The infectiousness of pompous prose

Martin W. Gregory

For centuries, scientists have been bombarded with pleas for plain language. Why have these pleas had no effect, when the problem of unreadable prose could be solved at a stroke?

THERE are two kinds of scientific writing: that which is intended to be read, and that which is intended merely to be cited. The latter tends to be infected by an overblown and pompous style. The disease is ubiquitous, but often undiagnosed, with the result that infection spreads to writing of the first type. I would like to present a few examples of the problem, and to offer a solution.

In 1667, Bishop Thomas Sprat implored[1] the newly formed Royal Society of London for the Improving of Natural Knowledge to "reject all the amplifications, digressions, and swellings of style; to return back to the primitive purity, and shortness, when men delivered so many *things*, almost in as many *words*." I have quoted only one sentence, but the bishop, evidently used to a captive audience, took two pages to extol brevity.

The most common problems that occur in scientific writing are (1) too many words, and (2) the adoption of a supposed 'literary' style in the mistaken belief that the written language is different from the spoken.

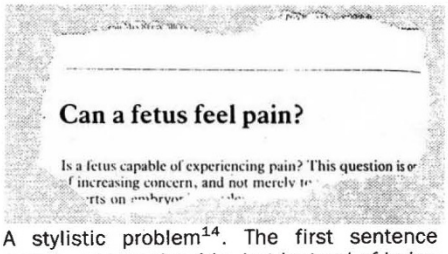
A typical example of the first problem is shown in the figure. The following is another: "The *main* purpose of any scientific article is to convey in the fewest *number of* words the ideas, procedures and conclusions of an investigator *to the scientific community*. Whether *or not* this *admirable* aim is accomplished depends *to a large extent* on how skillful the author is in *assembling the words of* the *English* language."

That is the opening sentence of an editorial[2] entitled "Use, misuse and abuse of language in scientific writing". The italics are mine: all these words can be omitted without loss of meaning. The last sentence can be reduced from twenty-seven words to eight: "Whether he succeeds depends on his writing skill." Thus the problem is so insidious that it appears even in works devoted to its eradication.

Distorted prose

In the second type of problem, prose is perverted and distorted to make it difficult to understand. It is like a neoplastic transformation, rendering the original tissue (the spoken word) unidentifiable. To illustrate this point, I shall present a case, and ask you to imagine yourself using it to explain your work to a colleague in the bar. Try opening the conversation with: "The availability of culture methods to measure either the formation of antibody in mixtures of T and B cells or the antigen-driven proliferation of T cells has allowed a more precise evaluation of the phenomenon involved in induction of the immune response[3]." If I have understood the author correctly, he means: "Some culture methods have helped us to understand the immune response better. Using cell culture we can measure antibody formation in a mixture of T and B cells — or we can measure the proliferation of T cells driven by antigen."

This may not be much shorter, but it is more likely to get you a drink. Try this one: "That the sense of smell was used by these cattle was established because of the marked audible variation in inhalation intensity as the animals grazed[4]." Presumably, "marked audible variation in inhalation intensity" means loud sniffing.



A stylistic problem[14]. The first sentence merely repeats the title, but instead of being omitted it has been doubled in length.

Here is a severe case: "As the practical relevance of intestinal immunity in diarrhoeal disease relates to the possibility of developing effective immunisation programmes for the control of gut infections, this review will focus on insights into the functioning of the immune system particularly relevant to this goal[5]." In other words: "This review will focus on aspects relevant to vaccine development."

Aaronson wrote an article[6] called *On Style in Scientific Writing*. He cited C. D. Graham, who compiled a glossary of pompous phrases, of which Aaronson gave some examples. Rather than cite any of these examples, I quote Aaronson's comment on them: "Although Graham is pressing the point for the sake of humor, working scientists will recognise the essential veracity of his translations." Had Aaronson been talking, he would have said "he's funny but he's right".

If you wish to be unintelligible, start your sentences in the middle so that the reader doesn't know what you're talking about until half-way through: "Similar to figurative language in function, humor is another way by which we come to know the world." That quotation was taken from the book *Breathing Life into Medical Writing*[7], in which this abominable style is actively encouraged. With skill, the technique can be refined to the point where the reader has to go back to the beginning to find out how it all started: "No avicide myself and, indeed, not much of a wide-ranging aviphage, I had always assumed that the so-called glorious twelfth occurred only in August when the aristocratic victim of your matched pair of Churchills or Boss' or Purdies (or what have you at £12,000 a throw) is, of course, our only and uniquely indigenous bird, the red grouse[8]."

That sentence deserves a prize. Read enough times, it becomes apparent that the author is not talking about avicides, or about himself, or about wide-ranging aviphages, or about aristocratic victims or about throwing matched pairs of Churchills, Bosses or Purdies (whatever they are), or even about the red grouse. He's talking about *the so-called glorious twelfth*. What would a non-British reader make of all that?

When a paper of this type is read aloud, the effect is stunning. In 1880, T. H. Huxley is said to have opened his speech to the Zoological Society with this sentence: "There is evidence, the value of which has not been disputed, and which, in my judgement, amounts to proof, that between the commencement of the tertiary epoch and the present time the group of the equidae has been represented by a series of forms, of which the oldest is that which departs least from the general type of structure of the higher mammalia, while the latest is that which most widely differs from that type[9]."

The titles of some scientific journals are admirably brief. Not so the contents. Here is an example from *Gut*: "All of these measurements have wide ranges of values in both control (Doniach and Shiner, 1957; Butterworth and Perez-Santiago, 1958; Rubin *et al.*, 1960a and b; Shiner and Doniach, 1960; Chacko, Job, Johnson, and Baker, 1961; Cameron *et al.*, 1962; Jos, 1963; Yardley, Bayless, Norton, and Hendrix, 1962;

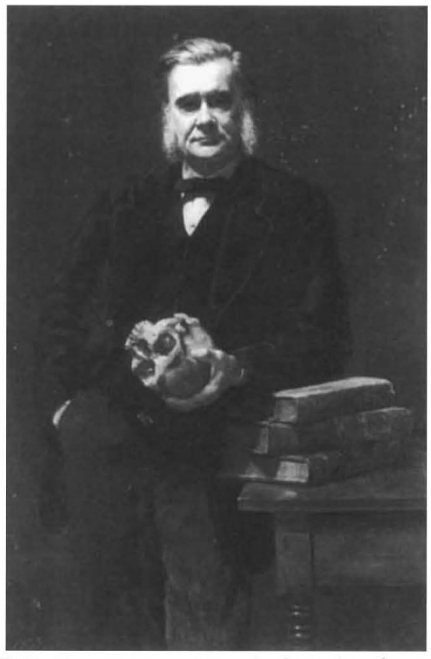
Astaldi, Conrad, Ratto, and Costa, 1965; Madanagopalan *et al.*, 1965; Swanson and Thomassen, 1965; Stewart, Pollock, Hoffbrand, Mollin, and Booth, 1967; Pollock, Nagle, Jeejeebhoy, and Coghill, 1970) and coeliac (Rubin *et al.*, 1960a; Shiner and Doniach, 1960; Chacko *et al.*, 1961; Cameron *et al.*, 1962; Jos, 1962; Yardley *et al.*, 1962; Bolt, Parrish, French, and Pollard, 1964; Madanagopalan *et al.*, 1965; Stewart *et al.*, 1967; Hamilton, Lynch, and Reilly, 1969; Pollock *et al.*, 1970) mucosae and the differences between the means are small (Rubin *et al.*, 1960a; Shiner and Doniach, 1960; Jos, 1962; Madanagopalan *et al.*, 1965; Stewart *et al.*, 1967)[10]."

That is not verbosity. It is simply the unspeakable Harvard system, to which so many journals are needlessly committed. The 149 words can be reduced to 22 at a stroke: "All these measurements have wide ranges of values in both control[1–12] and coeliac[3–7,9,11–14] mucosae and the differences between the means are small[3,4,6,9,13–15]". The original passage is unspeakable and unreadable, but neither the author nor the editor is interested in whether anyone *reads* this article. Indeed, they prefer that no one reads beyond the summary, or better still, beyond the authors' names.

Treatment

The first of these stylistic problems is easy to treat. Authors need to reduce their articles to the fewest possible words. William Strunk dealt with the subject well in his classic *The Elements of Style*[11]. Strunk was an enthusiast. One of his students described his zeal in a later edition[12] of Strunk's book: "Omit needless words!" cries the author on page 23, and into that imperative Will Strunk really put his heart and soul. In the days when I was sitting in his class, he omitted so many needless words, and omitted them so forcibly and with such eagerness . . . that he often seemed in the position of having shortchanged himself — a man left with nothing more to say yet with time to fill . . . Will Strunk got out of this predicament by a simple trick: he uttered every sentence three times. When he delivered his oration on brevity to the class, he leaned forward over the desk, grasped his coat lapels in his hands, and, in a husky, conspiratorial voice said, 'Rule Seventeen. Omit needless words! Omit needless words! Omit needless words!' " This advice is easy to follow: all you need is a blue pencil and practice.

Treatment of the pseudo-literary style problem is difficult, and rarely attempted, even though editorial boards of journals could solve it at a stroke by rejecting incomprehensible manuscripts. The best advice to authors is to throw the draft away and start again. How can a plain, clear text emerge by this process? The scientific literature itself will provide little guidance. Some of it may be good, but in my view the best advice is to be found elsewhere. John Whale, for instance, wrote a series of articles for the *Sunday Times* which has been gathered into one volume[13] which I found particularly readable. In chapters 5 and 6 he urges us to write as we would speak. If this rule is followed, the problem virtually disappears. The solution



T. H. Huxley — overlong declamations?

may be simple, but that doesn't mean it is always easy to apply. You will no doubt find signs of the problem in this paper: I am only a scientist, after all.

Discussion

Pleas for scientists to write readably have failed for at least 300 years. This is because the pleas have been aimed at the wrong people: the scientists. They should have been aimed at editors. The most important aspect of a scientific paper is its scientific value, but no matter how important it is, no one will read it if it is unreadable. Most scientists have no expertise in writing. We need help. The people who should be best qualified to help us are the editors through whom our efforts pass on the way to publication. But whom do we find as editors? More scientists!

Everyone can write, so it is assumed that writing is easy, or unimportant. Everyone can paint as well, but not everyone's paintings are worth hanging on walls. To expect scientists to produce readable work without any training, and without any reward for success or retribution for failure, is like expecting us to play violins without teachers or to observe speed limits without policemen. Some may do it, but most won't or can't.

With no guidance, scientists copy what they see, and we see things like this: "The author is of the opinion that it is appropriate to write scientific papers in the third person." This is ridiculous. *I* am the author, not a third person.

If there must be scientists on editorial boards of journals, their job must be only to reject bad science. The editor's job is to reject bad writing. The editor has the power to enforce standards of readability, and should be allowed to use this power.

In conclusion, my suggestion for the elimination of unreadable papers is first to omit needless words, and second, to write as you would speak. This magnificent advice will certainly have no measurable effect. For centuries, we scientists have been showered with advice on how to write readably, and still we all ignore it. Isn't it time we sought another solution?

In my opinion, editors should be writers, not scientists. Scientists should be judged according to how many times their work is *read*, not cited. (Audience research reveals how many people listen to or watch which programmes; readership research could in principle reveal how many read our articles.) Peer review will continue to uphold scientific standards, but badly written work should be rejected, whatever its scientific standard. Authors will be prepared to work (or pay) to get their paper re-written to have it published in the best journals if the only grounds for rejection by the journals are those of unreadability. An editor could offer to rewrite such articles (for an exorbitant fee). Thus, editors will get rich, journals will get read, readers will retain their hair, and real progress will be made. □

Martin W. Gregory is in the British Veterinary Project, Republic of Yemen, and can be contacted at the Foreign and Commonwealth Office, King Charles St, London SW1A 2AH, UK.

1. Sprat, T. from *The History of the Royal Society of London for the Improving of Natural Knowledge (1667)* reprinted in Ryan, L. V. *A Science Reader* (Rinehart, New York, 1959).
2. Gaafar, S. M. *Vet. Parasit.* **8**, 199–200 (1981).
3. Unanue, E. R. *New Engl. J. Med.* **303**, 977–985 (1980).
4. Arnold, G. W. & Dudzinski, M. L. *Ethology of Free-Ranging Domestic Animals* (Elsevier, Oxford, 1978).
5. Rowley, D. & La Brody, J. *J. Diarrhoeal. dis. Res.* **4**, 1–9 (1986).
6. Aaronson, S. *Curr. Cont. Life Sci.* No 2, 10 (1977).
7. Sheen, A. P. *Breathing Life into Medical Writing* (Mosby, St Louis, 1987).
8. Hillaby, J. *New Scient.* (6 May 1976).
9. Huxley, T. H. *Science* **2** (1st series, 1881). (Cited in *Science* **207**, 750; 1980).
10. Chapman, B. L., Henry, K., Paice, F., Stewart, J. S. & Coghill, N. F. *Gut* **6**, 905–909 (1973).
11. Strunk, W. *The Elements of Style* (1919). (Reprinted by Macmillan, New York, 1959.)
12. White, E. B. in *The Elements of Style* (ed. Strunk, W.) xiii (Macmillan, New York, 1959).
13. Whale, J. *Put it in Writing* (Dent, London, 1984).
14. Richards, T. *Br. Med. J.* **291**, 1220–1221 (1985).