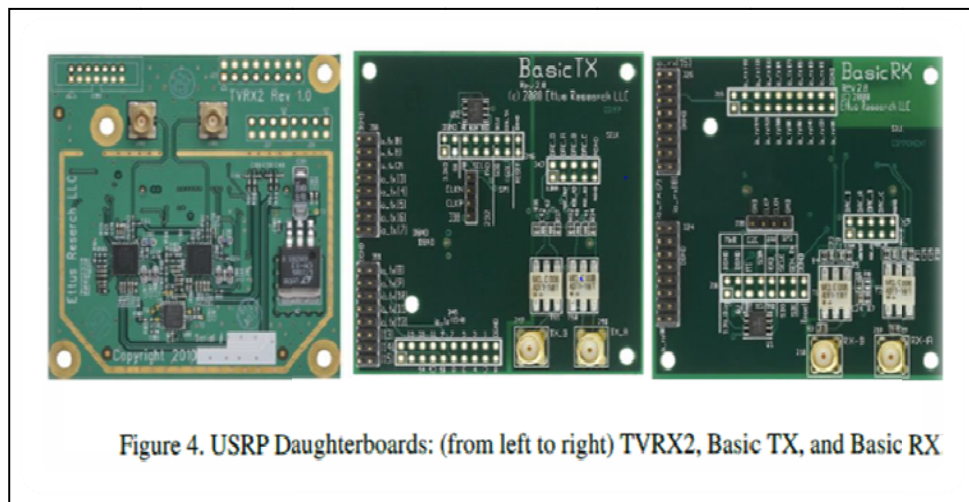

Figure 4. USRP Daughterboards: (from left to right) TVRX2, Basic TX, and Basic RX

Figure 1. Example of purloined graphic.

Obtaining permission is usually a simple process: the author contacts the copyright holder (in the case of Figure 1, the website manager) and explains why s/he is seeking permission. If the reason is for academic publishing purposes, usually permission is granted. The author then adds a "Reprinted with permission" statement to the figure caption and sends the permission notice to the editor.

Note, however, occasionally permission may be fee-based, especially if the item requested is archival or of historic value or appeared in a high-profile publication.

Ethical Considerations

Maintaining an ethical perspective is an essential component of publishing, applicable not only to publication staff but to authors as well. With the advent of open-access, online publishing, ethics has become even more important in preserving the integrity of academic

publications, currently threatened by literally thousands of bogus items—predatory and hijacked journals—that promise quick publication with no time-consuming peer review, all for a fee. This practice results in articles of questionable accuracy and veracity and can cost authors hundreds of dollars, in addition to potentially affecting scholars' reputations (Coan, 2017) and having a negative effect on promotion and tenure deliberations (O'Donnell, 2018).

Many of the items appearing in a list of "potential" predatory journals and publishers are technical in nature, such as the *International Journals for Sciences and Higher Technologies* or *Engineering Research Publication* (Beall, 2017). Jeff Beall, a University of Colorado librarian, was one of the first to draw attention to solely open-access, online journals that basically publish anything for a fee. Beall's list has since been supplanted by Cabell's blacklist, a for-fee service (Anderson, 2017). Engineers who publish, including practitioners, faculty, and graduate students, should be wary of publications that promise quick publication and charge high fees, especially those soliciting manuscripts via email.

Legitimate publications generally adhere to ethics as formulated by the Committee on Publication Ethics (COPE), available on its website (publicationethics.org); many of these guidelines are also applicable to authors. In addition, publishers' websites include ethical guidelines for authors. Wiley, for example, has an online booklet, *Best Practice Guidelines on Publishing Ethics: A Publisher's Perspective*, that explains a number of issues relating to writing and research integrity: fabrication, falsification, plagiarism, image manipulation, duplicate publication, intellectual property rights, copyright (2014).

For this editor, who has more than 30 years of experience, the following three areas are important ethical considerations for authors: originality, text recycling, and online editing services.

Originality

Authors should be aware that most journals now use some type of plagiarism detection software to determine originality. CrossCheck is common, as are Grammarly, Plagramme, Unplag, Noplag, Turnitin, and PlagScan, all fee-based services (Top 12, 2017).

IAJC journals use PlagScan, which compares the submission to a large database of millions of academically oriented sources. It fares well in the software review community and outperforms a number of free services (Bailey, 2011). The user simply uploads a file; PlagScan examines it and produces a report, available as a .pdf or an annotated Word document, which an editor can save and forward to the author. Across the top of the report is a banner summarizing the analysis (Figure 2).
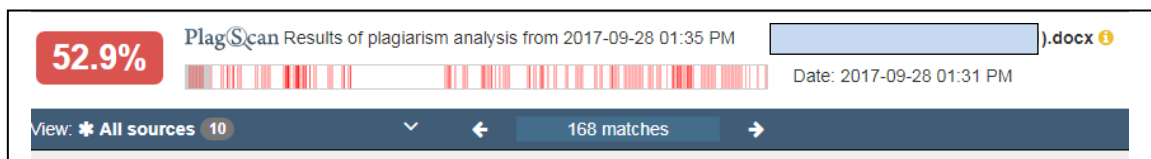

Figure 2. Example of PlagScan summary report banner. Reprinted with permission.

Clicking on the word "View" in Figure 2 yields a numbered list of sources (Figure 3, partially obscured to maintain confidentiality). Clicking on a source will retrieve the actual article.
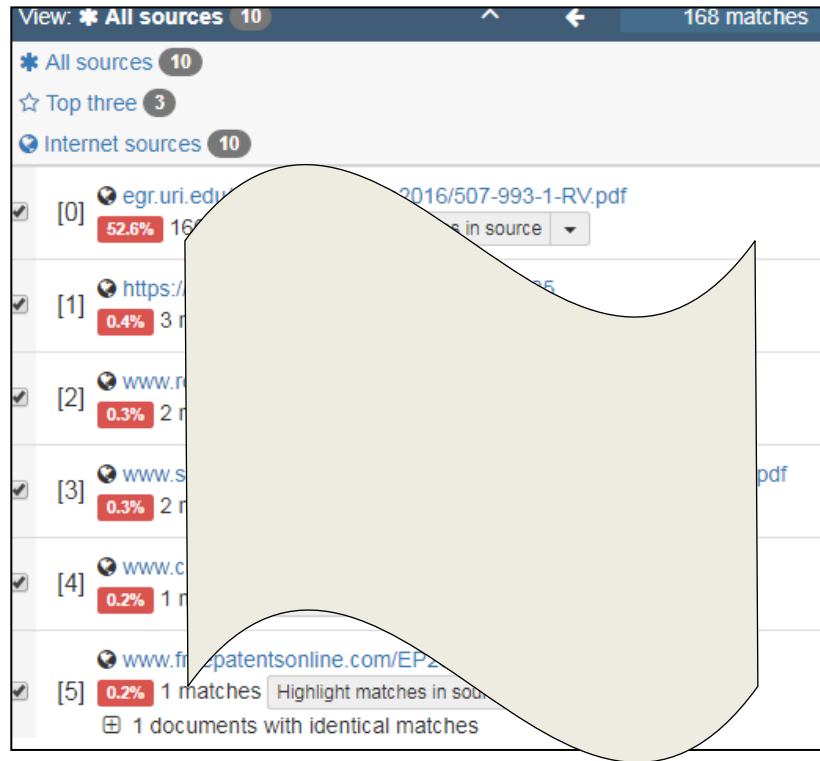

Figure 3. Example of PlagScan clickable source list. Reprinted with permission.

The actual report, excerpted in Figure 4 with asterisks replacing identifiable content, is color-coded:

- Red: matching text; the author has used words verbatim from a source, without attribution
- Blue: a near match; the author has made cosmetic changes to the original
- Green: a legitimate quotation, with attribution (not shown)

Teaching the operation of *********** can be improved by using new methods in conjunction with the traditional methods explained ********** textbooks. These supplementary methods include various hands-on and simulation tools which can be introduced in a ***************. Such tools are generally needed for helping students understand the operation of complex mechanical systems like the ********* *********** of a passenger car. While students can obtain some information about the operation of an ********* ********* in a textbook, teaching experience has shown that it is not enough. Furthermore, making a connection between the textbook illustrations and the real world application may not be easily accomplished. For a novice learner nothing can replace the direct observation of the operation of an ******* *********** the way a physical model or a related computer simulation can do. To address this need, the present paper described different theoretical, simulation and experimental methods where the operation of

Figure 4. Excerpted text with color-coded matches. Reprinted with permission.

Clicking on a colored section reveals the original document; users can also click on this box to access the source (Figure 5).
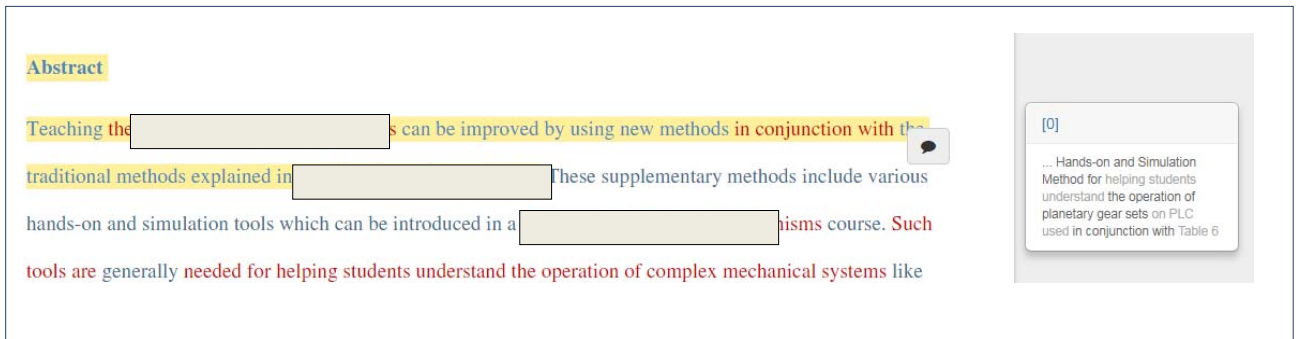

Figure 5. Example of annotated text. Reprinted with permission.

As is clear from the PlagScan report, this is not an original paper. The author has used substantial portions of a previously published conference proceedings paper as a basis for the "new" one, raising a major ethical question regarding recycled text. The author was asked to completely revise the text prior to the peer-review process.

While useful, detection software is far from infallible. An editor's eye is also necessary, as these programs flag *all* matching text, including references, common terminology in a given field, and recycled authors' biographies. They also have limited databases, only checking Web-based sources in languages that use the Roman alphabet, and only examine text, not graphical elements. Furthermore, most programs give "false positives," marking as matching text those sections that are legitimately attributed (Dyrud, 2014). An editor is an essential part of the process, especially to rule out false positives.

Although some authors have tried (Beall, 2013), deceiving detection programs is difficult. As a resource article by CrossCheck producer iThenticate notes, "Most attempts to outsmart plagiarism detection software require effort beyond what is required to properly cite or paraphrase source material. Software engineers estimate that in order for duplicated text to pass a plagiarism detection scan, the author would need to rewrite or revise every third word" (iThenticate, 2013).

Despite these shortcomings, detection software has streamlined the initial review process. Of course, authors are the key figures. By not recycling previously published materials, authors allow a publication's staff and reviewers to quit worrying about originality issues and copyright infringement and focus more on content and contribution.

Authors can use detection software programs to check their work prior to submission. Since many universities already subscribe to Turnitin to scan student work, an author can easily review his/her own work and identify areas for improvement. Doing so also simplifies the work of editors and reviewers.

Recycling Conference Papers

In the past, publishing modified conference papers in a professional journal was a common practice, primarily because proceedings were available only to a limited audience of conference attendees. With the advent of the Internet, however, this has changed, and proceedings are now widely available online, although some sites require a login. University libraries also provide access.

According to Tamsin Harwood, legal counsel for Wiley Publishing, one of the most common problems facing publishers involves repetitive publication, either dual, redundant, or self-plagiarism, all of which involve republishing material without attribution or acknowledgment of prior publication (n.d.). Publishing an unrevised conference paper in a journal is an example of duplicate publication.

Conference proceedings are a major publication outlet for engineers (Linsee, Larevière, & Archambaut, 2008), and the temptation to make a few cosmetic changes and then submit a manuscript to a journal is seductive. However, some professional societies have established policies regarding this issue. The IEEE Communications Society, for example, notes that "Conference papers cannot be republished without substantial additional technical material. The meaning of 'substantial' is left at the discretion of the Editor [sic]" (Conference, 2017).

In a study of more than 300 journals related to computer science, Zhang and Jia found that very few editors would publish conference papers verbatim; most require new content, ranging from 20% to 70%. In addition, the peer review process would be "more rigorous" (2013, p. 193), even if the proceedings were peer reviewed. They conclude, "Those [journals] that do republish conference papers will generally only do so if the paper has been substantially reworked to include additional detail which could not be included in the conference paper" (p. 195).

Authors should follow the advice of the ORI and avoid submitting unrevised conference papers to professional journals, since it may be copyright infringement. They should "adhere to the spirit of ethical writing and avoid reusing their own previously published text, unless it is done in a manner that alerts readers about the reuse or one that is consistent with standard scholarly conventions (e.g., by using of [sic] quotations and proper paraphrasing)" (Office, Text, n.d.).

When an author publishes a paper, s/he signs a copyright transfer agreement and no longer owns the work. Despite popular opinion to the contrary, the practice of reusing prior work is unethical and may have legal implications. In the literature, it is referred to as "self-plagiarism" or "text recycling" (COPE, n.d.) when an author simply submits an article that has sections repeated verbatim, or nearly verbatim, from a prior publication, indicating "a certain degree of scholarly laziness" (IEEE, 2018).

Reusing text without permission may constitute copyright infringement. US copyright law clearly explains the boundaries of "fair use," based on "the amount and substantiality of the portion used in relation to the copyrighted work as a whole" (US Copyright, 2016, p. 19).

Under the fair use doctrine, quoting a small portion of an article or book for academic purposes is allowable; quoting an entire work, regardless of length, is not. Statutory damages can include a fine up to $150,000 for unauthorized reproduction (US Copyright, 2016).

To avoid copyright infringement, author have several options:

- Check journal guidelines/policies for information regarding this issue
- Keep the central idea but completely rewrite the paper
- Reference repeated portions as per any other source material and use quotation marks as appropriate
- Seek permissions from the original publisher to reprint certain sections, especially graphics
- Discuss the situation with the journal editor/associate editor

Repercussions for republishing articles may be severe, including rejection; retraction, if the article has already been published and the issue later comes to light (COPE, n.d.); loss of publishing ability in that journal or other organizational publications and subsequent appearance on a "prohibited authors list" (IEEE, 2018). Some editors will also notify an academic author's department chair, which may result in demotion or termination (Karabag & Berggren, 2012).

Professors who violate academic integrity may also find themselves the object of local news stories, as happened to George Carney, an Oklahoma State University geography professor, who was featured in both the local university paper and *The Chronicle of Higher Education* articles describing a 30-year career littered with plagiarized materials (Professor, 2005).

Online Editing Services

Some authors, especially those desperate to publish or non-native speakers concerned about their English skills, may turn to online editing outlets in an attempt to improve their manuscripts. Services that offer proofreading and editing, for a fee, are rampant on the Internet. Proof-Reading-Service.com, for example, charges £10.99 ($15.42) per thousand words, roughly four pages double-spaced (Prices, 2016). ProofreadingPal.com bases its pricing structure on word count and turnaround time, although its website does not give actual figures (Pricing, 2006-2018). EditorWorld's charges are similar; the site includes a calculating function: the user simply enters an article's length and the calculator determines the amount of time necessary and gives a cost estimate. A 10,000 word article, for example, will take two days and cost $240 (Prices, 2018).

Some open-access, online journals offer editing services, for a fee. However, authors should avoid publishing in these journals, due to legitimacy issues, and especially avoid editing services that describe their assistance similar to the *Canadian Chemical Transactions*: "If reviewers recommend *for* extensive English editing for a manuscript *[missing punctuation]* then authors should *take* the English editing service. We charge $8-10 *dollor* a page (one page =300 words excluding *titile*, author's name and affiliations, and references) *depends* on editing requirements" (English, 2018; emphasis mine). Six errors in two sentences is not a positive reflection of their editors' English competence.

Few studies exist on the accuracy and efficacy of these services and the credentials of the editors, especially in regards to editing for professional journal submissions. Australian educator Lisa Lines has examined the prevalence of substantive editing in graduate students' theses and dissertations and concluded that the practice devalues degrees and amounts to plagiarism (Lines, 2016).

Online editing services range from simple proofreading to complex substantive editing and can obscure authorship, since the paper passes through many hands prior to submission. In fact, George Lozano notes in his study of the ethics of these services, "other than data gathering, 'editing services' can be deeply involved with all aspects of producing a paper, from the beginning to the end, starting with a proposal, continuing with developmental editing and ending with copy-editing and proof-reading. It is clear that at least in some cases, the 'editing service' and the author(s) essentially co-write the paper" (2013, p. 374). International writers, concerned about the quality of their English language skills, mostly use the services, which can be very costly, especially for lengthy documents.

Extensive use of online services may result in an impressive publication list, but it raises vexing questions: How much of the output is actually attributed to the writer? If an editor has rearranged the structure and content, as well as sentence structure and vocabulary, who has "written" that article? According to Lozano, "These days, an extensive publication record is no longer predicated on the ability to write" (2013, p. 375).

Conclusion

From a practical viewpoint, authors in all fields would benefit by regarding their manuscripts as "works in progress," at least through the peer-review process, and accepting revision suggestions with an open mind, avoiding defensiveness. To avoid damage to fragile egos, authors will be better served psychologically by simply assuming that any submission will require a revision. Being tied to the message rather than the exact wording is paramount, as is seriously considering reviewers' comments when revising. While the process of rewriting is, in some respects, easier than initial composition, it still poses a major challenge.

For engineering professionals in particular, writing is necessary to document the design process and create knowledge. According to Dorothy Winsor, "writing is what engineers do . . . . They inscribe a written representation of physical reality and then use more writing to build agreed-upon knowledge" (1990, p. 68).

The real key to producing readable and engaging writing is for authors to train themselves to read with an editor's eye, maintaining an aesthetic distance and looking at the material in a new light. Revision involves much more than bouncing through a manuscript changing punctuation; it is re-seeing the material from a different perspective.

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Biography

MARILYN DYRUD retired in spring 2017 as a full professor in the Communication Department at Oregon Institute of Technology, where she has taught for four decades. She has been a member of ASEE for 32 years and is active in the Engineering Ethics Division as past chair, and the Engineering Technology Division as the current program chair . She also chairs the newly formed Ethics Task Force. She is an ASEE fellow (2008), winner of the McGraw Award (2010), winner of the Berger Award (2013), and the communications editor of the *Journal of Engineering Technology*. In addition to ASEE, she is active in the Association for Practical and Professional Ethics, the Association for Business Communication, and serves as a technical and proceedings editor for IAJC journals and conferences.