Academic science writing: an inconsiderate genre?

Marcin Kozak
Department of Media, Journalism and Social Communication, University of Information Technology and Management in Rzeszów, Poland; nyggus@gmail.com; ORCID 0000-0001-9653-3108
James Hartley
School of Psychology, Keele University, UK; j.hartley@keele.ac.uk; ORCID 0000-0002-6461-3266

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Abstract
In this essay, we comment on the inconsiderate nature of many science articles, and how this may have come about. From the questionnaire survey we present, it follows that many academic scientists in the past did not care much about writing style. Today, however, there is a growing movement aimed at making scientific text more readable.

Keywords: academic writing, academic writer, writing style, tone

Introduction

Do you like reading scientific papers? Do you find them interesting, pleasant, and agreeable to read? Can you relax with a scientific article in hand? Or maybe – like us – you find such articles often boring, unpleasant, and difficult to read? Even sometimes repellent?

Science is fantastic. Far too often, though, scientific literature is not. Reading it can be tough, demanding, sometimes even impossible. Readers have to struggle with each sentence and paragraph, getting the meaning word by word.

You might think, "There is nothing wrong with this: science is difficult, and so scientific texts are difficult". On the one hand, you might be right: science *is* difficult. On the other, scientists often present even simple concepts in such an obscure way that readers get quickly lost. Williams[1] (p.96) remarks, 'Too often, though, writers think that they sound professional only when they write in ways that are complex and abstract. Or they fall into that style because they read so much of it. . . . It is true that some high-level scholarship will never be clear to merely intelligent lay readers – but less often than many scholars believe.'

A scientific writer should present difficult concepts in a way that makes them comprehensible, if not easy to understand. Making simple what is difficult is the virtue of a good writer; making difficult what is simple is the sign of a bad writer.

Scientific literature contains many excellent texts. Sword[2] offers several examples of stylish academic writing in a variety of disciplines. So does Dawkins[3], although, unlike Sword, he looks for the depth of a scientific thought rather than its style—yet both authors provide excerpts that are stylish and pleasant to read. Some readers may also remember reading scientific texts that struck them as truly stylish and pleasant to read.

In an academic text, content is one key thing. Another one is style. According to Pinker,[4] style 'ensures that writers will get their messages across', 'earns trust', and 'adds beauty to the world' (pp 8–9).

In other words, unstylistic text has little chance of finding its way to the reader's mind and heart – but it can find its way to the reader's nerves!

We hear all the time that *science must be objective*. We cannot agree more. But does this mean that, when writing about science, scientists must never show their fascination with what they study? If they merely presented their results, there would be no place for interpretation, no place for discussion, no place for conclusions. But we do see interpretation, discussion, and conclusions in most scientific papers.

Take the Introduction. This section gives the context and outlines the story: who has done what, what is still left to be done, what questions are waiting to be asked, what can be done, and what the present research aims to do. Is there no place for fascination in such an Introduction? Must we always be fully objective here? And how can a scientific writer be objective when there may be hundreds of papers to refer to in this Introduction? Being objective would mean referring to all of them, an impossible task for anyone wanting to publish a scientific article. So, more often than not, choosing some of them is the only possible course of action, and isn't this subjective? It is for reasons such as these that so many of us have seen in referees' reviews that 'the authors have omitted important references'. What is important and what is not is subjective. And clearly, the Introduction *is* the place for *subjectivity*. More importantly, the Introduction is the place for stylish and energetic writing that will invite the reader to keep on reading.

Langdon-Neuner[5] cites various authors, including Nobel laureates such as Hoffman, who point out that science writing is not objective, that its style matters, that it makes a difference. Flaherty[6] (p155) writes, 'The writer does not feel like a don; he feels dumb. So he dresses in an academic robe and procures from under it the most ornate syntax and the smartest words he knows or can look up. Why? Because the writer is afraid that if the editors and readers see him as he really is, they will judge him stupid or uneducated.' Although Flaherty was unlikely to have had scientists in mind when writing this, these words strike a chord. They resemble a common approach to scientific writing.

In the nineteenth century, Meiklejohn[7] wrote that 'style is manner; and every living person has his own manner, his own way of speaking, his own way of carrying himself, his own way of using his hands and his fingers. In the same way, every one has his own style of composition.' That's true, but this does not mean that everyone's style will be well received by readers. Pinker[4] named his book *The Sense of Style*, the term itself suggesting that not everyone has a sense of

style. Pinker writes, 'no one is born with skills in English composition per se' and goes on to suggest that those skills must have come from 'the writing of other writers' (p 11).

'Style is the form of thought', in the words of Meiklejohn[7]. Scientists spend much time thinking: the quality of their sense – their *sense of style* – should reflect the quality of their thought. Will the reader appreciate the quality of thought presented in poor style?

Sword in her more recent study[8] presents a variety of ideas about scientific writing. She carried out a questionnaire study with over a thousand academics, and she interviewed a hundred other successful ones. Based on the data, Sword discusses various aspects, at various levels, of writing, success, publication, work, the rat race, and other issues, all included in the modern world of writing academics. In this essay we ponder over why so few scientists try to make their prose lively, interesting, and pleasant to read. Unlike Sword, we focus on just one fragment of the big picture: stylish writing. Should a scientific text convey the message? Intrigue? Convince? Be understandable? Give pleasure? Or all of these?

To this end, we present the results from a brief questionnaire study on these issues, which we conducted with forty-four researchers from a variety of disciplines. We asked them five questions about how they wrote their scientific articles. Finally, when we complete our paper, we will offer our main conclusion. But, unlike most scientific articles, we will not keep it until the end. Here it is now. Let all we scientists make our prose lively, interesting and stylistic.

How do researchers want to write about science?

We asked (through email) forty-four colleagues – academics representing a variety of scientific disciplines, such as psychology, agriculture, economics, sociology, scientometrics, and media – whether or not they wanted their scientific articles to (1) convey the message, (2) intrigue, (3) convince, (4) give pleasure, and (5) be understandable. They were asked to choose any number of answers. Table 1 shows the results.

Table 1. Results of questionnaire survey among 44 academics concerning their approach to academic writing

Do you want your articles to	Yes	No	Does not matter
Convey the message?	43	0	1
Be understandable?	42	0	2
Convince?	33	1	10
Intrigue?	19	5	20
Give readers pleasure?	13	3	28

Clearly, some respondents must have misunderstood our questions or made a typo: we do not think that any academic wants his or her articles to fail to convey the message or to fail to be understandable. These first two questions were control ones; more interesting to us were the other three.

Do the respondents want to convince their readers? Most do, but not all: one respondent claimed not to do so, and ten claimed to be indifferent. One possibility is that such authors prefer to be 'objective' (as discussed in the Introduction); another is that they simply don't care whether or not they will convince their readers: "My job has been done here, and now it's your job to follow me."

Do academic writers want to intrigue their readers? Only slightly fewer than half of the respondents (19 out of 44) claimed to want to do so. However, for five of them, intriguing their readers was not an aim at all.

Pleasure came last: only thirteen respondents wanted their articles to give their readers pleasure. Three respondents denied even this and twenty-eight did not care!

Discussion

Back in the first half of the twentieth century, Sir Ernest Gowers started a campaign against wordiness in the language of bureaucracy. We can learn the details from his book,[9] revised and updated by Rebecca Gowers in 2014. Gowers's recommendation to remove this wordiness was clear and plain: write in clear, plain English. Scientific writing deserves the same campaign, and it has actually begun. The title of Greene's (2013) book,[10] for example – *Writing science in plain English* – says what the author recommends. Greene makes her point with many examples from biology. Suffice to look at the contents to see what she means; for example, 'Tell a story', 'Favor the active voice', 'Choose your words with care', 'Omit needless words'. This last point from this list – omit needless words – is not accidentally taken from Strunk and White[11]—perhaps the most often cited words on writing in the world, these three words capture the quintessence of writing in plain and clear English.

Sword[2], on the other hand, starts her campaign in a slightly different way. She claims that 'elegant ideas deserve elegant expressions; that intellectual creativity thrives best in an atmosphere of experimentation rather than conformity; and that, even within the constraints of disciplinary norms, most academics enjoy a far wider range of stylistic choices than they realize' (p.vii). 'I aim to start a stylistic revolution', she says, 'that will end in improved reading conditions for all'. In this paper we join this revolution.

Greene and Sword write about academic writing. Let us now look briefly at what others say, those who do not focus specifically on scientific writing but more generally on non-fiction writing. Zinsser[12] writes, 'Another way of making science accessible is to write like a person and like a scientist. It's the same old question of being yourself. Just because you're dealing with a scholarly discipline that's usually reported in a style of dry pedantry is no reason why you shouldn't write in good fresh English'. True, he wrote this about communicating science to non-scientists whilst we are discussing communicating science to peers. But does this change anything? Does it mean that academics writing for peers should make their writing as difficult as possible? It may pay well to listen to Zinsser, one of the world's greatest experts in non-fiction writing.

Is the scientific community ready for such a change? We are not sure we are at this point yet. Recall the results of our

study: most of the forty-four academic writers we surveyed did not care whether or not their writing was pleasant to their readers. If they don't care, why should they bother to make additional efforts to improve their writing just to please their readers?

Let us contrast journalists with scientists – both representing non-fiction. Most journalists are trained to write, and they have support from editors, who won't accept poor writing and often make substantial edits, even to well-written texts. Scientists, on the other hand, have a more difficult job to do: they are seldom trained and they don't have such editorial support — science editors serve different roles, more related to research than to writing.

Young scientists are often told that the relevant literature is their best teacher. At first glance, this suggestion does not sound all bad. King[13] writes, 'If you want to be a writer, you must do two things above all others: read a lot and write a lot. There's no way around these two things that I'm aware of, no shortcut (p164)'. Pinker[4] says the same, as mentioned earlier. So, young scientists have to read a lot and, in that way, learn how to write. Thus they imitate the writing styles they find in scientific literature.

Of course, this very suggestion assumes one crucial thing: that scientific literature is well written. But, throughout this paper, we claim that by and large, and with rare exceptions, scientific literature *is not well written*. Learning bad habits is not good learning.

One possible reason for poor scientific writing lies in the status quo. It takes courage to stand out, especially in academia, which is full of professionals and gurus. Standing out is often seen as showing off. Will it pay to be different, especially for young scientists? Their fear is quite reasonable: the scientific community is known to expect its young adepts to follow generally acknowledged norms of behaviour. Older scientists do not have so much to risk, but they are usually so used to the tradition – we mean the traditional ways of scientific writing – that they seldom see the need to change anything. And such a change might require a lot of energy and effort: it would be like saying, "I have been a poor academic writer, and everything I've published during my whole career was actually poorly written. And now, when I am ready to retire, I am going to change all that!"

So, we agree with Sword[2] when she claims (p174), 'Of course, making the choice to change one's writing style requires *courage*, especially for academics whose research careers are not yet well established.' It requires courage, courage that may not pay off. But today's scientists are now in a much better position than a decade ago: there are now sources on stylish academic writing and on writing in plain English. The scientific community, too, has been changing, and now it can accept behaviour it would not have accepted several decades ago.

Times change, scientific writing changes, and we are invited to write about our science in stylish and plain language. These changes notwithstanding, to change the status quo will not be an easy task, but the revolution has begun. Now it is high time for the scientific community to join in. Let us make scientific prose lively, interesting, and stylish!

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