

An occasional column, in which Caveman and other troglodytes involved in cell science emerge to share their views on various aspects of life-science research. Messages for Caveman and other contributors can be left at caveman@biologists.com. Any correspondence may be published in forthcoming issues.

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“If thought can corrupt language, then language can corrupt thought” (George Orwell)

The written word is the basis for most scientific exchange, dialog, record keeping and correspondence. True, scientific meetings and other gatherings of scientists provide forums for exchange of ideas and information (and it could be argued that these exchanges produce the most up-to-date information). Nevertheless, publication of data, in one form or another, provides the ‘formal’ context for a series of experiments.

Would it be enough if only data were presented? Well, not just data. The data should have a detailed description of the materials and methods (now there’s a novelty!). The readers should be able to follow the design and mechanics of each experiment as if they were doing it themselves, and, I realize this might be

shocking, attempts could be made to reproduce the experiments.

But, is that enough information? Could the experiments be followed – that is, would the data, the order in which the data were presented, and the way the data were presented be sufficiently comprehensible? Perhaps an expert in the field could follow the data, work out the logic to the order, and understand why certain experiments were performed and which ones were the controls. The expert, since he/she is immersed in the field, might even comprehend the rationale for the experiments, appreciate the significance of the results and would be able to critique the nature of any advance.

But how about the casual observer? Could they follow anything? Would the data, displayed as figures, graphs and tables, be incomprehensible? Perhaps not individually, as most of us can follow the (good) description of an experiment, the order of reactions and the definition of a ‘result’ and its level of significance on the basis of a comparison with a suitable control. However, it is unlikely

that the casual observer would be able to consider the data and results in a broader context of the field without some additional information.

So this is when data need some accompanying language. But beware! Corruption is nigh! The thoughts of the authors, which have long festered on the experimental design, the execution of the experiments and the spin placed on the interpretation of results, are now converted to language. The language is woven around the experiments, data and results. What are you thinking as you read? Are you thinking independently? Are you examining the data through the eyes of the authors, reading the spin on the results, believing the logic of their explanation? Is the language corrupting your thoughts?

So, here is an exercise for you so that you can decide whether Mr Orwell was right (again).

Take a journal publication and remove all text except Materials and Methods. Paste the figures together in the order presented in the publication, and see whether you comprehend the data and

the logic of its presentation, and build a picture of the scientific question (and maybe answer) that is being presented to you. What conclusions do you draw? Remember, the author is not looking over your shoulder, whispering in your ear or prodding you with subliminal suggestions in the text.

Then, add the Introduction. Does it provide context for the rationale for the work, the experimental design and the conclusions that you, and not the author, have divined? Are you missing any background information? Did the author, already in the Introduction, (helpfully) guide you down the pathway that he/she wanted?

Now add the rest of the text from the author. In theory, you should not need the text that goes with the figures (the 'Results' section). But, we all know it is replete with data that are 'not shown', references to work in other publications, personal communications that support the work, and other detritus that the author thinks would be helpful for us to follow the work. Now we see plainly that the author also inserts helpful asides about the interpretation of the data, the alternative explanations that are

thoughtfully excluded and the obvious need for the next experiment that continues to build the house of cards that the author is designing for you. And finally, the last piece of text, the cherry on top, is the Discussion. If ever language was meant to corrupt thought, it reaches its highest form of evolution in the Discussion. Here the spin is at its highest revolution. The data are lovingly discussed in their brightest, most positive light. They are carefully fitted together with other data, mostly from previous results from the author's lab. The jigsaw puzzle can look quite mangled, pieces crudely cut to fit with others, the overall picture distorted and crude.

I recommend this exercise to students. It is a good way to think about the bare bones of the experiments, to be forced to think about what they say without the author's help. It is a way to learn what is needed to help place the work in context and how much 'discussion' is realistic.

Remember when you write or read a paper Big Brother is watching you!

Caveman

Letters

JCS welcomes correspondence provoked by articles in all sections of the journal. Responses to articles in the Sticky Wicket section should be sent directly to Caveman (email: caveman@biologists.com). Correspondence relating to Research Articles, Commentaries and Cell Science at a Glance should be addressed to the Executive Editor and sent to

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