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HUMOR IN SCIENCE

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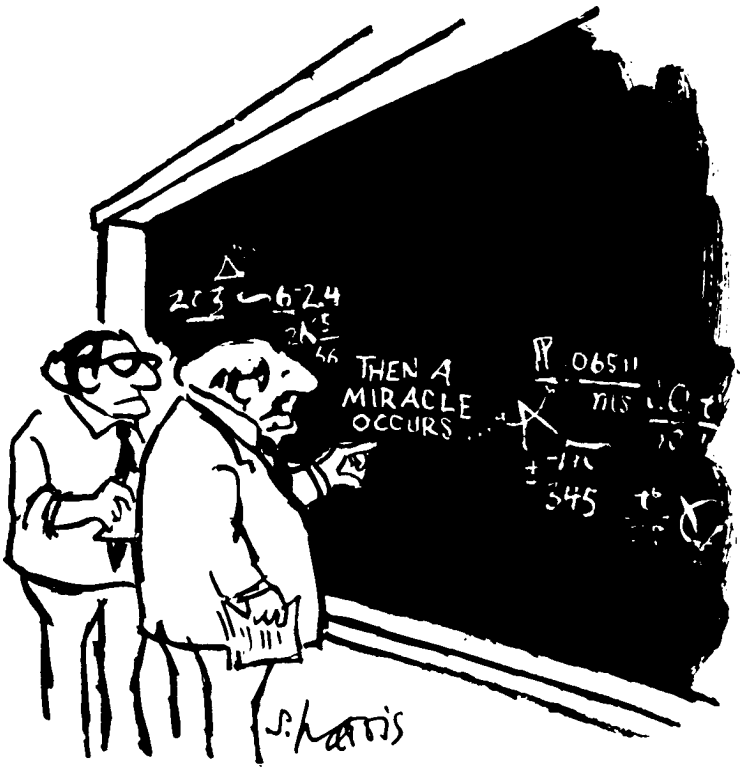


" *I THINK* YOU SHOULD BE MORE EXPLICIT HERE IN STEP TWO

The year 1970 was a benchmark in the history of humor in science. In that year, the frequency of publication of *American Scientist* was increased from quarterly to bimonthly, and, more important, the size of the journal was increased from *6 X* 9 in. to $8^1/2$ X 11 in. Because *American Scientist* starts each article at the top of a page, the increased size resulted in a concomitant increase in the amount of empty space at the end of each article. Although there is no evidence of a causal relationship, by the second issue of 1970, small cartoons began to fill this empty space. They were signed "S. Harris." The first of these cartoons showed two men walking across a crowded street surrounded by pollution from factories, cars, trucks, and buses. The caption read, "The only other solution is that we may evolve into a species immune to all this junk."

Despite Robert Benchley's warning that "defining and analyzing humor is a pastime of humorless people," it is tempting to try to understand why so many members of Sigma Xi begin their perusal of *American Scientist* by flipping through the pages to look for new answers to the question "What's so funny about science?" (1). Our excuse can be found

among the following quotations:

> "Men show their characters in nothing more clearly than in what they think laughable." -Goethe

> "A person reveals his character by nothing so clearly as the jokes he resents."-G. C. Lichtenberg

Laughter is easily defined: To paraphrase Koestler (2), Spontaneous laughter is a motor reflex produced by the involuntary coordinated contraction of 15 facial muscles in a stereotyped pattern associated with certain irrepressible noises and accompanied by altered breathing.

Unfortunately, it is not as easy to determine what makes us laugh. It has often been suggested that contradiction is one element of humor.

> "Wherever there is life, there is contradiction, and wherever there is contradiction, the comical is present." -Soren Kierkegaard

> "Man is the only animal that laughs and weeps, for he is the only animal that is struck with the difference between what things are and what they ought to be."
> -William Hazlitt

> "Humor is falling downstairs, if you do it while in the act of warning your wife not to." -Kenneth Bird, editor of *Punch*

The contradiction can result from conflict between the artwork and the caption of a cartoon. For example, Harris drew a cartoon in which two cowboys watch a train go by, with the caption: "I love hearing that lonesome wail of the train whistle as the magnitude of the frequency of the wave changes due to the Doppler effect."

The contradiction can be wholly contained within the caption, as in Gahan Wilson's drawing of an operating room with the caption: "Sometimes I miss how it was in the old days ... the hidden laboratory in the ancient castle ... the graveyard raids ... the angry crowds of peasants bearing torches.....

Often, the cartoon itself provides the contradiction, and no caption is needed, as in Harris's caricature of Einstein standing before a blackboard upon which the following equations have been written and crossed off: $E = ma^2$ and $E = mb^2$.

Freud argued that the element of contradiction in humor arises from the linking of two contrasting ideas (3). As an example, he quotes Heine:

> ". . . the inhabitants of Gottingen are divided into students, professors, philistines, and donkeys ... and these four classes are anything but sharply divided."

The argument that humor results from conflict between ideas may best be illustrated by a quotation attributed to Freud's son, Martin:

> " I didn't know the full facts of life until I was 17. My father never talked about his work."

Koestler has argued that not only must there be conflict, it must occur suddenly (2):

> The joke may be described as the sudden clash of two swift-flowing, independent association streams in the listener's mind. The clash must have the impact of surprise, and this can only be achieved if every contact between the two streams is avoided until they meet at the appointed junction.

Although we may laugh at obvious contradiction, conflict is not the sole source of laughter. Koestler has argued that laughter as a reflex may be unique in that it has no apparent biological purpose other than to provide relief from tension:

"The `emotional charge' which the story carries finds its channel punctured and gushes out aimlessly from the narrative like water from a hole in a pipe; the tension is suddenly released and explodes in laughter" (2).

This link between tension and laughter provides us with an interesting hypothesis: We often laugh at things we fear the most.

> "And if I laugh at any mortal thing, 'Tis that I may not weep." -Lord Byron, in *Don Juan*

> "I quickly laugh at everything for fear of having to cry." -Pierre de Beaumarchais, in *The Barber of Seville*

> "Some things are of that nature as to make One's fancy chuckle, while his heart doth ache." -John Bunyan, in *Pilgrim's Progress*

In science the most common examples of tension as a source of humor result from conflict between reality and the stereotyped image of either science or scientists. An element of this conflict can be found in the classic quotation:

> There is something fascinating about science. One gets such wholesale returns of conjecture out of such a trifling investment of fact. -Mark Twain, in *Life on the Mississippi*

The cartoons in this article give additional examples of this conflict, but the glossary of scientific writing (Table 1) is the best evidence for the hypothesis that we laugh at things we fear the most (4).

This laughter can be traced back to a conflict between our idealized image of how scientists should behave and the way we perceive they do behave; this laughter is therefore an interesting starting point for discussions of the philosophy of science.

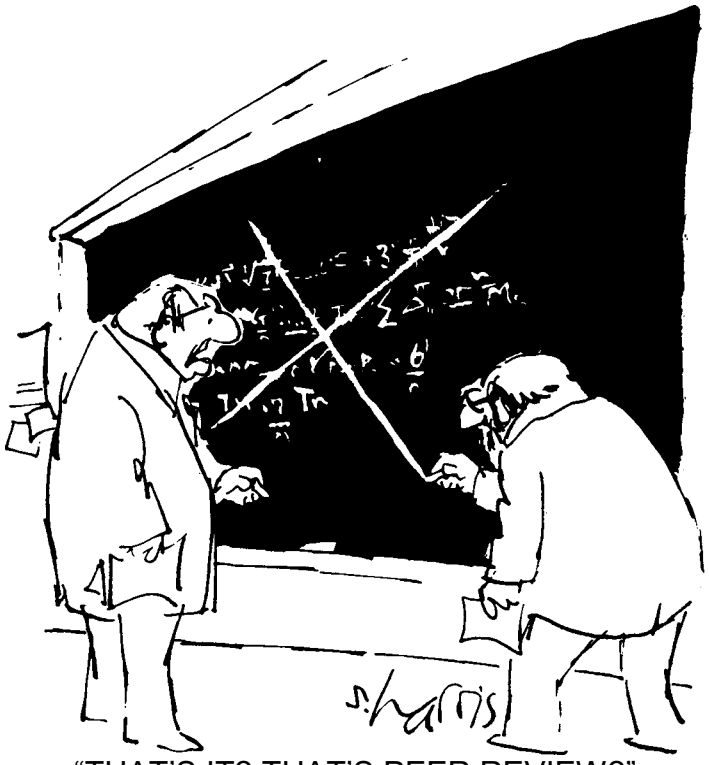
REFERENCES

(1) *Two* collections of Sidney Harris cartoons, "What's *So* Funny About Science?" and "All Ends *Up,"* have been published by *American Scientist.*

(2) Koestler, Arthur, "Insight and Outlook"; Macmillan Publishing: New York, N.Y., 1949; "The Act of Creation"; Hutchinson: London, 1964.

(3) Freud, Sigmund, "Der Witz and seine Beziehung zum Unbewussten"; Deuticke: Leipzig, Vienna, 1905. English translation: "Wit and Its Relation to the Unconscious"; Moffat Yard: New York, N.Y., 1917.

(4) This table was taken in part from a glossary published in "A Random Walk in Science"; The Institute of Physics; Crane, Russak & Company, Inc.: New York, N.Y., 1973. The glossary was first published by C. D. Graham, Jr., in *Metal Progress 1957, 71, 75.*



"THAT'S IT? THAT'S PEER REVIEW?"

Table 1. A dictionary of scientific writing

Phrase	*Translation*
Typical results are shown.	The best results ever obtained are shown.
The agreement with predicted curve	The agreement with predicted curve
is excellent .	is fair.
is good.	is poor.
is satisfactory.	is doubtful.
is fair.	is imaginary.
is as good as could be expected.	is nonexistent.
Correct within an order of magnitude.	Wrong
... accidently stained during mounting.	... dropped on the floor.
... handled with extreme care.	... not dropped on the floor.
High purity, very high purity, or spectroscopically pure	Composition unknown except for the exaggerated claims of the supplier
Preliminary experiments have shown	We did it once but couldn't repeat it.
Presumably at longer times.	I didn't take the time to find out.
It is hoped that this work will stimulate further efforts in the field.	This paper isn't very good, but neither are any of the others in this miserable field.
Three of the samples were chosen for detailed study.	The results of the others didn't make sense and were ignored.
The W-Pb system was chosen as being especially suitable to show the predicted behavior.	The fellow in the next lab already had some made up.
It has long been known ..	I haven't bothered to look up the original reference
A survey of the earlier literature ...	I even read last year's journals.
It is suggested (or it is believed) that ...	I think ...
It is generally believed that ...	A couple of other guys think so too.
... of great theoretical and practical importance.	... interesting to me.
Elegant ...	A reference to work that will be attacked.
Thanks are due to Joe Glotz for assistance with the experiments and to John Doe for valuable discussions.	Glotz did the work and Doe explained what it meant.