

On Telling It Like It Was

When I was a postdoc, I worked with John Kebaran, another postdoc in the same lab. There came a time when we had accumulated some nice results and I asked him how he thought we should write them up for publication. He said, "Let's just tell 'em what we did, tell 'em what we saw, and tell 'em what we think it means." Good advice. It sounds simple enough, but it's not. We pride ourselves on telling it like it was, but there is a remarkable paradox in the conventions for scientific reports. Our papers have become so stylized, so disingenuous that, essentially, we never tell it *like it was*. We don't simply tell 'em what we did: We choose which data are valid and which generated results and which results are meaningful. In our selection and shaping of observations, we routinely reorder the sequence of events and hide the true history of our work. Here, however, I want to focus on the *telling*.

Old papers, I mean really old papers, are more interesting for the narrative they provide. I think current conventions evolved to serve ideals considered more important than providing historically and experientially true accounts. One is objectivity. Personal statements are out, lest opinion creep into observation. We now frown on editorializing in papers (some people even frown on editorializing in editorials). To avoid even the hint of subjectivity, we take ourselves out of the picture as much as possible. The phenomena, the observations, the measurements are treated as just being there, to be come upon by anyone who happens to wander by while walking in the woods reading nature's spoor. Experimental manipulations are treated as if they just kind of happen; we ourselves have little to do with them, just happened to be there at the time to watch or take measurements. Thus, the prevalence of passive voice. We say too little about the process of science in our papers and the progress of our thoughts. These somehow got linked to the personal and are reserved for memoirs, or, to a lesser extent, reviews. Still, it's good to say "we" occasionally; it allows you to use more interesting verbs, like "we think . . ."

Another, related, ideal is disinterest. We know well that "the intensity of a conviction that a hypothesis is true has no bearing over whether it is true or not" (Sir Peter Medawar, 1915–1987). Advocacy is bad, enthusiasm is suspect. It is important to speak with modesty and caution. Plodding sentences are preferred, as if style and substance were opposed. Reviewers can be counted on to guard against overstatement. Consequently, we reflexively qualify all statements as if dull statements are more likely to be true than lively ones, as if weasel-words and mealy-mouthed circumlocution indicate circumspection. Why not allow yourself an occasional harmless flourish? Long, conditional sentences abound. (I was once scolded by a reviewer for using "It did" and "It did not" as complete sentences in a paper.) Why not allow yourself an occasional verbal arrowhead?

"Suggests" is our workhorse and our shield. It has become the hallmark and stereotype of a scientist, so much so that the media and public often see right through it—even charlatans say "suggest." So we go further and say "might suggest." We use it when the contention is far-fetched, and we use it when the contention is ironclad. Another good word ruined. Don't use "suggest" for results: Use active, unqualified verbs; let yourself say "plummets" or "triples" when appropriate. Do say how confident you are in your inferences and conclusions, but don't mix strong and weak (as in "clearly shows that X may suggest . . ."). Try to use words and phrases of graded strength like "possible," "plausible," "consistent with" (never "not inconsistent with"), "likely," "evident," "conclusive." Dare to say "demonstrates" when it's warranted.

Finally, returning to the starting point of how to write a paper, there's another simple guide to keep in mind (modified after Ramon y Cajal, 1852–1934): "Have something to say; say it; then stop."

Martin Zatz
Editor