Use the most informative synonym

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Convey the maximum information by using the most precise synonym possible. Avoid unnecessary imprecision.

For example, to write the 'level' of some quantity is vague. Better to write the 'concentration', or the 'frequency', or whatever. The term 'concentration' is more specific than 'level' and so contains more information. Similarly, in an example from human studies, prefer to write 'patient' or 'gymnast' instead of the vague 'subject'. Use synonyms that have more information.

Most terms we use have variants over a wide range of abstraction. Higham [2, Section 4.29] gives these examples:

- graph — function — rational function — polynomial — quadratic — scalar;
- result — theorem — relation — inequality — bound;
- statistic — error — relative error;
- optimum — minimum — global minimum;
- random — normally distributed — normal $(0, 1)$.

These lists place the most abstract, general words to the left, and the most concrete, specific words to the right. Prefer the word that is as far to the right as possible as it conveys the most information.

Similarly aim for precision when you choose non-scientific words. Fortunately, the many invaders of England in the past few thousand years left a legacy of a language rich in synonyms: English is one of the most synonym-rich languages. When choosing a synonym, prefer a short, concrete word (often Anglo–Saxon in origin) in preference to a long, abstract word (often of French or Latin origin). Enjoy using uncommon words when connotations associated with the word are just right for you. Then the fewest words will convey the maximum information through their connotations.

Precisely specify forward and backward links. Often authors write 'the above method', 'mentioned above' or 'later we see'. Such links internal to the document are vague and imprecise. You, the writer, are referring to something preceding (but not actually above) or following. Such loose references are convenient for writers, but not for readers. You know exactly what and where, but your readers may have to search. Instead be specific.

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Make internal links precise using names or numbering. For examples, the above imprecise links might be more informatively written: 'the quasi-Newton method', or 'mentioned in the Introduction', or 'Section 4 shows'.

the ill and unfit choice of words wonderfully obstructs the understanding

Francis Bacon, circa 1600

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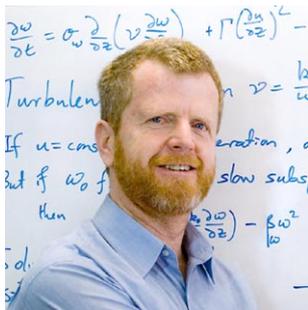
Tony Roberts is the world leader in using and further developing a branch of modern dynamical systems theory, in conjunction with new computer algebra algorithms, to derive mathematical models of complex systems. After a couple of decades of writing poorly, both Higham's sensible book on writing and Roberts' role as electronic editor for the Australian Mathematical Society impelled him to not only incorporate writing skills into both undergraduate and postgraduate programs, but to encourage colleagues to use simple rules to improve their own writing.