

Laymen in scientists' clothing?

SIR—We were glad to read Rosner's¹ documented evidence on the pervasive and drastic increase in assertive sentence title (AST) usage in the biological sciences in the past few years. The author proposes that the motivation for such social-psychological strategies of advertisement may be pragmatic, that is, it "lies in the increasing pressure for science to be goal oriented". We suggest that this is true only in those few cases in which Rosner has noticed that the title's bold conclusion is stated in less certain terms elsewhere in the article. We believe that the majority of ASTs reflect a more fundamental problem, namely, the kind of layperson mentality that is attracted to the biological sciences.

Most biological fields are still largely taught in a descriptive fashion, according to the naive and fallacious 'baconian' philosophy which believes that 'the facts speak for themselves'. Individuals who adopt this view of science are often endowed with a high ability for rote memorization and an insatiable appetite for manipulation of 'black-box' recipes, but with poor imagination, little reflection and almost no scepticism. The resulting phenotype is a researcher with high uncertainty avoidance behaviour (with the corresponding dose of dogmatism), a poor sense of taste for fundamentals and little recognition of the inherent ambiguity of empirical evidence — the 'kit' generation, as described by Davies and Pugsley². Of necessity, such black-box-driven technicians produce much data but little thought or ideas; any digestion is relegated to the prepackaged restriction nucleases.

Although the layman may believe that science is the straightforward accumulation and ordering of facts, the scientist who seeks a mechanistic understanding of the complexity of nature should have a more profound appreciation of the uncertainty of observations and interpretations of data. As Kuhn put it, "there are always many alternative conceptual schemes capable of bringing order to any prescribed list of observations"³; unfortunately, there seem to be fewer and fewer people in the biological sciences able to propose new schemes, or even to question the accepted ones.

Nobel Laureate Luis Leloir, who described himself as "a bad practising physician because I was never sure of the diagnosis or of the treatment"⁴, displayed the proper scepticism about his own inferences, but would have a hard time succeeding in those fields which now frown upon uncertainty and imagination.

Imagination is the mother of scepticism, for it allows one to create alternative possibilities and thus introduces uncertainty about the reality of propositions (both one's own and others'). However,

imagination is selected against in most of biology. Sir Hans Krebs relates an occasion in which one biochemist denigrated a then-new proposal by Jacques Monod as "just the sort of fantasies to which Mediterranean people are prone, but in which the British do not indulge"⁵. This is the kind of mentality that is often opposed to hypothetical thinking, and which too readily transforms palatable propositions into tenured 'facts', without imagining that observations can be interpreted in many different but testable ways, and that the inferences drawn from data are never self-evident (especially in an age when many of the 'obvious' discoveries have already been made). It is this kind of mindset which we believe is pervading the biological sciences and churning out ASTs.

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1. Rosner, J. L. *Nature* **345**, 108 (1990).
2. Davies, J. & Pugsley, A. *Trends biochem. Sci.* **15**, 137 (1990).
3. Kuhn, T. S. *The Copernican Revolution* 74 (Harvard University Press, 1957).
4. Leloir, L. F. *Ann. Rev. Biochem.* **52**, 15 (1983).
5. Krebs, H. A. in *The Creative Process in Science and Medicine* (eds Krebs, H. A. & Shelley, J. H.) 105 (Excerpta Medica, Amsterdam, 1975).

Nobel women

SIR—Sachi Sri Kantha (*Nature* **344**, 582; 1990) omits from the list of women winners of the Nobel prize, Selma Langerlöf, who won the literature prize in 1909 (*Encyclopedia Britannica*, 14th Edition, **13**, 592); I like her *Gösta Berglings* and children's stories.

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Mass poisoning

SIR—Slack *et al.* (*Nature* **345**, 583; 1990), writing about mass-poisoning between May 1981 and March 1983 in the Madrid area of Spain, apparently involving aniline-degraded, reprocessed rapeseed oil as the causative agent, state that the events, reported to be lethal to 340 of more than 20,000 affected individuals, "probably represent the worst recorded outbreak of food-borne chemical intoxication ever documented." However, an event in the winter of 1971–72 in Iraq, involving a methylmercury fungicide present on wheat used for bread baking, was reported lethal to some 459 individuals^{1,2}. Some 6,500 people were reported to have

been hospitalized among a much larger number intoxicated.

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1. Bakir, F. *et al.* *Science* **181**, 230–41 (1973).
2. Marsh, D. O. in *The Toxicity of Methyl Mercury* (C. U. Eccles and Z. Annau, editors), Baltimore and London, Johns Hopkins Series in Environmental Toxicology, pp.45–53, 1987.

Beginning of AIDS

SIR—In a leading article (*Nature* **346**, 92; 1990), it is stated that the seaman (*sic*) who died in a Manchester hospital in 1959 of what is now believed to be AIDS had infected his wife who in turn had infected her youngest daughter. This is not true. For the record, the 25-year-old male patient who died, and who had been to sea in 1955–57, was unmarried and had no (known) offspring. There is no reason to suppose he infected anyone.

Details of his case were reported by Williams, Stretton and Leonard in 1960 (*Lancet* **ii**, 951–55).

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SIR—Your leading article states, correctly I believe, that the rate at which AIDS spreads is determined principally "by the rate at which infected people acquire and infect new sexual partners in the interval between infection and death". But your conclusion "that the spread can be controlled only by individual precautions to ensure that sexual intercourse does not lead to infection by HIV and that other high risk behaviour is avoided" cannot be left unchallenged.

Reducing the number of sexual partners, preferably to one, reduces the rate of spread more substantially. "Till death do us part" has much to recommend it.

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Simple words

SIR—The News item on "Genome research" (*Nature* **345**, 654; 1990) mentions *Arabidopsis thaliana* once and *Arabidopsis* three times. Is it just too much to ask that the general reader (who in the United States is being taxed for \$25 million to pay for this project) be informed that this plant happens to be a member of the Brassica or mustard family, and therefore somewhere in between the human and yeast families which are actually mentioned by names immediately recognizable by all?

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