

Tim Radford on science writing: 'Don't be afraid to ask simple questions'

Our blog to accompany the asks top science writers about their craft. First up, former Guardian science editor **Tim Radford**

Wellcome Trust Science Writing Prize

Wednesday 6 March 2013 17:19 GMT

What makes a good science story?

Good science stories are hard to define but paradoxically easy to find. They are hard to define because science - unlike premier league football, the balance of trade figures, or party political briefings - so often delivers the unexpected. They are unexpected because they can come from anywhere: from Egyptology or entomology or epigenetics or nanotechnology or high earth orbit or a galaxy far away and long ago. They are unexpected because there is now a huge, competitive and international effort to deliver research, so good stories arrive daily, by the bucketful.

A good science story may be hard to define, but it will always have these qualities: there will be something you can say in an opening sentence that will leave the audience urgently wanting to know more; it will arrive with an image - not necessarily a photograph, drawing or diagram; it could be just a vivid picture in the mind - that will evoke a sense of beauty, or comedy, or delight or horror; somewhere in the story there will be a scientist who will say something laconic, lurid or droll, but always quotable; and somewhere in it too will be a hinterland, an exciting story-so-far, and the promise of a next thrilling episode. Crime stories end when the perpetrator goes to prison. Good science stories tend to run and run.

How you tell these stories is of course, the problem. First, you cannot cheat: you do have to deliver the substance of the story, very quickly: fast enough for the reader to make a judgment about its importance, or its entertainment value. This can be quite difficult: many science stories start from unfamiliar concepts - that is, few ordinary humans ever think about biology at the level of a cell, or contemplate the space rocket as a problem of general relativity. Many science stories involve unfamiliar language, freshly coined words derived from Greek or Latin, or newly minted labels that deploy familiar terms in an unexpected context (for instance, a gene called sonic hedgehog). So the trick is to introduce an unexpected idea in very familiar words: preferably simple, one-syllable words rooted in English rather than Latin or Greek.

What do you need to know to write well about science?

Can people write knowledgeably about science if they don't have a science degree? I really do not know if this question can be answered usefully one way or the other. Some journalists just started writing about science because they were sent to a press conference because the real science correspondent was doing something else. Some science journalists moved from science to science writing because they liked it, and hey, it was a living, with travel and expenses too.

My own feeling is that this may just be the wrong question. Someone who writes about science is going to learn something about science: writing is an act of learning. I am fond of pointing out that every day a newspaper reporter, like a university student, attends either a seminar or a lecture - that is, does an interview or goes to a press conference - and then has to write an essay (only we call it a story) based on what he or she has heard. It then gets marked for accuracy, fairness and comprehension not just by the authorities that gave the seminar or conducted the press conference, but by 500,000 other random, unidentified examiners as well. The first is incentive enough to get the story right. And those 500,000 other examiners didn't have to read it. But they did, and that is the ultimate pass-mark.

How do you get the best out of an interviewee?

I often ask a scientist to tell me how he would explain his research to his own family, to a parliamentary committee that wants to know why it should fund his institution; or to a colleague from a very different discipline.

Any interviewee will tend to respond in the language anticipated by the question: ask a knowing, informed, sophisticated question and you'll get a knowing, sophisticated answer. This won't be any use to the reader. My advice is always: do not be frightened to ask simple questions. You stand a better chance of getting simple answers. But don't expect simple answers; if science was that easy, we'd all be doing it. But there is a better reason for asking seemingly dumb questions: they often provoke really interesting, unexpected and enjoyable answers.

Do you use metaphors and analogies in a story?

All the time. I cannot expect the reader to understand the words that the scientist has just coined, or the phenomenon he or she has just revealed. I must rely on imagery. It helps if it is not stale, tired imagery, or misleading, or ridiculous imagery, of course!

What do you leave out of your stories?

The crude answer is: everything I possibly can - everything that might turn a straightforward, swiftly told 500-word tale into a series of irritating, frustrating digressions; everything that would take an extra unnecessary paragraph to explain; every detail that doesn't really matter. It is more useful to think about what the story must include: it must answer the questions who, what, why, how, when and where? These questions, of course, can be multiplied infinitely. But you have to answer them all at least once.

How do you stay objective and balanced as a writer? Should you?

Words like impartial, balanced, detached and objective are intellectual snares. Each of us stands at the centre of his or her own universe: we can never really be objective. But we can try to be fair, to remember that other people might not see things the way you, or your scientist source, might see them. Balance is important, but it should remain a matter for the writer's judgment. If you think a reported conclusion sounds a bit too simple - and this is not unknown in science - go and ask a researcher from another group or laboratory for a second opinion. But some good stories are just good stories. A dramatic and unexpected find in a hitherto-neglected Egyptian burial ground is just that: a good story because it is dramatic and unexpected, and involves somebody who has been dead for 3,000 years. What would be the point of searching for a scholar to say, halfway down the story: "Aw, shucks, mummies, they're all over the place, I mean who cares?"

What's the biggest potential pitfall when writing about science?

There are potential pitfalls in writing about anything. The biggest single hazard of all, however, is simply this: not being readable, and not being read.

. Tim Radford is a former science editor of the Guardian.

. Read some Tim Radford - we like his article, [The first man on the moon published in the Guardian in 2009](#).

. Find out more about how to enter the Wellcome Trust Science Writing Prize, in association with the Guardian and Observer, on the Wellcome Trust website - the closing date is 28 April 2013.

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