

***The Scientific Method in practice - two everyday examples***

The examples constitute the sort of story you might read in a newspaper. We will try to analyze these stories in terms of the scientific method. A general feature is the lack of a rigorous test situation in the original stories; the strength of the scientific method largely lies in devising tests that are capable of discriminating between different hypotheses.

**The dog that understands French**
Mr. Smith of Morningside has taught his dog Rover to understand French. Mr. Smith noticed that every evening, after dinner, when he went to the door with his coat on and said "Walkies", Rover immediately understood and came running. Mr. Smith was going to France for the summer, and, as an experiment in international understanding, decided to teach Rover French. He started to say "Allons" instead of "Walkies". To his delight, Rover very quickly understood and came running.
• The most obvious observation is that the dog apparently responds to the call of 'allons'.
•   Mr. Smith's hypothesis is that the dog understands the word as meaning 'walkies'.

1.  Unfortunately this is not the only explanation. Discuss another hypothesis.
2. Devise a test to see if your hypothesis is correct.

**Do plants give off water vapour?**
Experiment: Forty bean plants, growing in pots, were covered one afternoon by individual glass containers and left in the laboratory overnight. Next morning, the inside of the lid of each container was found to be covered in droplets of a fluid which proved to be water.
Conclusion: Plants generally give off water vapour.

3. What are at least three  things wrong with this conclusion?

**Is your supermarket's 'own brand' of washing powder as good as a nationally-advertised one?**

Eric Triton bemoaned the fact that his wife Ariel insisted on washing his clothes with their local supermarket's own brand of powder. He was sure the well-known brand he saw performing miracles on television most evenings would do better. He therefore set out to prove as much.
Mr. Triton decided to compare the effectiveness of the two products on what his wife called 'difficult' dirt: grass stains on white linen handkerchiefs. He bought 4kg of the well-known brand for $5.17 in their supermarket and noted that the same weight of the own-brand powder would have cost $4.47. He followed the instructions on the packets exactly, weighing out the same amount of powder and using their washing machine's program for white linens. Mr. Triton was aware of the need for an index of 'cleanliness' and therefore devised a subjective scale, ranging from 10 ('whiter than white') to 0 (the starting level of dirtiness).
Mr. Triton's belief was substantially confirmed. He scored the handkerchief cleaned by the national brand an impressive 8, whereas the own-brand powder only managed 7. Triumphantly, he reported the outcome to his wife. Mars Triton, however, was unimpressed. She pointed out to her husband that there were several flaws in his experiment and convinced him that the outcome was 'not proven'.

4.What were the flaws in this experiment?