The art and science of writing a publishable article

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Submitted: 13 November 2017; Received (in revised form): 15 November 2017; Accepted: 16 November 2017

Key words: academic writing, publishing articles, mind maps, front loaded writing, writing strategies

Composing and writing a paper that is acceptable for publication in a high-quality journal is not easy. Journals publish articles that present a well-supported story that makes a significant contribution to the knowledge base of the journal’s targeted discipline. At the very minimum, publishable articles need to be based on solid scholarship, sound and robust methodology, to be well written, and to have a clear, concise message. Having been involved in reviewing manuscripts for leading journals for many years, we are still surprised how many submitted articles are rejected even before they are sent out to review because they are poorly written or fail to meet a journal’s publication requirements. We are not referring to just submission guidelines, which of course need to be addressed; rather we are talking about more fundamental components of composing well written, publishable articles. In this article, we provide some simple recommendations on how to effectively write papers that will be earnestly considered for publication in high-quality journals.

This article was written for a broad audience of writers. The discipline of urban ecology studies the structure and function of urban ecosystems which provides evidence-based knowledge to inform the design, planning, construction and management of cities and towns (McDonnell and MacGregor-Fors 2016). Thus, contributors to the knowledge base of the discipline comprise a diversity of urban ecology practitioners including scientists, architects, planners, engineers, landscape architects, land managers, conservationists and policymakers (McDonnell 2015). Although we use the term ‘scientist’ or ‘academic’ throughout this article, we are referring to all urban ecology practitioners eager to publish their work in a high-quality journal.

Advice on improving your writing

Writer’s prime directive

The most important idea in academic or scientific writing is to respect the audience. Do not make them work to figure out what you are trying to say, or what the structure of your story is. You should do as much work for them as you can, to be sure that your message comes across clearly. After all, readers of scientific papers, grant proposals and management recommendations are busy people. This is especially true of journal reviewers and editors. They have many things competing for their attention. There are other papers to read and write, there are lectures to prepare, there are colleagues to meet, and there are proposals to evaluate. If your article or proposal is hard to follow, or just makes them work harder than they should to sort out possible meanings, connections or flow, they may turn their attention to other tasks, rate your work poorly or quickly reject it if it is being considered for publication. Your job as a writer is to make it as easy as possible for people to understand your message. This task is common to all academic writers.

Written communication in academia is linear

Writing moves in a straight line. The linearity implied by ‘Once upon a time’ is as much a part of academic writing as it is of the
narrative. Successful non-fiction writing moves clearly from a big or an initial idea to expansions or support of that idea, through implications and outcomes of that idea. In other words, a narrative is a tool of academic writing just as it is for any other kind of writing. However, academic writing should not be like a mystery novel that reveals the outcome only at the end. Academic and especially scientific narratives are effective if they start from a stated focus, move through a clear structure of support, and bring the story to fruition. The organization and the order of ideas should be clear throughout any academic narrative. If you find yourself circling back, or repeating details, that likely means that the structure of your work needs to be revised.

Kinds of writing

Academic writing, especially scientific writing, is different from some kinds of writing done for literature or cultural criticism. There are several kinds of writing, each with a different philosophy and style. Exploratory writing deals with feeling and expression of opinions or emotions. It also explores ideas and seeks to discover the personal or cultural significance of what may seem to be disconnected thoughts or impressions. Exploratory writing is often highly metaphoric and imagistic. It may build slowly, or wander through a ‘stream of consciousness’. It may express irony. However, these tactics are unlikely to be a useful part of reporting scientific findings or proposing a research plan. Exploratory writing may aim at figuring out what a message might be. Indeed, several famous writers including Joan Didion, Eugene Ionesco and Stephen King have said they write to find out what they think. This is the goal of exploratory writing. Unfortunately, such evocative writing is the sort most familiar to students from their writing experiences outside of science. When students use that as their model for scientific writing, they come up short.

The second kind of writing is explanatory. It is much more straightforward than exploratory writing. Explanatory writing, which is the style most appropriate to scientific subjects, starts with a clear message. To define your message requires a variety of activities including taking notes or keeping a journal, discussions with your professors and collaborators, readings in the theory of a subject, absorbing the existing empirical literature, field work, poring over graphs of data, statistical analyses and traveling to expand your understanding of the geographical context of your work. The goal of a scientific article or a scientific research proposal is to explain to the reader what the message is, and why it is sound. Scientific writing most often presents a narrative about expectations concerning the material world, and whether those expectations are borne out by tests. It explains some part of scientific understanding.

The specific style of explanatory writing may differ depending on the kind of publication it is intended for. Three common kinds of academic outlets are research journal articles, book chapters and grant proposals. Journal articles have a form and style specified by the particular journal. Usually, in journals, the piece begins with an abstract that tells briefly what the scientific problem is, what was done to address it, and what the findings are. For some journals, abstracts must indicate the practical implications of the findings. The body of the article makes the detailed argument and presents the support clearly enough for other scientists and practitioners to evaluate it. Review and synthesis articles in journals may summarize the state, history and future needs of a research or subject area. Each publication outlet will have instructions that will help you decide on the scope of the piece you write and submit. We will discuss this in more detail later, but it is imperative that you understand and follow the instructions provided by the editors if you want to have your article earnestly considered for publication. Before you even begin writing, it is an effective strategy to be familiar with the requirements and writing style of the journal to which you will submit your article.

What we write about is complex, but the writing should be simple

In all these outlets, however, it is important to write clearly and simply. Just because the topic is complex does not mean that the writing should be. Indeed, complex topics should be presented extraordinarily clearly. Simple, straightforward sentences are better than complex, long and convoluted ones. Exact or plain words are better than vague or fancy words. If a fancy word is required for the flow, use it. Avoid using jargon and acronyms especially when submitting an article to multidisciplinary international journals. Be sure every word plays a role in presenting your case and you know the specific meaning of each unusual word you use. Exploit the extraordinary subtlety of English to help make your points.

If English is not your first language, we strongly recommend that you seek assistance from your advisor, colleagues, university writing centers and professional writing services to improve the quality of your article. Poor sentence structure, grammar and syntax, as well as any spelling mistakes, will negatively impact the assessment of your article for publication.

When writing an article for publication in a journal, authors should lay out the problem or the point very early in the piece rather than letting the conclusion emerge gradually through the narrative. As a result, journal articles are often described as ‘front-loaded’. That is, the message or problem is briefly outlined first, and the rest of the piece lays out the background, the approach, and the proposed or discovered solution to the problem. In well-written journal articles, the problem or critical questions you are addressing should be stated in the first two paragraphs.

Roadmaps are key parts of scientific writing. Front loading tells where you are going. The roadmap lets the reader know how you are getting there. A roadmap for the whole argument should be laid out early in the article. But there are opportunities to reinforce the roadmap throughout the article. Each paragraph should have a topic sentence, which is a small, local roadmap. The roadmap for each sentence can be reinforced by using the active voice, clearly identifying the actor, the action and the result. Provide transitions between paragraphs and sections as a way to reinforce the roadmap. Structure of the writing should reinforce the intellectual structure of the argument. The roadmap is a tool to help the author keep ideas in the correct place, and for the reader to know where they are in the argument.

Strategies for writing

The first thing to consider in preparing to write an article is to clarify for yourself who the audience is. Is it the few people who are experts in your specific field? Is it ecologists in general? Is it scientists in other disciplines? Is it designers, planners and managers? Is it the reading public? Is it policy makers? Each of these audiences will have needs and will bring different background assumptions or knowledge to your piece. How you write for each of these audiences will differ. For example, we
suggested earlier that you should avoid using jargon and acronyms because when you are writing for a broad audience they may not be familiar with these terms. Using jargon and acronyms in your writing can impede the flow of your article and reduce its impact.

Identifying the audience is an important tool for keeping them in mind as you prepare your article. Visualizing them may help you do the work that will help them be engaged and follow your piece easily. As you finalize your article, it may help to envision your audience/reviewers asking questions like these: Why am I reading this? Why should I keep reading this, rather than reading something else, or doing something else entirely? Rare is the audience/reviewer that must read your piece. Rarer still is the audience/reviewer that must like it no matter what.

Writing, the experts say, is a skill to be learned, not a gift bestowed without effort. This means that there is hope for all of us. It also suggests the two strategies discussed below.

The first is to practice writing. Write regularly. Many successful writers set aside their best mental time of day to write. They practice writing as a discipline. Graduate students commonly tell us they struggle to write any time of the day or night. They often feel this way because they underestimate how long it takes to write well. Writing a high-quality publishable article requires confidence in your ideas, practice and skill which takes time to acquire. How much time? It is hard to answer this question for it depends on many factors, some of which we discuss in this article. We feel it is useful to point out to students that the writing process is much more akin to knitting a beautiful handmade sweater than making a sandwich. It takes considerable skill and years of practice to quickly knit a beautiful sweater. Thus, we feel most students can learn to write well, but they need to increase the amount of time they actually spend writing. Not all writing needs to be done at a desk or in front of a computer. We commonly make good use of time spent walking, waiting for the bus, riding in a car or train to think about how to improve what we are currently writing.

The second strategy is to pay attention to good and bad writing. What academic writers produce work that engages you? Which ones do not? What is the difference in how they present their arguments? What is the difference in how they use words and lay out sentences? Thinking carefully about other people’s writing is a step toward improving your own.

To make the second strategy of learning from other writers most effective, read what good writers have said about writing. The classic Elements of Style, by Strunk et al. (1999), is widely recommended. A more contemporary work, appearing in several editions, all of which can be profitably read, is William Zinsser’s (2006) On Writing Well. Lamott’s (1994) Bird by Bird has other useful messages. We have found it useful to revisit such books every few years.

Most good writers have trusted friends, family members or colleagues who help them find weak spots in their writing. We commonly advise our students to become involved in what we refer to as the ‘community of science or writers’ that is composed of their local graduate student colleagues, post-docs and professors as well as those involved in similar work around the globe. The complete process of writing, conceived as the production of a cogent piece, is rarely a completely solitary pursuit. The best writing has been filtered through fresh, critical, sympathetic—or all three—kinds of eyes. The writer who does not take advantage of help from others is unlikely to produce the best work. Writers do one another the favor of constructively critiquing each other’s work.

Outlining is a key step for most writers. This is simply a tool for getting down the order of ideas, and for identifying what are the main points and what are the supporting points. Some people fear traditional linear outlining because it seems to lock them into a set order of things very early or they just do not think or write in an orderly, linear fashion. For example, it is common for graduate students to struggle with developing a flow in their writing because they get bogged down
with the writing of introductory material, yet they excel in writing their methods, discussion and conclusion sections. If traditional linear outlining does not work for you, there are several alternatives. Some alternatives are more visual, while some are more verbal. A writer can outline in pencil, use big post-it notes on a blackboard or blank wall (Fig. 1), or make a non-linear diagram to organize your information in the form of a ‘mind map’ (http://en.wikipedia.org/wiki/Mind_mapping; accessed 21 November 2017) on paper or using software (Fig. 2). Even using the list function in a word processor to lay out the flow of ideas, or creating a Microsoft PowerPoint presentation to present your proposed structure and content of your article to share with your fellow students, professors or colleagues can be useful before you start writing. The advantage of all these methods is that they are clearly exploratory and it is easy to change the points included and the order of those points. The post-its can be moved around, and new ones inserted or existing ones not needed can be put aside. A mind map can have new ‘legs’ inserted when a new main or supporting idea comes to mind. It is also easy to move ideas within the map if you find a better place for them.

Sometimes, literally talking through the draft outline, mind map or PowerPoint presentation exposes gaps or poor order in the argument. Doing the maps or outlines electronically or in pencil reduces the desire to avoid changes. Start early, play with the outline, play with alternatives and let it rest. Come back to the outline after a time away, and it will be easier to see it with fresh eyes and to make good changes. Unless the piece is extremely short and well-focused, an outline is usually helpful. But be aware that once you start writing, even a mature outline may have to be changed. The act of writing itself is a process that can expose alternatives in the structure of an argument and it can even spawn a new level of understanding of your subject matter (Zinsser 1993).

Composing versus editing

Composing and editing are two distinct activities for us and for many other writers. You may find that you can compose and edit at the same time. But if that is not the case, keep the two functions separate. The biggest job of a writer is to get her or his ideas and argument down on paper or in electrons. The first draft can be horrible, and nothing that you would show to anyone else. Get something down. Work on it every day to get more down until you have your story or argument complete. Wait until later to edit.

‘Drawer time’, the time your manuscript spends in the dark of your file cabinet or unopened on your hard drive, may be one of the most valuable editing tools. Let your draft sit long enough so that when you read it again, you will be able to identify the big things that are wrong with it. Not leaving enough drawer time is a major cause of poor editing. Drawer time allows the author to be a better editor of their own work. If you have little drawer time, then be sure to have friendly critics edit your work for you. Of course, allowing time for both is best.

Advice on submitting an article for publication

Where to begin

Once you have a good, well-supported story you want to publish you need to carefully assess the most appropriate journal(s) to
submit it to for publication. The closer your work falls within the current scope of a journal the higher the probability of getting it published. It is always disappointing to have a paper quickly rejected because it was a ‘poor fit’. We advise our students to put considerable effort into investigating potential journal outlets before beginning to write an article for publication. Do not hesitate to engage your colleagues and the greater ‘community of writers’ to help select an appropriate journal. Reading similar recently published articles in your target journal will also assist you in composing an article that falls within their scope and fulfills their publication requirements.

To facilitate the assessment of your submitted article, it is imperative that you understand and follow the journal’s submission instructions. Failing to do so commonly results in a desk rejection. Desk rejection means that the editors quickly reject the paper, usually within a week of receiving it, without requiring further peer review.

**Things to avoid**

Professors commonly tell graduate students ‘It is easier to get something published than unpublished’. The not-so-subtle message in this statement is always submit original, high quality, error-free articles for publication and be certain to avoid violating any ethical or legal norms that could at the very least result in rejection of your paper or, at the worst, result in tarnishing your reputation, job dismissal, lawsuits or criminal charges. Most journals today require authors to abide by the Committee on Publication Ethics (COPE) publication guidelines (https://publicationethics.org/resources/guidelines; accessed 17 October 2017). They cover a diversity of issues related to originality, fabricated or misappropriated data, plagiarism, authorship, conflict of interest and copyright. Before submitting your article for publication we encourage you to become familiar with COPE’s publication guidelines and read the journal’s policies that state their publication ethical standards.

One of the more common violations of journal ethical codes is plagiarism which is defined by Oxford University as ‘… presenting someone else’s work or ideas as your own, with or without their consent, by incorporating it into your work without full acknowledgment’ (https://www.ox.ac.uk/students/academic/guidance/skills/plagiarism?wssl¼1; accessed 17 October 2017). Over the past decade, journals have paid more attention to self-plagiarism which the iThenticate’s white paper on the ethics of self-plagiarism defines as ‘… a type of plagiarism in which the writer republishes a work in its entirety or reuses portions of a previously written text while authoring a new work’ (https://www.ithenticate.com/hs-fs/hub/92785/file-5414624-pdf/media/ith-selfplagiarism-whitepaper.pdf; accessed 17 October 2017). Again, we urge anyone considering submitting an article for publication in a journal to read and carefully follow their ethics policy regarding plagiarism and especially self-plagiarism. It is now common practice for journals to input every submission into sophisticated electronic software programs that can detect all forms of plagiarism. Articles with plagiarized content are desk rejected.

**First impressions are important**

We have all heard the aphorism ‘You never get a second chance to make a first impression’ and it definitely holds true in the world of publishing. When your article is received by journal editors or reviewers they typically have a relatively short time to assess whether it is publishable. Regardless of the quality and significance of your article’s message, if after just a quick read it seems poorly written, hard to follow and contains obvious errors in grammar, syntax and spelling, which reduces the impact of your message, it will be desk rejected. If you follow our advice above and write cogently and powerfully with no errors, your article will make a good first impression. In most cases, such articles will be sent out for peer review. As we mentioned previously, you can significantly improve the quality of your writing by studying good writers that have published articles that engage you personally or are well respected in their field of study.

Now that you have a more detailed understanding of the publication process and the need to convey a positive first impression, you should recognize the importance of selecting an appropriate title and keywords as well as composing a well written and informative cover letter and abstract. Editors and reviewers will assess all of the components of your article, but they pay particular attention to these four components during their initial assessment.

A cover letter should be carefully written to quickly convey your story so editors can rapidly evaluate how well it fits into the scope of the journal. It is also advisable to explicitly state your target audience especially if it is a multi-disciplinary or international journal. Finally, as justification for its publication, it is good practice to list up to three of the important outcomes of your article. Again, it is your job to make it as easy as possible for the editors to understand why you have submitted your paper to their journal and why they should publish it.

A good title is short, concise and accurately conveys your article’s message. It also helps to use simple yet specific terms and avoid vague complex terminology and jargon. For example, ‘Urban parks support local biodiversity which can provide a diversity of ecosystem services’ is complex, vague and relatively uninformative. A more descriptive and informative title would be ‘Multilayered urban park vegetation provides critical habitats for birds’. We also advise our students to try to compose clear single phrase titles and avoid creating complex titles that require colons. One effective technique to develop a cogent title is to generate a dozen or more titles and evaluate them with your co-authors, colleagues and your ‘community of writers’. From our experience, a few strong titles always emerge at the completion of this type of exercise.

Writing a good abstract is critical to getting your work published. Because they are between 150 and 250 words, you need to describe your story very simply and concisely. If your abstract is poorly written and hard to follow the editors may not grasp its message and are thus unable to evaluate its significance. This can lead to a quick desk rejection. Successful abstracts should be ‘front-loaded’ as we described earlier. They should briefly inform readers of (1) context, (2) problems or questions being addressed, (3) methodological approach which should be kept to a minimum, (4) results and (5) significance of the work or findings. Be sure to write about your actual results rather than your statistics.

In the days before the internet, we did not spend much time selecting keywords for journal articles. This has changed dramatically with the proliferation of search engines, searchable databases and electronic journals. Today, your choice of keywords significantly influences how discoverable your article is to other researchers and practitioners. In addition, your keywords assist journal editors in assessing how well your article fits within the scope of their journal. This is especially important when submitting to very high-quality international journals. We encourage our students to develop a ‘keyword strategy’ to maximize the discoverability of their published
articles. In selecting keywords, we suggest you choose a few very broad subject categories such as biodiversity, global change, ecosystem services and urban ecology so it is visible to a large audience, but also include more specific terms such as vegetation dynamics, genetic mutation, plant-insect interactions, predation, trophic structure and non-economic valuation that increase the discoverability of your article by researchers and practitioners focused on your specific sub-discipline. It is a good practice to compile lists of keywords that appear in articles you have cited and also recently published articles in the journals where you plan to submit your article. Remember that most search engines scan titles, keywords and abstracts, so when composing yours be smart and use a diversity of terms to improve the discoverability of your article.

**Keys to publishing**

Although we have covered a number of topics, there are many other issues we could address to assist you in writing a publishable article. Indeed, we have run workshops and semester courses on this topic, but we feel strongly that the best way to successfully publish your work is to learn by doing. After following our advice and doing the best job you can in writing your article, check to see if you have successfully covered all six keys to publishing as follows:

**Six keys to publishing a journal article**

1. Well written and easy to understand story.
2. Well supported, robust and reliable message and conclusions.
3. Appropriate and robust methodology and data analysis.
4. Clear explanation of how the article addresses existing knowledge gaps.
5. Comprehensive list of up-to-date references.
6. Message relevant to a relatively wide audience.

Once you are satisfied you have written a publishable article, share it with your professors, colleagues and your ‘community of writers’ and ask them to evaluate it using the six criteria above. If they all feel you have written a publishable article then you should submit it to your chosen journal. If you follow this advice we feel there is a high probability your article will be sent for peer review. We consider this the true starting point of publishing as follows:

Peer review can be a very difficult and fickle process. To the beginner, it can seem very unfair. It may not help to know that many writers have felt this way at some point in their career, but once you have published an article the purpose of the peer review process becomes clearer. The first lesson is to not take the reviewer’s comments personally. They typically provide very valuable feedback on how to improve your article so it can be published. You should view it as part of a learning process and work hard to address all of the reviewer’s comments and resubmit your revised article as soon as possible. If no fatal flaws are discovered during the peer review process and you address all six keys to publishing we listed above, journal editors will want to publish your article. Thus, if you work hard to revise and improve your article, they will typically work with you until it is in a publishable form.

**It takes practice to write a publishable article**

The push for young academics to publish their work in high-quality journals has increased dramatically since we were students. This is undoubtedly due, in part, to the current level of competition for jobs and the adoption of more quantitative methods for evaluating academic scholarship. It is now more important than ever for graduate students and early career professional to develop good writing skills and a thorough knowledge of the publication process. Because our early writing was not very good, we received all sorts of constructive criticisms. For example, we were often told our writing was too complex, too indirect or too wordy, but instead of getting discouraged we worked hard to become better writers. It took training, practice and being edited by sensitive writers including our professors, fellow students, colleagues and journal reviewers to improve our writing skills. In addition, over the years we have come to see that the erroneous assumptions we originally made about what was good writing are common. Also common are the errors in the production of a journal article that beginners make, and that we still make in early drafts or unedited pieces. We hope our advice and suggestions on how to avoid these errors will assist you in getting your work published. Do not forget, we all go through this learning and practicing process in our efforts to become published writers.

**Conflict of interest statement.** None declared.

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