

**Are we active? Or should the passive be used?**

**By Rupert Sheldrake**

"The test tube was carefully smelled." I was astonished to read this sentence in my 11-year-old son's science notebook. At primary school his science reports had been lively and vivid. But when he moved to secondary school they became stilted and artificial. This was no accident. His teachers told him to write this way. As a parent and as a scientist, I was shocked.

Why are many schoolchildren still told to write up their science reports in the passive, as though experiments happen of their own accord?

When I was at school in the 1950s, my science teachers made me adopt the passive style, but I had no idea this was still going on in schools. Ever since I was a graduate student at Cambridge University, I have thought the active voice--"I did"--far more appropriate in scientific writing than the passive--"it was done". Experiments do not mysteriously unfold in front of impersonal observers. People do science. To portray science as a human activity is not to diminish it but to show it as it is.

The passive style is not only misleading, it is also alienating. A young medical student told me "it felt strange at first" when a lecturer asked her to write her reports in the active. "But then it felt liberating," she said. "Suddenly I could be myself again, after years pretending I wasn't there."

In 2000, I asked Frank Chennell, then co-ordinator of the Norfolk Teacher-Scientist Network (TSN), if he could find out how local teachers and scientists thought children should write science reports. Most teachers agreed that, in line with the national curriculum, younger children should adopt a direct style. But some believed that older pupils should use the passive. Most local scientists favoured the passive for research papers.

When Lord May, the President of the Royal Society, read the results of this survey in the TSN newsletter, he said he was "horrified" that the Norfolk scientists' preference for the passive. "I would put my own view so strongly as to say that, these days, the use of the passive voice in a research paper is the hallmark of second-rate work," he said. "In the long run, more authority is conferred by the direct approach than by the pedantic pretence that some impersonal force is performing the research."

I found that May's views are shared by many other eminent scientists. The Astronomer Royal, Sir Martin Rees, told me, "I completely concur with the preference for the active voice. At the moment, the relation between 'scientific literature' and 'literature' resembles that between 'military intelligence' and 'intelligence'. Anything that reduces the gap between the two – and gives young people less reason to doubt that scientists think and behave like real human beings – is to be welcomed." I also asked Bruce Alberts, President of the US National Academy of Sciences, for his opinion. He too strongly favours the active voice.

Many scientists abandoned the use of the passive voice years ago. In 1953, Watson and Crick wrote their famous paper in *Nature* in the active voice. In an analysis of effective scientific communication, Moore (2000) attributes part of the enormous impact of this paper to its clarity, brevity and first-person statements. The opening sentence was “We wish to suggest a structure for the salt of deoxyribose nucleic acid (DNA)”. By contrast, other key papers in molecular biology took far longer to be appreciated. They were long, hard to read, and written in a dull, agentless style. The scientists referred to themselves abstractly as “the writers” and used phrases like “It may be shown that...” and “It must be decided whether...”. and even conclusions seemed to be produced without human intervention.

Nowadays, most scientific journals accept papers in the active voice and some, including *Nature*, positively encourage it. I recently surveyed the current issues of 55 journals in the physical and biological sciences and found that only two still required contributions in the passive.

The passive style did not become fashionable in science until the end of the 19th century, when it was meant to make science seem more objective, impersonal and professional. Earlier scientists generally used the active voice, like Isaac Newton and Charles Darwin. The heyday of the passive in scientific literature was from about 1920 to 1970.

To find out what is happening in schools, I contacted the heads of science in 262 secondary schools: 212 state-maintained schools in Devon, Greater London (Camden, Ealing and neighbouring boroughs), Greater Manchester (Rochdale and Bury) and Nottinghamshire, and a random sample of 50 independent schools. I received 172 replies altogether, a 66% response rate.

After a brief introduction referring to the Norfolk survey and the diversity of opinion on this subject, I asked two questions:

1. “In your school are students usually encouraged to write their science reports in the active (‘I did...’) or the passive (‘This was done...’) voice?”
2. “If you encourage the use of the passive voice, do you do so because:
  - a) because you think it is better
  - b) because you think it is required by examining boards and/or universities
  - c) simply as a convention
  - d) any other reason?

The results showed an overall average of 45 per cent schools encouraging the use of the active voice, with 42 per cent promoting the passive. The remaining 13 per cent had no preference. There was a statistically significant difference between state-maintained and independent schools: 58 per cent of the independent schools were pro-passive, compared with 37 per cent of state schools. Geographically, the proportion of passive-promoting state schools ranged from 30 per cent in Devon to 41 per cent in London and Greater Manchester (Sheldrake, 2001).

Some teachers enthusiastically advocated the active voice, commenting that it is “more natural”, “gives pupils ownership of their work” and “makes science more personal and pupils more involved”. I agree.

Others said they used the active voice out of necessity. One head of science in an inner-city comprehensive commented, "We're lucky to get them to write anything at all. It would be difficult to persuade students to write in a style so very different from normal speech."

Most of the teachers promoting the passive voice said they were simply following convention. They believed that scientific authorities and journals still require it. But this is an outdated view.

Some teachers are imposing the passive because they think examination authorities require it. Is this really the case? To find out, I recently surveyed all the examination authorities for England, Wales and Northern Ireland. Here are their replies:

- AQA "has no fixed policy on this issue. We require the reports to be accurate, complete and use appropriate scientific terms. The meaning must be clear but the use of the active or passive voice is not an issue."
- EDEXEL "does not have a policy regarding the use of the passive voice in science reports. There are marks awarded in most science papers for clear communication of scientific ideas by candidates, but candidates could use either active or passive voice to do this."
- OCR "We do not give advice to Centres about which voice to use in science reports. Any will be accepted. We are principally concerned with the scientific understanding within the report."
- CCEA (Northern Ireland) "does not require any specific style of writing for reports of science investigations. Candidates would not lose or gain marks because they used active rather than passive voice".
- WJEC (Wales) "Our science course regulations make no stipulation regarding the use of the passive voice (or perhaps I should say, "No stipulation is made"). We take the view that if research institutions feel the need to train scientists in the use of the passive voice, then good luck to them. We'd rather assess the science."

The Qualifications and Curriculum Authority (QCA), the government's guardian of educational standards in England, told me, "The science National Curriculum defines what is to be taught about science, but not how it should be taught. Therefore we would not say that pupils should (or should not) be taught to write their science experiments in any specific writing style or voice."

The conclusion is unambiguous. In the light of these statements from the various Authorities, no teacher need feel that the use of the passive voice is necessary. There is no penalty for using the active voice in science reports.

Nevertheless, some people feel they need permission to give up the passive convention. In fact they already have this permission: from the examination authorities, from journals like *Nature* and *Science*, from many eminent scientists, and

from the President of the Royal Society.

Lord May's message could not be clearer: "Primary and secondary teachers should, without any reservation, be encouraging all their students to be writing in the active voice."

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### **References**

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