

The nature of academic writing

Anyone who wishes to become a good writer should endeavour, before he allows himself to be tempted by the more showy qualities, to be direct, simple, brief, vigorous, and lucid.

(Fowler & Fowler, 1906, p. 11)

THE LANGUAGE OF SCIENCE AND ACADEMIA

If we examine the text of scientific articles it is clear that there is a generally accepted way of writing them. Scientific text is precise, impersonal and objective. It typically uses the third person, the passive tense, complex terminology, and various footnoting and referencing systems.

Such matters are important when it comes to learning how to write scientific articles. Consider, for example, the following advice:

Good scientific writing is characterised by objectivity. This means that a paper must present a balanced discussion of a range of views . . . Moreover, value judgements, which involve moral beliefs of what is 'right' or 'wrong' must be avoided . . . The use of personal pronouns is unnecessary, and can lead to biases or unsupported assumptions. In scientific papers, therefore, personal pronouns should not be used. When you write a paper, unless you attribute an opinion to someone else, it is understood to be your own. Phrases such as 'in my opinion' or 'I think,' therefore, are superfluous and a waste of words . . . For the same reasons, the plural pronouns *we* and *our* are not used.

(Cited, with permission, from Smyth, 1996, pp. 2–3)

CLARITY IN SCIENTIFIC WRITING

In my view, following this sort of advice obscures rather than clarifies the text. Indeed, Smyth has rather softened his views with the passage of time

(see Smyth, 2004). For me, the views expressed by Fowler and Fowler in 1906, which head this chapter, seem more appropriate. Consider, for example, the following piece by Watson and Crick, announcing their discovery of the structure of DNA, written in 1953. Note how this text contravenes almost all of Smyth's strictures cited above:

We wish to suggest a structure for the salt of deoxyribose nucleic acids (D.N.A.). This structure has novel features which are of considerable biological interest.

A structure for nucleic acid has already been proposed by Pauling and Corey. They kindly made their manuscript available to us in advance of publication. Their model consists of three inter-twined chains, with the phosphates near the fibre axis, and the bases on the outside. In our opinion this structure is unsatisfactory for two reasons: (1) We believe that the material which gives the X-ray diagrams is the salt, not the free acid. Without the acidic hydrogen atoms it is not clear what forces would hold the structure together, especially as the negatively charged phosphates near the axis will repel each other. (2) Some of the van der Waals distances appear too small.

Another three-chain structure has also been suggested by Fraser (in the press). In his model the phosphates are on the outside and the bases on the inside, linked together by hydrogen bonds. This structure as described is rather ill-defined, and for this reason we shall not comment on it.

(Opening paragraphs from Watson and Crick, 1953, pp. 737–8, reproduced with permission from James D. Watson and Macmillan Publishers Ltd)

Table 1.1.1 lists some of the comments that different people have made about academic text. Some consider that academic writing is spare, dull and undistinguished. Some consider that articles in prestigious journals will be more difficult to read than articles in less-respected journals ones because of

Table 1.1.1 Some characteristics of academic writing

Academic writing is:

- unnecessarily complicated
- pompous, long-winded, technical
- impersonal, authoritative, humourless
- elitist, and excludes outsiders.

But it can be:

- appropriate in specific circumstances
- easier for non-native speakers to follow.

their greater use of technical vocabulary. Others warn against disguising poor-quality articles in an eloquent style. Indeed, there is some evidence that journals do become less readable as they become more prestigious and that academics and students do judge complex writing to be more erudite than simpler text (Hartley *et al.*, 1988; Oppenheimer, 2005; Shelley and Schuh, 2001). Furthermore, Sokal (1996) once famously wrote a spoof article in scientific and sociological jargon that went undetected by the editors (and presumably the referees) of the journal it was submitted to.

MEASURING THE DIFFICULTY OF ACADEMIC TEXT

There are many different ways of measuring the difficulty of academic text. Three different kinds of measure (which can be used in combination) are: 'expert-based', 'reader-based' and 'text-based', respectively (Schriver, 1989).

- *Expert-based* methods are ones that use experts to make assessments of the effectiveness of a piece of text. Referees, for example, are typically asked to judge the quality of an article submitted for publication in a scientific journal, and they frequently make comments about the clarity of the writing. Similarly, subject-matter experts are asked by publishers to judge the suitability of a manuscript submitted for publication in terms of content and difficulty.
- *Reader-based* methods are ones that involve the actual readers in making assessments of the text. Readers might be asked to complete evaluation scales, to state their preferences for different versions of the same texts, to comment on sections of text that they find difficult to follow, or be tested on how much they can recall after reading a text.
- *Text-based* measures are ones that can be used without recourse to experts or to readers, and these focus on the text itself. Such measures include computer-based readability formulae and computer-based measures of style and word use.

Two particular measures deserve attention here because they have both been used to assess the readability of academic text. One is a reader-based measure, called the 'cloze' test. The other is a computer-based measure, called the Flesch 'Reading Ease' score.

Cloze tests

The cloze test was originally developed in 1953 to measure people's understanding of text. Here, samples from a passage are presented to readers with, say, every sixth word missing. The readers are then required to fill in the missing words.

Technically speaking, if every sixth word is deleted, then six versions should be prepared, with the gaps each starting from a different point. However, it is more common _____ prepare one version and perhaps _____ to focus the gaps on _____ words. Whatever the procedure, the _____ are scored either:

- (a) by _____ accepting as correct those responses _____ directly match what the original _____ actually said, or
- (b) by _____ these together with acceptable synonyms.

As the two scoring methods (a) and (b) correlate highly, it is more objective to use the tougher measure of matching exact words (in this case: 'to', 'even', 'important', 'passages', 'only', 'which' 'author' and 'accepting').

Test scores can be improved by having the gaps more widely dispersed (say every tenth word); by varying the lengths of the gaps to match the lengths of the missing words; by providing the first of the missing letters; by having a selection of words to choose from for each gap; or by having readers work in pairs or small groups. These minor variations, however, do not affect the main purpose of the cloze procedure, which is to assess readers' comprehension of the text and, by inference, its difficulty.

The cloze test can be used by readers both concurrently and retrospectively. It can be presented concurrently (as in the paragraph above) as a test of comprehension, and readers are required to complete it, or it can be presented retrospectively, and readers are asked to complete it after they have first read the original text. In this case the test can serve as a measure of recall as well as comprehension. The cloze test can also be used to assess the effects on readers' comprehension of different textual organisations, readers' prior knowledge and other textual features, such as illustrations, tables and graphs (Reid *et al.*, 1983).

There are few studies using the cloze test with academic text. However, it has been used (along with other measures) to assess the readability of original and revised versions of journal abstracts (Hartley, 1994).

The Flesch Reading Ease score

The Flesch score is (now) one of many easily obtained computer-based measures of text readability. The scores run from 0 to 100, and the higher the score, the easier the text. The original measure was created in 1943 by Rudolph Flesch to measure the readability of magazine articles (Klare, 1963). Basically, what current measures of the score do is to count the length of the words and the length of the sentences in a passage and compute these into a reading ease (RE) score (Flesch, 1948). The underlying logic is clear – the longer the sentences, and the longer the words within them, the more difficult the text will be. Scores can be grouped into the categories shown in Table 1.1.2.

Table 1.1.2 Flesch scores and their interpretation

Flesch RE score	Reading age	Difficulty level	Example for UK readers
90–100	10–11 years	Very easy	Children's stories
80–89	11–12 years	Easy	Women's fiction
70–79	12–13 years	Fairly easy	Popular novels
60–69	14–15 years	Average	Tabloid newspapers
50–59	16–17 years	Fairly difficult	Introductory textbooks
30–49	18–20 years	Difficult	Students' essays
0–29	Graduate	Very difficult	Academic articles

Adapted from Hartley, Sotito and Fox (2004), p. 193. © Sage Publications.

Academic text typically falls into the 'difficult' and the 'very difficult' categories.

There are a number of obvious limitations to this measure (along with most other computer-based measures of readability). The formula was developed in the 1940s for use with popular reading materials rather than academic text: it is thus somewhat dated and not entirely appropriate in the current context. The notion that the longer the words and the longer the sentences, then the more difficult the text, although generally true, is naïve. Some short sentences are very difficult to understand. Thus the calculations do not take into account the meaning of the text to the reader (and you will get the same score if you process the text backwards), nor do they take into account the readers' prior knowledge about the topic in question, or their motivation – both essential contributions to reading difficulty.

Nonetheless, despite these limitations, the Flesch score has been widely used to assess the readability of academic text, partly because it is a convenient tool on most writers' personal computers. It is simple and easy to run and keeps a check on the difficulty level of what you are writing as you proceed. It is also useful as a measure of the relative difficulty of two or more versions of the same text – we might well agree that one version with a Flesch score of 50 is likely to be easier to read than another version with a score of 30, and that some useful information might be obtained if we use the scores to make comparisons between different texts, and between different versions of the same text.

Some examples might serve to illustrate this. My colleagues and I, for instance, once carried out four separate studies using the Flesch and other computer-based measures of text to test the idea that influential articles would in fact be more readable than would be less influential ones (Hartley *et al.*, 2002). In the first two of these studies, we compared the readability of sections from famous articles in psychology with that of sections from the articles that immediately followed them in the same journals (and were not famous). In the second two studies, we compared the readability of

highly cited articles in psychology with that of similar controls. The results showed that the famous articles were significantly easier to read than were their controls (average Flesch scores of 33 versus 25), but that this did not occur for the highly cited articles (average Flesch scores of 26 and 25).

In another study, we compared the readability of texts in the sciences, the arts and the social sciences, written in various genres (Hartley *et al.*, 2004). Here, we compared extracts in all three disciplines from sets of research articles, text-books for colleagues, text-books for students, specialist magazine articles and magazine articles for the general public. The main finding here was not surprising – the texts got easier to read as measured by the Flesch scores as they moved across the genres, from 15 to 60. There was little support, however, for our notion that the scientific texts would be easier to read than those in the other disciplines *within* each of the different genres.

In a third example, we used Flesch scores, together with data from other computer-based measures, to examine the relative readability of the abstracts, introductions, and discussions from eighty academic papers in psychology (Hartley *et al.*, 2003). Here the abstracts scored lowest in terms of readability (mean score of 18), the introductions came next (mean score of 21), and the discussions did best of all (mean score 23). Intriguingly, although the mean scores of the different sections differed, the authors wrote in stylistically consistent ways across the sections. Thus, readability was variable across the sections, but consistent within the authors.

THE STRUCTURE OF SCIENTIFIC ARTICLES

Research articles typically have a standard structure to facilitate communication, which is known as IMRAD (introduction, method, results and discussion), although, of course, there are variations on this basic format. The chapters that follow in Section 2 of this book elaborate on each IMRAD section in more detail. It is important to note here, of course, that this structure is actually a charade. Scientists do not proceed in the way that IMRAD implies. IMRAD is a formula for writing up, and it is a method for making the scientific enterprise look much more logical than it actually is (see Medawar, 1964). Similarly, although the language of the scientific article may appear to be precise, impersonal and objective (as noted at the beginning of this chapter), this, too, is misleading. The language of scientific text is also the language of rhetoric and persuasion. Table 1.1.3 lists some rhetorical devices that the reader will no doubt find in this text!

WRITING PROCESSES

The discussion so far has concentrated on the *product* of writing – the academic paper and its constituents – rather than the *process* – how academics go about

Table 1.1.3 Some rhetorical devices used in academic articles to persuade the reader of the validity of the argument

Jargon: language that can become pretentious and opaque.

Misuse of references: lists of references to support a point, and selective references to support one side of the argument and not the other.

Straw men arguments: to bolster a position.

Vague qualifiers: e.g. 'Most people will agree ...' – to ensure the reader does or does not, as appropriate.

Quotations: selectively used to support a point with particular emphasis.

Anecdotes: used like quotations.

Examples: the most dramatic ones selected from a range.

Exclamation marks and question marks: to speak more directly to, and carry along, the readers.

Omissions: especially in abstracts, of key details such as the numbers of participants, their ages and where the study was carried out.

Overstatements: discussing non-significant findings as though they are statistically significant.

Distortions: selective presentation of findings from previous research and in the current research.

After Woods (1999), pp. 63–80.

writing. I now want to discuss writing processes in more detail, and differences between writers in this respect.

The research on how writers actually produce texts can be considered in terms of a hierarchy of overlapping processes or levels. At the bottom level, there is the actual process of putting pen to paper or, these days, fingers to keyboard. Next comes a concern with the thinking that leads to text being written or to being keyboarded. And finally, there is discussion of writing in a more social context: how and why people write at university, for example, and how producing a publication is a lengthy business.

Level 1: Keyboarding the text

Research at this level of detail is not particularly relevant to this text. However, it is of interest in one respect. In the old days, people produced and kept early drafts of their work. It was possible, therefore, to see how – through the changes, deletions and revisions – a writer's thoughts changed and developed as the text was produced. Today, with word processing, it is extremely difficult to keep track of changes of this kind. It is now so easy to change a word or phrase without affecting the look of the manuscript, and early versions are deleted and changed online as the text develops. (Of

course, some obsessive authors such as myself keep copies of initial and later versions, but it is hard to think of them as sequential, separate *drafts*, as was the case before . . .).

Nonetheless, some word processing systems do allow writers/readers to keep track of the changes made, and such changes have been subject to analysis (e.g. see Kollberg and Eklundh, 2001; Wengelin, 2007). Kollberg and Eklundh, for instance, described a computer-based technique for analysing the text production and revision strategies of school-children and university students. Using keystroke analyses, these investigators were able to create a record of all the revisions made to a text while it was being written, as well as the order in which they were made. One can imagine that such records may be useful in, say, the study of literary criticism, or in relation to studies at Level 2.

Level 2: Writing and thinking

The research on how writers actually think about their texts as they produce them is typified by observational and retrospective accounts. In observational studies, it is usual to use 'protocol analysis' as a technique, where writers are asked to comment on what they are doing and thinking about as they are writing (e.g. see Cotton and Gresty, 2006). Retrospective accounts are given in response to questions after the writing session is over. Sometimes, writing sessions are videotaped to aid subsequent analysis. Interviews and questionnaires are also commonly used in retrospective studies to ask writers about their writing procedures. Table 1.1.4 shows the level of detail described in some of these studies.

Studies using these methodologies lead to the conclusion that what drives writing is very much:

- (i) who the text is being written for;
- (ii) what it is about; and
- (iii) how much of the text has been already produced (Hayes, 2006).

Within these constraints, writing is often characterised as a hierarchically organised, goal-directed, problem-solving process. Writing, it is said, consists of four main recursive processes – planning, writing, editing and reviewing. These activities, however, do not necessarily occur in the fixed order suggested. Writers move to and fro in accordance with their individual goals of the moment – although, naturally, more time is spent on planning or thinking at the start, and on editing and reviewing at the end.

Studies of the teaching of writing have shown that instruction in each of these activities leads to better performance (e.g. see Graham, 2006). However, some authors, such as Peter Elbow, think that it is misleading to think of

Table 1.1.4 Multiple and overlapping thought processes when writing

While I am writing, my mind is either simultaneously engaged in or rapidly switching between processes that perform all or most of the following functions:

- monitoring the thematic coherence of the text;
- searching for and retrieving relevant content;
- identifying lexical items associated with this content;
- formulating syntactic structures;
- inflecting words to give them the necessary morphology;
- monitoring for appropriate register;
- ensuring that the intended new text is tied into the immediately preceding text in a way that maintains cohesion;
- formulating and executing motor plans for key strokes that will form the text on screen;
- establishing the extent to which the just-generated clause or sentence moves the text as a whole nearer the intended goal; and
- revising goals in the light of new ideas cued by the just-produced text.

These processes cannot all be performed simultaneously. Attempting to do so . . . would result in overload and writing would stop. The fact that I am writing this at all, therefore, is testament to the writing system's ability to co-ordinate and schedule a number of different processes within the limited processing resources afforded to it by my mind.

Adapted, with permission, from Torrance and Galbraith (2006), p. 67, and the Guilford Press.

writing as moving in separate stages from planning through writing and editing to reviewing. Elbow advocates writing some appropriate text first, not worrying too much at this point about spelling and syntax, and then repeatedly editing and refining the text to clarify what it is one wants to say (e.g. see Elbow, 1998). There is room, of course, for both positions. It can be helpful to think about the sequence and the structure of a paper (or book chapter) before one begins to write it, but one need not necessarily start at the beginning. And it can be equally helpful to let the thoughts pour out when writing a particular section, before revising it. In my view, the actual product determines the process, but the processes involved can be many and varied.

Individual differences in academic writing

Numerous investigators have tried to distinguish between writers in terms of the ways that they think about their writing and their procedures. As we have already seen, computer-based tools can be used to measure different aspects of style (or readability). Microsoft's *Office* program, for instance, provides measures of word, sentence and paragraph lengths, the percentage of passives used, and various measures of readability (such as the Flesch RE score). Another program, Pennebaker's *Linguistic Inquiry and Word Count*

(Pennebaker *et al.*, 2001), calculates the percentage of words used in any one text in any one of seventy-four different linguistic categories. Some of these separate categories can be grouped, for example, into emotional words (e.g. 'happy', 'sad', 'angry'), self-references (e.g. 'I', 'we') and cognitive words (e.g. 'realise', 'think', 'understand').

Studies using these measures have confirmed that individual writers have distinct styles or 'voices'. My colleagues and I, for example, once showed that three highly productive writers maintained similar writing styles over a period of more than thirty years, despite the many changes in the technology that they had used over this period (Hartley *et al.*, 2001). Indeed, 'forensic linguistics' is a discipline that specialises in detecting changes in authorship (e.g. in a witness's statement) by using computer-based stylistic measures (e.g. see Coulthard, 2004).

So, although all the articles in a particular journal may look much the same, different writers will have used different methods to achieve this uniformity. Indeed, as noted above, one of the ways that manuscripts differed, before the advent of word processing, was in their physical appearance. Stephen Spender, the poet, distinguished between writers he labelled 'Beethovians' and those who he labelled 'Mozartians', and, if you have ever seen an original (or facsimile) manuscript of either of these composers, you will know exactly what he meant. A score by Beethoven is full of crossings out and looks an incomprehensible mess. A score by Mozart is, by contrast, neat and pristine. Beethoven, it can be argued, working from earlier sketches in his notebooks, was struggling to get it right. Mozart had it right already in his head and just copied it out:

When I proceed to write down my ideas, I take out of the bag of my memory, if I may use that phrase, what has been previously collected into it in the way that I have mentioned (above). For this reason the committing to paper is done quickly enough, for everything is, as I said before, already finished; and it rarely differs on paper from what was in my imagination.

(Excerpt from a letter attributed to Mozart,
in Ghiselin, 1980, p. 35)

In modern terminology it is more common to distinguish between writers who are 'pre-planners' (Mozartians) and 'revisers' (Beethovians). Indeed, several studies distinguished between academic writers in terms of these two separate categories before the advent of word processing. Others, however, placed them along a spectrum – from pre-planners to revisers. Thus, for example, Torrance *et al.* (1994) described postgraduates in the social sciences who:

- (i) extensively pre-planned their writing and then made few revisions (planners);

- (ii) developed their content and structure through extensive revisions (revisers); and
- (iii) both planned before they started to write and revised extensively as part of their writing process (mixed).

Torrance *et al.* found that their postgraduate planners reported higher productivity than did both the revisers and the mixed groups. Table 1.1.5 provides quotations from fully fledged academics to illustrate what these different kinds of writer say. It is not necessary, of course, to stick to one particular method. John Le Carré, for example, in a radio broadcast, reported using a storyboard method for planning three of his novels but letting the plot develop for others.

Some research with adolescents suggests that writing and changing what you want to say as you go along (revising) lead to better writing than planning the writing in advance and then writing it out (planning). However, more recent research along these lines suggests that there might be further individual differences here. Kieft (2006), for instance, found in one of her studies that 15 to 16-year-old students who were *high* self-monitors – i.e. those who frequently evaluated their text as they were writing – did equally well whether or not they were taught to revise through multiple-drafting or to produce an outline first. However, those who were *low* self-monitors did better when they were taught to produce an outline first.

Other investigators have used fancier names for describing different kinds of writer. Nonetheless, they are arguing essentially the same thing – that there is a variety of writing styles based along a spectrum from pre-planning at the start to revising at the end. Thus Chandler (1995), for example, distinguished between 'architects' (planners in advance), 'oil-painters'

Table 1.1.5 Quotations from academic writers

I like to write a plan. I produce section headings and fairly detailed jottings about what these will contain, and then follow them through.

I write very much in sections at a time, from the beginning to the end.

I do plan my writing, but I usually find that in the process of writing the plan might take a new direction. I will then 'go with the flow'.

I usually pre-plan it, although on the occasions when I have just let it 'flow' it seems to have worked quite well.

Cut and paste was invented for me. I start off with headings . . . I then start shifting things around.

I have ideas in the back of my mind, but I only really know what I want to say as I write them down. That drives me into more reading and re-reading of my texts.

Reproduced from Wellington (2003), pp. 22–3, with permission of the author and the publishers.

(changers and revisers), 'bricklayers' (one step at a time) and 'water-colourists' (who aim to complete the text at the first attempt).

The architect strategy is typically the 'plan, write and revise' strategy discussed above. Architects make detailed plans and stick to them. Oil painters may think of new ideas while they are writing. They tend to produce drafts and print them out while they are working. This allows them to read and to revise. A characteristic refrain of these writers is, 'How do I know what I am going to say until I can see what I have said?'. Sharples (1999) classifies the novelists Frederick Forsyth as a water-colourist and Beryl Bainbridge as a bricklayer.

Individual differences and new technology

I am inclined these days to the view that new technology has made it more difficult to categorise and describe differences in the ways that writers go about writing. Word processors allow writers to write how they like at whim, and to vary their approaches. But writing is still a complex business, however, even with word processors. The writing strategies described above in Table 1.1.5 do not begin to approach the fine detail of what is actually required. Table 1.1.4 gives a better picture.

Level 3: Social aspects of academic writing

Academic writing does not take place in a social vacuum, and the motives for writing are mixed and various. Today's academics are expected to produce papers, and their livelihood depends upon it. This affects what is researched, who does it, who writes it up, where it is published, and so on. Figure 1.1.1 presents the reasons for writing listed by Orhan Pamuk, winner of the 2006 Nobel Prize in Literature.

Murray and Moore (2006) describe academic writing as consisting of advances and retreats. There are things that drive us on – such as creating new knowledge, and gaining approval – and there are things that hold us back – such as difficulties in getting started, revising the text, finding our voice and generally feeling inadequate. Then there are inordinate delays in the publishing process, together with referees' comments that can be quite dispiriting. Writing for publication can be thoroughly enjoyable at times, and nasty and competitive at others.

Murray and Moore discuss how things that facilitate and things that inhibit writing are moderated both by environmental factors (such as time available to write) and internal factors (such as writing fluency). Furthermore, successful writing is affected by intrinsic rewards (such as personal satisfaction) and extrinsic ones (such as promotion and tenure). Figure 1.1.2 shows how these factors interact.

As you know, the question we writers are asked most often, the favourite question, is: why do you write? I write because I have an innate need to write! I write because I can't do normal work like other people. I write because I want to read other books like the ones I write. I write because I am angry at all of you, angry at everyone. I write because I love sitting in a room all day writing. I write because I can only partake in real life by changing it. I write because I want others, all of us, the whole world to know what sort of life we lived, and continue to live, in Istanbul, in Turkey. I write because I love the smell of paper, pen and ink. I write because I believe in literature, in the art of the novel, more than I believe in anything else. I write because it is a habit, a passion. I write because I am afraid of being forgotten. I write because I like the glory and interest that writing brings. I write to be alone. Perhaps I write because I hope to understand why I am so very, very angry at all of you, so very, very angry at everyone. I write because I like to be read. I write because once I have begun a novel, an essay, a page, I want to finish it. I write because everyone expects me to write. I write because I have a childish belief in the immortality of libraries, and in the ways my books sit on the shelf. I write because it is exciting to turn all of life's beauties and riches into words. I write not to tell a story, but to compose a story. I write because I wish to escape from the foreboding that there is a place I must go but – just as in a dream – I can't quite get there. I write because I have never managed to be happy. I write to be happy.

Figure 1.1.1 Reasons for writing.

Excerpt from the Nobel Lecture, 'My father's suitcase' by Orhan Pamuk, translated from Turkish by Maureen Freely. Reproduced with permission of the Nobel Foundation. © The Nobel Foundation, 2006.

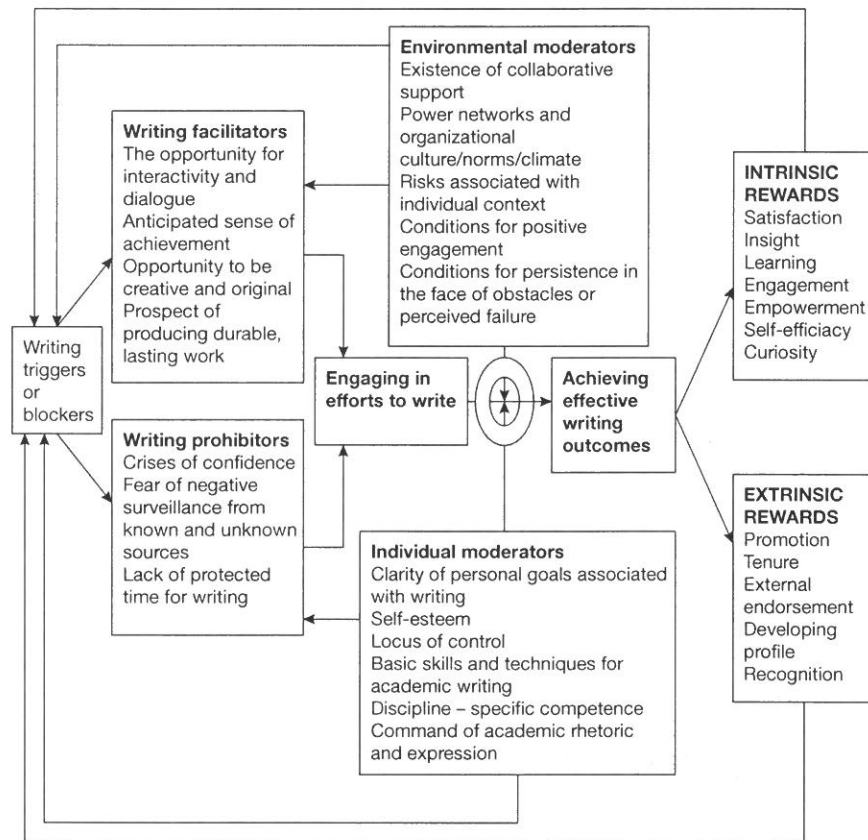


Figure 1.1.2 A social model of academic writing.

From Murray and Moore (2006), p. 179. Reproduced with permission of the authors and the Open University Press Publishing Company.

POSTSCRIPT 1: PROBLEMS FOR NON-NATIVE SPEAKERS OF ENGLISH

The IMRAD format is helpful for non-native speakers and writers, in the sense that anything that has a structure is easier to deal with than anything that has not. Unfortunately, it is more difficult for non-native speakers of English to read and to write in the appropriate style than it is for native speakers. Regrettably, methods of automatic translation have not yet progressed sufficiently for us to be able to turn scientific articles written in different languages into formal scientific English. Automated grammar and style checkers may help, but, in my experience, writers already need to have a good knowledge of grammar and style before they can judge the validity of many of the automated suggestions (Hartley *et al.*, 2007).

In my view, non-native writers of English are best aided in their writing by working with native speakers of English in their own discipline. Native speakers are more aware of the subtleties and nuances that might escape their non-native English speaking colleagues. There is a case, therefore, for more international collaboration and assistance when authors with different nationalities are involved. Fortunately, such assistance is much easier today via email and the Internet.

POSTSCRIPT 2: ONE STYLE FOR ALL . . .

I have argued in this chapter for a more readable approach to academic writing. However, these views are not shared by all. Consider, for example, the following quotations from the referees of two of my papers. If, as a writer, you are unsure about how to proceed in terms of clarity, it may be best to play it safe until you are an established author!

Paper 1

Articles in this journal are not typically written in the first person. Whilst this may make the manuscript somewhat more accessible for some readers, it is not appropriate for a formal, academic professional outlet such as this one. In addition, the tone of the manuscript is far too informal for this journal.

(Referee 1)

This is an exceptional paper. It is 40 years since the one occasion on which I listened to Jim Hartley's voice, and I cannot recall how he sounded. Yet in this paper the writer speaks out to the reader quite personally, while at the same time conveying useful information, findings and thinking in a scholarly, rigorous and academic manner. This is a rare talent.

Paper 2

The use of first person in this manuscript is a major distraction. Although the first person is acceptable if used judiciously, the word 'I' appears so much in this manuscript that the implication is that the author is more important than the research . . . The manuscript must be rewritten to reduce the personal references. The present manuscript is simply so self-indulgent and so incredibly poorly presented that in-depth evaluation of the content and the meaning of the work is impossible.

(Referee 1)

This is well presented, crisp and clear. I would prefer removal of the first person at the beginning, leading to a more scholarly presentation. Very impressive literature review.

(Referee 2)

The first paper was accepted for publication: the second paper was not.

REFERENCES

- Chandler, D. (1995). *The act of writing: A media theory approach*. Aberystwyth: University of Wales.
- Cotton, D. & Gresty, K. (2006). Reflecting on the think-aloud method for evaluating e-learning. *British Journal of Educational Technology*, 37(1), 45–54.
- Coulthard, M. (2004). Author identification, idiolect, and linguistic uniqueness. *Applied Linguistics*, 25(4), 431–47.
- Elbow, P. (1998). *Writing with power* (2nd edn). New York: Oxford University Press.
- Flesch, R. (1948). A new readability yardstick. *Journal of Applied Psychology*, 32 (June), 221–3.
- Fowler, H. W. & Fowler, F. (1906). *The King's English*. Oxford: Clarendon Press.
- Ghiselin, B. (Ed.). (1980). *The creative process: A symposium*. Berkeley, CA: University of California Press.
- Graham, S. (2006). Strategy instruction and the teaching of writing: A meta-analysis. In C.A. MacArthur, S. Graham & J. Fitzgerald (Eds.), *Handbook of writing research* (pp. 187–207). New York: Guilford Press.
- Hartley, J. (1994). Three ways to improve the clarity of abstracts. *British Journal of Educational Psychology*, 64(2), 331–43.
- Hartley, J., Branthwaite, J. A., Ganier, F. & Heurley, L. (2007). Lost in translation: Contributions of translators to the meanings of text. *Journal of Information Science*, 35(5), 551–65.
- Hartley, J., Howe, M. J. A. & McKeachie, W. J. (2001). Writing through time: Longitudinal studies of the effects of new technology on writing. *British Journal of Educational Technology*, 32(2), 141–51.
- Hartley, J., Pennebaker, J. W. & Fox, C. (2003). Abstracts, introductions and discussions: How far do they differ in style? *Scientometrics*, 57(3), 389–98.
- Hartley, J., Sotto, E. & Fox, C. (2004). Clarity across the disciplines: An analysis of texts in the sciences, social sciences, and arts and humanities. *Science Communication*, 26(2), 188–210.
- Hartley, J., Sotto, E. & Pennebaker, J. (2002). Style and substance in psychology: Are influential articles more readable than less influential ones? *Social Studies of Science*, 32(2), 321–34.
- Hartley, J., Trueman, M. & Meadows, A. J. (1988). Readability and prestige in scientific journals. *Journal of Information Science*, 14(1), 69–75.
- Hayes, J. R. (2006). New directions in writing research. In C.A. MacArthur, S. Graham & J. Fitzgerald (Eds.), *Handbook of writing research* (pp. 28–40). New York: Guilford Press.
- Kieft, M. (2006). *The effects of adapting writing instruction to students' writing strategies*. Amsterdam: University of Amsterdam.
- Klare, G. R. (1963). *The measurement of readability*. Ames, Iowa: Iowa State University Press.
- Kollberg, P. & Eklundh, K. S. (2001). Studying writers' revising patterns with S-notation analysis. In T. Olive & C. M. Levy (Eds.), *Contemporary tools and techniques for studying writing* (pp. 89–104). Dordrecht: Kluwer.
- Medawar, P. (1964). Is the scientific paper a fraud? Retrieved 24 September 2006 from <http://bioq.weblog.com/pt/arquivo/medawar.pdf>.
- Murray, R. & Moore, S. (2006). *The handbook of academic writing: A fresh approach*. Maidenhead: Open University Press.
- Oppenheimer, D. M. (2005). Consequences of erudite vernacular utilized irrespective of necessity: Problems with using long words needlessly. *Applied Cognitive Psychology*, 20(2), 139–56.
- Pamuk, O. (2006). My father's suitcase. Nobel lecture, 7 December 2006. Retrieved 3 January 2007 from http://nobelprize.org/nobel_prizes/literature/laureates/2006/pamuk-lecture_en.html.
- Pennebaker, J. W., Francis, M. E. & Booth, R. J. (2001). *Linguistic inquiry and word count: LIWC*. Mahwah, NJ: Erlbaum.
- Reid, D. J., Briggs, N. & Beveridge, M. (1983). The effects of pictures upon the readability of a school science topic. *British Journal of Educational Psychology*, 53(3), 327–35.
- Schrifer, K. A. (1989). Evaluating text quality. *IEEE Transactions on Professional Communication*, 32(4), 238–55.
- Sharples, M. (1999). *How we write*. London: Routledge.
- Shelley, M. & Schuh, J. H. (2001). Are the best higher education journals really the best? A meta-analysis of writing quality and readability. *Journal of Scholarly Publishing*, 33(1), 11–22.
- Smyth, T. R. (1996). *Writing in psychology: A student guide*. New York: Wiley.
- Smyth, T. R. (2004). *The principles of writing in psychology*. London: Palgrave Macmillan.
- Sokal, A. D. (1996). Transgressing the boundaries: Towards a transformative hermeneutics of quantum gravity. *Social Text*, 46/47 (Spring/Summer), 217–52.
- Torrance, M. & Galbraith, D. (2006). The processing demands of writing. In C.A. MacArthur, S. Graham & J. Fitzgerald (Eds.), *Handbook of writing research* (pp. 67–80). New York: Guilford Press.
- Torrance, M., Thomas, G. V. & Robinson, E. J. (1994). The writing strategies of graduate researchers in the social sciences. *Higher Education*, 27, 379–92.

- Watson, J. D. & Crick, F. H. C. (1953). A structure for deoxyribose nucleic acid. *Nature*, 171 (25 April), 737–8.
- Wellington, J. (2003). *Getting published: A guide for lecturers and researchers*. London: Routledge.
- Wengelin, A. (2007). The word-level focus in text production by adults with reading and writing difficulties. In M. Torrance, L. van Waes & D. Galbraith (Eds.), *Writing and cognition: Research and applications* (pp. 67–82). Amsterdam: Elsevier.
- Woods, P. (1999). *Successful writing for qualitative researchers*. London: Routledge.

FURTHER READING

- Cronin, B. (2005). *The hand of science*. Lanham, MD: Scarecrow Press.
- Elbow, P. (2000). *Everyone can write: Essays towards a hopeful theory of writing and teaching writing*. Oxford: Oxford University Press.
- Swales, J. M. & Feak, C. B. (2004). *Academic writing for graduate students: A course for non-native speakers of English* (2nd edn). Ann Arbor, Michigan, MI: University of Michigan Press.
- Thaiss, C. & Zawacki, T. M. (2006). *Engaged writers and academic disciplines*. Portsmouth, NH: Boynton/Cook Publishers.