

Preface

Today English is the official language of international conferences, and most of the important publications in science and technology now appear in English. Researchers must read English-language journals and books to keep up with advances in their fields. Over twenty percent of the world's population speaks Chinese, but China is still a developing country and few researchers outside of China will understand a scientific publication written in Chinese. While this may not be the case in the twenty-first century, for now, the researcher who wishes to reach a wide readership must publish in English. Therefore, learning how to write a manuscript in English has become part of the researcher's task.

Writing in English can be difficult even for someone who grew up speaking the language, and even more so for anyone who learns it as a foreign language. English derives from many cultures and is constantly evolving. As a result, its grammatical rules are many and complex. We Asians face an additional challenge not shared by our European counterparts: Most Asian dialects, Chinese and Japanese included, do not belong to the same language family as English. There are grammatical constructs that have no corresponding forms in Chinese or Japanese. The task is not merely to translate words, but to understand and use foreign concepts of syntax as well.

Consider the article *the*, which has no grammatical equivalent in Chinese. Knowing when to use it before a noun is intuitive for an English-speaking writer, but quite tricky for the Chinese. Other examples are prepositions such as *at*, *in*, and *with*. These also have no equivalents in Chinese, which can make usage especially difficult to master. Then there is the plural form of nouns. The European writer is used to seeing both singular and plural nouns in his or her own language, and can easily deal with these forms in English. In Chinese, however, a noun has the same

form for both the singular and plural cases. It requires extra vigilance on the part of the writer to be certain of using the correct form in an English sentence.

Such difficulties are by no means insurmountable. With practice, plus attention to the particular challenges faced by the Asian scholar, any of you should be able to write a scientific paper in English that is concise and lucid as well as grammatically correct, even if your vocabulary and understanding of English usage are limited.

There are already many excellent texts on scientific writing in English. Why, then, would an author whose first language is Chinese write another book on the subject? As an author in English for over forty years, I understand the unique writing challenge that we Asians face. This book discusses the style and convention used in scientific publications and is written on a level that can be understood by researchers who learned English as a second language. Rarely will a dictionary be needed. It assumes, however, that the reader can already write *grammatically correct* English and avoid such mistakes as the following:

INCORRECT

The experimental data included circular dichroism and intrinsic viscosity indicated that tropomyosin was a helix-rich rod.

CORRECT

The experimental data including both circular dichroism and intrinsic viscosity indicated that tropomyosin was a helix-rich rod.

I know of some Chinese professors who rely on coworkers fluent in English to polish their scientific writings. While it is fine to have others review your work, this should not be part of the development of the paper. You must learn how to write concisely and lucidly in a well-organized manner. The following illustrates that a sentence can be grammatically correct but difficult to follow:

Supply us with the necessary inputs of relevant equipment and we shall implement the program and accomplish its objects.

Winston Churchill expressed this same idea concisely and far more elegantly:

Give us the tools and we will finish the job.

It is true that a paper is only as good as the underlying research, and writing effort can improve the quality of a poor study. On the other hand, however fine the research, it is wasted if the paper is not read and understood. If, by attention to style and presentation, your paper communicates more effectively, you will have accomplished your purpose.

Professor Julius H. Comroe Jr., former Director of the Cardiovascular Research Institute at the University of California at San Francisco, firmly believed that a concise and lucid writing style furthered the cause of research. I once showed him a review that I had written for *Advances in Protein Chemistry*. One of the paragraphs began, "Needless to say ..." Dr. Comroe crossed out the paragraph and indeed the entire page, writing in the margin, "If it is needless, why say it?" In 1977 I decided to take Dr. Comroe's course on scientific writing. Initially I regarded "How to Write a Paper" with some skepticism, believing that writing skill was innate and could not be learned. Dr. Comroe convinced me, however, that some style rules on this subject can be quite helpful when writing a manuscript.

This book is divided into five parts. Part I deals with the most typical syntax errors. It discusses choice of words, sentence structure and, briefly, the linkage between sentences in paragraphs. Part II, the major part of this book, discusses how to plan a manuscript. It covers the choice of an informative and attractive title and the composition of an abstract (a mini-paper by itself), followed by the standard format of a scientific manuscript: introduction, materials and methods, results, and discussion. Part III explains how to submit a manuscript to a journal and the process of acceptance/rejection and revision of the paper. Part IV discusses the preparation of a poster and some suggestions on oral presentations. In the appendices are the International Union of Pure and Applied Chemistry recommendations on symbols and terminology for quantities and units, and also some common physical and chemical quantities and standard biochemical abbreviations. I find these to be useful reference materials when

writing a biochemistry manuscript. Authors in other fields can compile appendices relevant to their own subjects.

The reader who wishes to study scientific writing in more detail is encouraged to read two recent publications: *Essentials of Writing Biomedical Research Papers* by Mimi Zeiger (McGraw-Hill, 1991), and *A Researcher's Guide to Scientific and Medical Illustrations* by Mary Helen Briscoe (Springer-Verlag, 1990). Both books are well regarded and have been translated into Japanese. Incidentally, both authors were associated with the Cardiovascular Research Institute, as I was. Ms. Zeiger and I took Dr. Comroe's course together and Ms. Briscoe helped me prepare numerous illustrations during my tenure at the Institute.

For general writing, I recommend *The Elements of Style* by William Strunk. This is an easy-to-use, classic text that many English teachers consider indispensable. It is, however, somewhat dated in that it recommends using *he* to represent men and women alike. I prefer using *he or she*, *his or her*, etc. unless it makes the text too unwieldy.

One final recommendation: Do try to think in English when you write a manuscript in English. Text that is translated from one language into another often sounds awkward. It may be difficult to put your thoughts into English, but you will gain facility with practice. You are also advised not to become overly reliant on this or any other writing guide. In the words of Confucius, "Better to have no books than to trust them completely." There is no substitute for practicing a language and developing an ear for its nuances. Only in this way can you master your own scientific writing in English.