

WRITING FOR
**EARTH
SCIENTISTS**

— 52 Lessons in Academic Publishing —



STEPHEN K. DONOVAN

WILEY Blackwell

Writing for Earth Scientists

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52 Lessons in Academic Publishing

Stephen K. Donovan

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For Trevor Jackson (1941–2016), head of department, co-author and friend, who never, ever failed to be anything but an enthusiast for all and any of my publications.

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Foreword

Given the vital importance of clear, accurate and comprehensible communication to the advancement of science, it is remarkable how cavalier, even disdainful, most scientists are to the processes of writing and publishing. There seems to be an implicit assumption that real science is done in the lab or in the field and that writing up is at best an annoyance or worst a hateful imposition to be done as quickly and with as little grace as possible. The merest reflection shows this to be nonsense and dangerous nonsense. Without clearly written, well-structured and thoughtful papers, monographs and text and reference books, the most important scientific discoveries are worthless. After all, even the double helical structure of DNA would have remained a topic for bar discussion in the Cambridge pub, the Eagle, had Crick and Watson not written their elegant and lucid paper for *Nature* and thereby changed the world. Until that paper was communicated and circulated, the science contained in it did not exist. Scientists should embrace and celebrate good writing and rejoice when the quality of their written work is recognized. It should be the fundamental basis of what they do but sadly and all too often it is slipshod, obscure, portentous, pretentious and downright incomprehensible. This book will show you how to avoid the pitfalls of bad scientific writing and produce sparkling and readable text that will gain you the reputation of being a discipline leader. What else could you possibly aspire to?

Steve Donovan and I first met when he was a young researcher at the University of the West Indies in Jamaica and I was dreaming of setting up a new scientific and academic imprint, called Belhaven Press, almost 30 years ago. The greatest challenge for a new publisher is to find willing authors. By definition, you have no track record and nothing to show. My own academic background was in the Earth sciences (geography actually. My PhD is on viticulture in France. Well, why not? Someone has to.)

so that seemed the obvious place to start. I had just left a drudge job at Macmillan but still had a free subscription to *Nature* which they had founded over a century before and still publish. Leafing through a copy one hot and tedious afternoon (we had seemingly glamorous but in reality stuffy offices in Covent Garden), I noticed a short but elegantly written article on fossils (ostracods, I think, but it was a long time ago) by a young author who clearly knew how to write well. I wrote to the author to ask if he'd ever thought of writing or editing a book on mass extinctions. He responded weeks later (due to snail mail; this was long before e-mail) enthusiastically and the result was the beginning of a long and fruitful partnership that has produced several books which we both like to think have changed the field positively, and we have even jointly authored a couple of papers. It also produced a lifelong friendship which we both treasure. The young author was of course Steve Donovan.

Since then, Steve has written dozens of papers and tens of books and monographs for a variety of audiences. The publishing world has changed out of all recognition since we first collaborated in 1986. Then it was primarily print on paper and offprints of journal articles were the common currency. (There must be enormous mountains of them, mouldering in university offices and libraries in Africa, China, India and South America.) Now there are digital platforms galore, blogs, pre-prints, postprints, database data and much else. Yet one thing remains unchanged. If you do not write well and clearly, you will not be read and you may as well not have done the research. Good writing is the most essential thing in science. Nothing else matters so much.

In *Writing for Earth Scientists*, Steve provides a step-by-step guide on how to achieve good clear scientific authorship. If you are browsing this book in a bookshop, your library, on-screen or on your mobile device courtesy of Mr Amazon, my advice is devour it, memorize and keep it at your side at all times when writing. It will remind you of the what, how and why of your research and you will become a better scientist, more widely read and the envy of your friends and colleagues. It will not make you more beautiful or attractive but you didn't really expect that, did you? Now, I must get back to my own writing. I have a publisher's deadline to meet!

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My thanks go to all the colleagues, reviewers and editors of the past 35 years, many of which I am proud to call friend, who helped turn each of my papers into something worth publishing. Iain Stevenson, recently retired from University College London, commissioned my first edited book for the late-lamented Belhaven Press and has also written the Foreword for the present volume – thank you, Iain. Ian Francis, formerly of Wiley-Blackwell, fed me, tempted me with the idea for this book, but I had to think it through myself before I bit the hook; I am glad that I did. Ramya Raghavan at Wiley-Blackwell was afflicted by my original typescript, complete with one chapter written twice in different parts of the book (!), and has calmly and enthusiastically guided my scribble through the early stages of the publication process. My children, Hannah and Pelham, have put up with their Dad, always reading, always writing, without complaint; now H. is starting her own course of university study, I hope the writing ‘bug’ bites her, too. My partner, Karen, has provided so much support for this project in so many ways from her lofty eyrie across the North Sea – thank you, Kitten.

Special thanks must be given to places, apart from home, where I wrote this guide in my (now) stained and battered brown notebook. Vascobelo Café in Scheltema bookstore in Amsterdam was a regular haunt for breakfast on Saturdays, providing peace, tranquillity and a soft boiled egg while I wrote a paragraph or two. Subway at Leiden station was my writing place on weekday lunchtimes, where I must have written at least a third of *Writing for Geologists*. Subway in Hoofddorp fed me and let me scribble mainly at dinnertime, and, if I took the family for a burger at McDonald’s in Hoofddorp, I wrote there, too. If this was a research paper, I would list any sources of

grants in the acknowledgements. None of these cafés sponsored me *per se*, but each was indispensable, providing a table and coffee to encourage my pencil. Thank you, you were all essential to this book.

Thank you to those journals who gave permission for me to reproduce illustrations from some of my earlier publications. These are Figures 23.1 (originally in *Bulletin of the Mizunami Fossil Museum*, edited by Dr Hiroaki Karasawa), Figures 24.1 and 24.2 (*Caribbean Journal of Earth Science*, edited by Dr Sherene James-Williamson), Figure 25.2 (*Proceedings of the Isle of Wight Natural History and Archaeological Society*, editor Dr. Paul Bingham), Figure 25.3 (*Palaaios*, managing editor Dr Kathleen Huber) and Figure 39.1 (*Geological Magazine*, Ms Georgia Stratton, Cambridge University Press).

About a quarter of the chapters in this book have been adapted or have evolved from articles published originally on one or other side of the Atlantic Ocean. I thank the publishers for their graciousness in granting permission for their reproduction, each in a more or less changed form, herein. The publishers are, in no particular order, University of Toronto Press, Toronto (publishers of *Journal of Scholarly Publishing*); Tribune Content Agency on behalf of *New Scientist*; SEPM (Society for Sedimentary Geology), Tulsa, Oklahoma (*Palaaios*); European Federation of Geologists, Brussels (*European Geologist*); and the Palaeontological Association, London (*Newsletter*). Bibliographic details as follows:

Chapter 2, 'Publication Diversity', adapted from *Journal of Scholarly Publishing* (2008, **39**: 294–300).

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Chapter 8, 'Discussions and Replies to Published Papers', adapted from *Journal of Scholarly Publishing* (2016, **47**: 213–16).

Chapter 9, 'Book Reviews', *New Scientist* (1993, **140** (1900): 55) and *Journal of Scholarly Publishing* (2006, **38**: 36–40).

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Chapter 27, 'Co-authors and Others', adapted from *New Scientist* (1995, **147** (1990): 46–7).

Chapter 30, 'Editors', adapted from *European Geologist* (2004, **17**: 16).

Chapter 32, 'Why Write (2)?', adapted from *Palaeontological Association Newsletter* (2006, **61**: 62–4).

Chapter 33, 'Reviews', adapted from *Palaaios* (2005, **20**: 99–100).

- Chapter 36, 'Rejection', adapted from *European Geologist* (2003, **16**: 41).
- Chapter 39, 'Offprints and Pdfs', adapted from *Journal of Scholarly Publishing* (2009, **40**: 201–5).
- Chapter 41, 'Reviewing', adapted from *Journal of Scholarly Publishing* (2014, **46**: 89–95).
- Chapter 43, 'Productivity', adapted from *Journal of Scholarly Publishing* (2011, **42**: 382–6).
- Chapter 46, 'Plain English', adapted from *Journal of Scholarly Publishing* (2012, **44**: 105–6).
- Chapter 48, 'Why Write (4)?', adapted from *Journal of Scholarly Publishing* (2005, **36**: 238–42).

Stephen K. Donovan
Thursday, 8 December 2016

1

Introduction to Writing

“A discovery dates only from the time of the record of it, and not from the time of its being found in the soil.” This classic sentence of [General Augustus Henry Lane-Fox] Pitt Rivers [1827–1900] proclaims fairly and squarely the ultimate moral and scientific duty of the field-archaeologist’ (Wheeler, 2004, p. 182) and, needless to say, also the Earth scientist.

Speech ... is an invention of man’s to prevent him from thinking.
(Christie, 1958, p. 162)

To speak to many academics, you would be mistaken to think that their sole purpose for writing research papers and conference abstracts is to keep their job. Their university, museum, laboratory or head of department instigate annual publication targets which must be met – or else. But is pressure from above the sole reason to record your latest ideas and discoveries in print?

There has to be some element of a desire to get it recorded in the psyche of each and every academic author. As expounded in the quotation in the epigraph, scientific ideas only enter the true playing field of science by being published. I have heard many talks and seen many posters at meetings that never got further than a conference abstract. And an unpublished thesis is just that, unpublished.

So, are you a writer? At secondary school, I was poor at spelling and had little understanding of the rules of English, but I read widely. This is not necessarily the worst way forward for a writer. My style of writing has been influenced and guided by authors who are masters of the language. My own foibles and idiosyncrasies have been found out and

corrected by an army of editors and reviewers over the past 35 years. Spelling has never been simpler; not only has my own vocabulary and accuracy improved with time, but, unlike my old typewriter, word processing programs will actively argue with you if they disagree with your spelling.

The time has come. You are an Earth scientist – geomorphologist, tectonicist, palaeontologist, geochemist, Earth systems scientist or whatever. You've spent weeks, months, years working on a project – now is the time to pull it together for publication. You might be writing an undergraduate or graduate thesis, a research paper for a leading journal, a note for the newsletter of the local amateur scientific society, a book review or an abstract for a specialist geological conference. How do you make the transition from promising unpublished researcher to established academic author? And how do you maintain momentum once published? Of course, the phrase 'academic publishing' covers a multitude of sins; monographs, research papers, book reviews, conference abstracts or whatever, and each requires a different approach. You have to decide what it is you are going to write and where to publish it. There are co-authors, supervisors and examiners of your degree, peer reviewers and editors to deal with on the way. But the only way to write like an academic is to write like an academic ... where do you start? You could do much worse than start here.

There are many books on how to write and be published, aimed mainly at research students and other aspiring academics. Many of these are readable, comprehensive and provide good advice. Although I am no longer aspiring – I have about 1000 assorted publications to my name and I have, if anything, become more productive as I have got older – I enjoy buying and reading (and, not uncommonly, reviewing) such volumes as each and every one contains something that is new and useful to me. Over the years they have helped me increase my productivity, as well as improving my style of writing, the organization of my papers and their content. Further, they have inspired me to compose my own essays on academic publishing, written from my perspective as an author and editor.

Writing for Earth Scientists is comprised of numerous short chapters on this subject, all directly relevant to one or more aspects of academic publishing and aimed particularly at Earth scientists in the broadest sense. As a palaeontologist, I am an Earth scientist with strong leanings towards biology, but I also have active research interests in Caribbean geology and the history of geology. But any book on

writing can provide useful ideas to any writer. Earth scientists are encouraged to use the book as much as a reference as a reader, 'dipping in' to the chapters that contain relevant tips, hints and comments to enable them to improve the paper that they are currently writing. This book is intended to be informative, readable and, above all, of practical application for all readers.

My aim has been to make this book a clear reference that readers will be able to read from cover to cover, but also to make it more akin to an owner's manual for a car than a textbook. If you have a book review to write or are having trouble formatting the tables for a paper, then turn to the relevant chapter(s). That there are 52 chapters in *Writing for Earth Scientists* is more than a coincidence; there is one for every week of the year. I rarely see other academics reading volumes aimed at improving their communication skills, yet many should aim to advance their writing, which is often poor even in senior academics. So, I have made *Writing for Earth Scientists* accessible at various levels, including as a 'one chapter per week' dipper, which may encourage at least some to read a chapter every week. That is, I want *Writing for Earth Scientists* to be a readable compilation investigating the many facets of academic publishing relevant to the Earth sciences from which anyone can benefit. While I anticipate that postgraduate students, postdocs and new academics will be my core readers, do not hesitate to point out relevant comments to your lecturers and supervisors. It is not just young authors who struggle to write; many established authors would benefit from examining their own style of writing and their approach to publication. Fringe readership will include ambitious undergraduates who want to 'break in' to academic publishing early, amateurs in various fields of natural history who want to write up their own findings, and authors in academic fields outside the target audience, all of which I welcome; geology and geologists can never be too diverse.

I also emphasize that there are many other worthy books on academic publishing. It may seem eccentric that I am praising, even advertising my 'competition,' but who would write a research paper with only one reference? This list is personal and I apologize to authors of those excellent books that I do not include; either I, sadly, have not read your book or you do not appear on my bookshelf. Some of these books have now gone into new editions; I merely list those that I actually use. Thus, some particularly valued examples include Day (1998), Luey (2002), Kitchin and Fuller (2005), Thody

(2006), Silva (2007), Germano (2008), Connah (2010), Greene (2013) and, probably my favourite, Hartley (2008). (Although some of these volumes are available in newer editions, but these are the ones that I actually use.) Some pairs of books can provide a contrast, none more so than Sword's *Stylish Academic Writing* (2012) and Billig's *Learn to Write Badly: How to Succeed in the Social Sciences* (2013). (Do not be concerned if a book, like Billig's, is aimed at a specific and non-geological academic niche; academic writing is academic writing, whatever the field.) I also mention, quietly, my own slender collection of essays on academic writing (Donovan, 2014). These books are either comprehensive introductions to all aspects of the academic publishing process or, in the examples of Silvia (2007), Sword (2012) or Billig (2013), focus rather differently on the requirements of the writing process.

Writing for Earth Scientists is a rare beast, a specialist book on how to publish in geology and related fields, although I admit that there are other guides to writing papers in the Earth sciences (such as Cochran *et al.*, 1984; AIPG, 1986; Irvine and Rumble, 1992; US Geological Survey, 1995). I propose to take a structured textbook approach, which cynically might be described as buy a word processing package on page 1, publish your paper/monograph on the last page. I trust that *Writing for Earth Scientists* will be much better than this, however. It is intended that it will be as readable as any of the distinguished competition listed above and will focus on most aspects of the academic publishing process that are important in the Earth sciences. It is thus intended to be comprehensive for the Earth scientist, while providing commentary on specific things that are of common concern to all academic authors, such as co-authorship, peer review, book reviewing and choice of type of publication.

At this point, it is relevant to briefly admit to those areas of publishing that I do not consider in *Writing for Earth Scientists*. I do not consider writing grant proposals. We all apply for grant support, but in this book I concentrate on writing for publication; there are a number of fine volumes on composing proposals to which you can refer. Blogs and social media are definitely forms of publication, but represent as much personal memoir as anything else. I do not consider 'blogging' (ghastly word), but many of the ideas discussed herein may be broadly applicable. What the author of a blog should always consider is, is it worthwhile publishing or is it just what I cannot get accepted elsewhere?

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2

Publication Diversity

Everything in our age conspires to turn the writer ... into a minor official, working on themes handed to him from above and never telling what seems to him the whole of the truth. But in struggling against his fate, he gets no help from his own side: that is, there is no large body of opinion which will assure him that he is in the right.

(Orwell, cited in Davison, 1998, p. 371)

January is the time to write my annual report for my institution. As an academic, I know what is most important to emphasize in my report, including such details as publications and awards of research grants during the past year. The principle with grants is easy – the bigger, the better – but the same general rule does not apply to publications. Like real estate, the important parameter is location. There are league tables which rank the relative importance of peer-reviewed journals, based on metrics of citations, impact factors and their ilk, and thus purport to indicate whether a particular research publication is good or not so good. (Note that this is a measure of where you might publish rather than what you intend to publish.) The following classification scheme, based in part on those I have seen at several institutions, gives a broad feel for the relative importance of different types of publications:

- 1) Scientific article in journal with Science Citation Index (SCI) impact factor.
- 2) Scientific article in non-SCI journal, but with external peer review policy.
- 3) Scientific article in other journal, but lacking peer review policy.

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