Appendix B

# A Usage Guide for Scientists and Engineers

"Usage" refers to the selection of the proper word. Some selections are clear-cut. For instance, no matter what reference book you consult, "its" is defined as "of it" and "it's" is defined as "it is." Other choices are not so clear. For example, some liberal sources, such as *Webster's New Collegiate Dictionary*, treat "farther" and "further" as synonyms, while conservative sources, such as *Elements of Style*, do not. Because scientific writing is more traditional than other kinds of writing, you should probably lean to the conservative side in your usage. This appendix presents a guide to common usage questions. At the end is a list of traditional usage references.

*-ability words:* A word ending in "ability" is a signal that you can tighten the sentence by having the word "can" precede the verb buried in the "ability" word. Although examples such as "capability" are not offensive, pretentious constructions such as "operationability" and "manufacturability" are. Rewrite the sentence using "can operate" and "can manufacture."

*abstract nouns:* nouns that offer none of the five senses to the audience. Common abstract nouns in scientific writing are "environment," "factor," and "nature." If you have to use an abstract noun, ground it with an example.

*active voice/passive voice:* In general, the active voice (having the subject perform the action) is a more natural way to communicate





because it is crisper and more efficient than the passive voice. However, for those occasions in which the subject of your writing is acted upon, the passive voice is more natural.

*affect/effect:* "Affect" is a verb and means to influence (note that in psychology, "affect" has a special meaning as a noun). "Effect" is usually a noun and means a result. Occasionally people use "effect" as a verb meaning to bring about: "He effected the change of orders."

*alright:* not accepted usage. Use "all right."

*always:* a frightening word because it invites readers to think of exceptions. If an exception exists, your readers will find it, and your authority will be undercut. You should go in fear of absolutes.

*approximately:* appropriate when used to modify a measurement's accuracy to within a fraction, but inappropriate when applied to a situation such as "approximately twelve people." Does the writer mean 11.75 or 12.25 people? In such cases, use the simple word "about."

*center around:* The phrase "center around" makes no physical sense. You should either use the phrase "center on" or "revolve around."

*clichés:* descriptive phrases that have become trite. Common examples include "come up to speed" and "sticks out like a sore thumb." If a descriptive phrase sounds cute, avoid it.

*component:* often can be replaced by the simple word "part."

*comprise/compose:* "Comprise" literally means to include. Most conservative sources such as *Elements of Style* hold to that literal definition. For that reason, conservative sources insist on the whole comprising the parts, not the reverse. Likewise, conservative sources shun the phrase "is comprised of."

*conjunctions:* Conjunctions, such as "and" and "but," are powerful words that connect words, phrases, and clauses. Is it proper to begin sentences with conjunctions? Although some formal scientific journals frown on this usage, many respected publications, including *The New York Times*, allow it. With time, this usage will likely become accepted everywhere.

*continuous/continual:* "Continual" means repeatedly: "For two weeks, the sperm whales continually dived to great depths in search of food." The word "continuous" means without interruption: "The spectrum of light is continuous."

*criterion/criteria:* "Criterion" is the singular form, and "criteria" is the plural form. Note that this word comes from Greek, which explains the unusual plural form.

*data:* a plural form of "datum," a Latin word. Because "datum" is no longer used in English, many sources consider "data" acceptable as either singular or plural. Many conservatives refuse to budge on this word. If you need a singular form and do not want to ruffle feathers, spend a few extra words and write "a data point."

*facilitate:* a bureaucrat's word. Opt for the simpler wording "cause" or "bring about."

*farther/further:* Conservative sources distinguish between "farther" and "further," advocating that "farther" be used to indicate distance, and "further" be used for all other variables: time, intensity, depth of meaning. However, many conservative sources, including Bernstein [1965], admit that "further" will eventually become accepted for all uses.

*fewer/less:* In general, use "fewer" for items that can be counted and "less" for items that cannot. For that reason, write "fewer cells," "fewer errors," and "fewer fish in the stream." Likewise, write "less water," "less air," and "less foliage." Exceptions include sums of money and time: "less than five years ago" and "less than 1 million dollars."

*first person:* the use of "I" or "we." Occasional use of the first person can help reduce the unnatural use of the passive voice. As long as the emphasis remains on the subject of the writing, there is nothing inherently wrong with using the first person. You should understand, though, that some editors and managers (to their deaths) will forbid its use in scientific writing.

*however:* an adverb that has the same meaning, but not the same sentence function, as the coordinating conjunction "but." A coordinating conjunction can join two independent clauses; an adverb cannot. Is it proper to begin a sentence with "however"? Yes. As a transition word at the beginning of a sentence, "however" is accepted by all but the most conservative of readers.

*implement:* a pet verb of bureaucrats. Consider substituting "put into effect" or "carry out." These verb phrases are old and simple. They're the verb phrases that Winston Churchill would have used.



*interface:* the interstitial boundary between two systems, planes, or phases ("a computer interface" or "an oil-water interface"). Not acceptable is to use "interface" as a verb meaning to meet. The idea of two people or, worse yet, a group of people interfacing is unprofessional.

*irregardless:* not accepted usage. Use "regardless."

*its/it's:* "Its" is the possessive form of the pronoun "it" and means "of it." "It's" is a contraction and means "it is." A few hundred years ago, someone decided on these meanings. Accept them; learn them; write them.

*-ization nouns:* often pretentious. You should challenge "-ization" nouns and search for simpler substitutes. For example, replace "utilization" with "use." In cases where you have monstrosities such as "prioritorization," you should rewrite the entire sentence in forthright English.

*-ize verbs:* as with "-ization" nouns, often pretentious. Although some verbs such as "optimize" are forthright, other verbs such as "prioritorize" and "utilize" are pretentious. Opt instead for short, old words such as "rank" and "use."

*-ized adjectives:* as with "-ization" nouns, often pretentious. You should challenge "-ized" adjectives and search for simpler substitutes. For example, replace "discretized" with "discrete" and "individualized" with "individual."

*like/as:* "Like" is a preposition and introduces prepositional phrases: "Like Earth, Mars has an elliptical orbit." The word "as" is a conjunction and introduces clauses: "In Bohr's theory, the electron orbits the nucleus as a planet orbits a star."

*never:* a frightening word because it invites readers to think of exceptions. If an exception exists, your readers will find it, and your authority will be undercut. You should go in fear of absolutes.

*only:* a tricky word (sometimes adjective and other times adverb) that changes the meaning of a sentence by its position in the sentence. Check the position of "only" in the sentence to make sure that it modifies what you want it to modify.

*phenomenon/phenomena:* "Phenomenon" is the singular form, and "phenomena" is the plural form.

*possessives:* For single nouns, form the possessive by adding an *'s*: "a person's fingerprint," "someone else's decision," "your boss's

authority." Exceptions include a handful of old people and places in which the possessive form does not add an *s* sound to the pronunciation (for instance, "Mount St. Helens' eruption" and "Archimedes' Principle").

*principal/principle:* "Principal" can be either a noun or an adjective. As an adjective, "principal" means main or most important. "Principle" appears only as a noun and means a law, as in "Archimedes' Principle."

*redundancy:* needless repetitions of words within a sentence. Common redundancies in scientific writing include

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|---|---|
| (already) existing | empty (void) |
| (alternative) choices | first (began) |
| at (the) present (time) | introduced (a new) |
| (basic) fundamentals | mix (together) |
| (completely) eliminate | never (before) |
| (continue to) remain | (none) at all |
| (currently) underway | (still) persists |

*stratum/strata:* "Stratum" is the singular form, and "strata" is the plural form.

*unique:* an absolute that does not need a preceding modifier. Either something is unique or it is not. For that reason, the phrases "very unique" and "somewhat unique" make no sense.

*weak verb phrases:* In general, the smaller the verb phrase, the stronger the verb phrase. For that reason,

| | | |
|---|---|---|
| is beginning | → | begins |
| is used to detect | → | detects |
| performed the development of | → | developed |
| made the decision | → | decided |
| made the measurement of | → | measured |

*which/that:* Use "that" for defining clauses: "We will select the option that has the highest thermal efficiency" (the clause tells which one). Use "which" for nondefining clauses: "We will select Option A, which has the highest thermal efficiency" (the clause adds a fact about the known option). Note that you separate "which" clauses from the rest of the sentence with commas.

*writing zero:* a phrase that adds nothing to the sentence and can be cut without loss of meaning. Common examples include "the fact that" and "the presence of."



## References

Bernstein, Theodore M., *The Careful Writer: A Modern Guide to English Usage* (New York: Atheneum, 1965).

Fowler, H. W., *A Dictionary of Modern English Usage*, 2nd ed. (Oxford: Oxford University Press, 1965).

Sabin, William A., *The Gregg Reference Manual*, 6th edition (New York: McGraw-Hill, 1985).

Strunk, Jr., William, and E. B. White, *Elements of Style*, 3rd edition (New York: Macmillan, 1979).