

Communicating Rocks—Writing, Speaking, and Thinking About Geology by Peter Copeland. Pearson, 2012. 176 pp. \$38.47 (paperback). ISBN 9780321689672.

*No style of writing is so delightful as that which is all pith,
which never omits a necessary word, nor uses an unnecessary one.*
—Thomas Jefferson (1743–1826)

Writing, speaking, and talking publicly about geology and, by extension, about science, may be a daunting task for some of us (called scientists). The major fear, in my opinion, is that our audience might be not prepared to understand our lingo and thus we will end up barking up the wrong tree. Additionally, scientists tend to be more cautious speaking or writing to audiences outside their own field because they are fully aware of how easy is to make a fool of oneself when venturing publicly beyond one's own group. On the other hand, the students taking our geology classes are trying to develop excellent writing skills to publish reports and to solicit grants from government, industry, and private foundations. They are also interested in mastering speaking skills necessary in future job endeavors.

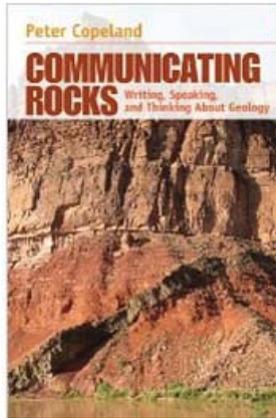
Being capable of writing and speaking clearly and persuasively about geology (i.e., science) is a task every undergraduate and graduate student (and not only they) should tackle earnestly if they want to communicate to others the results of their work. That's why I read with interest the recent book written by geology professor Peter Copeland. Being myself a professor of geology and teaching for thirty years in universities in both Romania and the U.S., I took a special interest in what he had to say about "balancing science with writing and speaking," and making "the case that one cannot have the former without the latter."

The book is balanced, going from "Communication Equals Thinking" (Chapter 1) to "Written Communication" (Chapter 2) and "Oral Communication" (Chapter 3) to end with "Writing is Hard" (Chapter 4). The author uses some of his own research and teaching experience to illustrate "types of written communication" (the abstract, the research proposal, the research paper, the review paper, etc.). He then presents extensively "problem words and concepts" (e.g., common confusions surrounding words such as accuracy, precision, uncertainty, and responsibility; or hypothesis, theory, and law). Useful hints and examples are offered in the "Oral Communication" chapter (know your audience, give a road map, stick the dismount, etc.)

Overall, the content of the book was interesting, and I agree with the

author's assessment of many of the issues discussed there. About others, I have reservations. Here is an incomplete list.

From the moment I moved from Romania to the U.S., back in 1993, I was appalled by how little Latin and Greek are known here. Whenever I heard or read that “mass media *is* . . .,” or “data *is* . . .,” I cringed. At the University of Oklahoma I tried to continue my Romanian academic experience and teach my American students some basic Latin, Greek, or French in addition to geology classes. After a couple of semesters, some student evaluations started to read like this: “I paid for this class to be taught geology, not Latin or Greek.” No comments.



Is there a solution to this issue? Peter Copeland quotes Patricia T. O'Connor (1996), who argues that *data* has joined a group of technically plural Latin and Greek words very few recognize as thus. Other linguists I talked to told me that there is little hope: The spoken language imposes the norm. If more and more people are going to use “mass media *is* . . .” or “data *is* . . .,” little can be done to stop it (maybe by making the study of Latin and Greek mandatory?).

Completely agreeing with what Copeland wrote about the above topic, I was puzzled to find on page 100 the following: “The data has [*sic*] not constrained the history of the reason . . .” Is there a typo here?

Remaining in the realm of foreign languages, I noticed that the author misspelled twice (page 52 and page 54) the French word *voilà* (he wrote *viola*). Any explanation?

On page 64 Copeland writes: “. . . strictly speaking, *heat* is a verb and shouldn't be used as a noun.” I respectfully disagree: My second Ph.D. thesis (1997) was titled *Heat Flow in Oklahoma* (Cranganu 1997), and I still do not see any verb meaning in *heat flow*. The *American Heritage College Dictionary* (fourth edition, 2002) lists for *heat* 14 definitions as a noun and only 5 definitions as a verb.

On pages 62 and 63, after the definition of *half-time*, the author writes nine equations that have little to do with half-time ($t_{1/2}$), a term applied to radioactive elements. The most important equation ($t_{1/2} = \ln 2 / \lambda$) is missing.

On page 30 it says: “*Accuracy* is *not* how close a measured value is to the actual (true) value.” Well, I have to disagree again and—if I am allowed—I would like to quote from my Geostatistics course:

Accuracy is determined by bias.

Bias is error that is the same for every measurement. For example, a scale that always gives you a reading that is too low.

The smaller the bias, the more accurate the measuring process.

The bias in the measuring process is the difference between the mean measurement μ and the true value:

$$\text{Bias} = \mu - \text{true value}$$

On the other hand, Figure 2.2 on page 34 is a good illustration of the concepts of accuracy, precision, and repeatability (reproducibility).

On page 96, discussing a sentence with (possibly) eight errors, the author writes:

2) *Metrics*. Not a noun. [sic]

If metrics is not a noun, then what it is? I noticed earlier (page 69) that he decried the use of *metric* as “another unfortunate example of the nounification of adjectives.” I did a rapid search online to see whether metric(s) is a noun and here is what I found:

From the *Merriam-Webster Dictionary* (2011): *Metric*

1 plural: a part of prosody that deals with metrical structure

2: a standard of measurement <no *metric* exists that can be applied directly to happiness—*Scientific Monthly*>

3: a mathematical function that associates a real nonnegative number analogous to distance with each pair of elements in a set such that the number is zero only if the two elements are identical, the number is the same regardless of the order in which the two elements are taken, and the number associated with one pair of elements plus that associated with one member of the pair and a third element is equal to or greater than the number associated with the other member of the pair and the third

On page 105, Copeland proposes an alternative to the ways in which the electromagnetic energy from the Sun interacts with an object:

When electromagnetic energy from the Sun strikes an object, the energy can be reflected, adsorbed [sic], or transmitted.

Although I agree with many other alternatives he proposed in the book, this time he should have stuck with the uncorrected version [absorption]. Simply because **adsorption** is the adhesion of atoms, ions, biomolecules, or molecules of gas, liquid, or dissolved solids to a surface. The electromagnetic energy from the Sun is **absorbed**, not **adsorbed**.

On page 89, writing about split infinitives, the author states:

The infinitive forms of English verbs come as a two-word package. . . . Somewhere, somebody decided that these pairs should never be split apart. . . . This is a rule in Latin, but it has no correspondence in English.

What rule in Latin is he referring to? I know Latin, but I am not aware of such a rule, because the Latin verbs do not come as a two-word package (for example, *to love* in English = *amo* in Latin)

Finally, I have one more comment: Copeland quotes O'Connor (1996) twice (page 48 and page 64), but he did not list her work in the References.

In similar situations, my former Romanian students (quoting Horace) used to tell me: "aliquando bonus dormitat Homerus . . ."

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