

The pages are proofed...

... the files are ready to go to the printer's, another *Lab Times* issue is accomplished. But wait, one thing is still missing: right, the Editorial.

It seems like a law of nature in the magazine publishing business: the Editorial page remains blank until the very last moment, until everything else is finished. "Clear thing", you might think, "Of course you have to wait until all the contents of the whole issue are complete before writing this piece."

Not quite! This would be true if we were to write our Editorials as a kind of commentarial spotlight, just highlighting the three or four main articles of the issue. Although many magazines do exactly that in their Editorials, we prefer a different approach. We aim to use this space to write an independent piece. Usually, it's a personal comment about a life science issue under current debate with, in the ideal case, some of our own experiences as life science reporters included.

And, incidentally, that's why this Chief Editor is now sitting in front of his computer thinking about what to write for this issue's Editorial. It's an unusual situation for him to be in. You see, he hasn't come across anything striking during the last weeks that immediately springs to mind, firing that urge to exclaim: "Hey, that's what I'm going to write the Editorial about!" Is it because it's silly season?

Well, there's no way round it, the page has to be filled. Once again, the Chief Ed leafs through his latest printouts from the web. He pauses at the story about the cows that can apparently sense the field lines of the Earth's magnetic field. Yes, why not? There are certainly some interesting aspects involved.

First of all, the method is pretty original. The researchers used satellite images across the globe posted online by Google Earth, to observe that domestic cattle, while grazing or at rest, tend to orient their bodies in a north-south direction (*PNAS*, epub before print August 25). According to the authors, two-thirds of the 8,510 animals in 308 pastures from all over the world demonstrated this behaviour. "An incredibly neat use of Google Earth", was a colleague's comment in the *Los Angeles Times*.

The Chief Ed, however, started reasoning about another, more general aspect of the paper. What possibly caused the authors to investigate specifically the cattle's orientation? Was it prompted by anecdotal reports from farmers? If yes, perhaps the scenario was as follows: farmers report that their cattle mostly align their bodies in a north-south direction while grazing or resting; the researchers suspect that this could be a specific behaviour (hypothesis!) and decide to establish a firm scientific basis through systematic observation (applies Google Earth as the method of choice); the results (if you believe them) finally seem to prove the hypothesis (specific behaviour), but in itself still constitute an observation (cattle prefer aligning themselves in a north-south direction); this *systematic* observation now gives rise

to formulate a *new* hypothesis (cattle can sense the field lines of the Earth's magnetic field)...

This might be a good example of how the so-called scientific method works, thinks the Chief Ed. But suddenly, the last two sentences of the paper's abstract catch his eye: "Our findings open horizons for the study of magnetoreception, in general, and are of potential significance for applied ethology (husbandry, animal welfare). They challenge neuroscientists and biophysicists to explain the proximate mechanisms."

Phew, that's hard stuff. How dare the authors already proclaim magnetoreception in cows to *be fact*, based solely on their observations of the Google Earth images of 8,510 cows?

(These, by the way, were so badly resolved that it couldn't be determined, which of the individual "positives" were facing north or south). Do they really believe that they have effectively excluded all other possible factors, which might eventually cause this behaviour? Wind, light conditions, temperature, orientation of the pasture grass...

Or has the Chief Editor overlooked something significant? Why not check whether any comments have been logged in some internet discussion forums. Indeed, there are some to be found and, as the Chief Ed suspected, they're not exactly positive. One of the politer critics claims, "The study is based entirely on correlations. To demonstrate conclusively that cattle have a magnetic sense, some kind of manipulation will eventually be needed."

Another, named "Chad" didn't treat the authors with so much respect in his weblog contribution: "What I am talking about is a 'scientist' looking at imagery and going 'Hmm, they seem to be pointed North all the time. So it has to be the Earth's magnetic field doing it!'" And he continued: "What they did was correlation, a very tiny part of a scientific study and not something to put a whole theory on. So, I REALLY hope this article just made it look like they just used Google Earth ... because if that is all they really did ... that is a sad state science is moving to." In closing, he added: "For my insight into this 'study' ... I grew up on a farm, there are dairy farms all around ... cows will face ALL directions when at rest and will roam anywhere."

Well, the Chief Ed agrees and, finally, comes to the conclusion that the study is obviously *not* an example of how the scientific method works. To the contrary, this case rather aptly demonstrates just how easy it is to conclude far too much from one simple observation.

And *this* – scientific results that are plainly oversold – surely is a hot topic for an Editorial.



Sticking out the tongue north, south or where?

