

Science, Pseudoscience, and The Three Stages of Truth

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1 Introduction

“There is no new thing under the sun,” said the writer of Ecclesiastes [4]. But every creative person secretly wishes that weren’t so, at least for the things that they personally have discovered.

Creative people also have to deal with criticism of their ideas. Truly revolutionary ideas often arise in direct contravention of accepted wisdom, and hence come under rigorous scrutiny. The new idea is then judged based on the responses of its promoters.

However, *any* idea — good or bad — that contravenes accepted wisdom will be attacked. It is a logical fallacy to assume that simply because an idea is severely attacked, it must therefore have merit. Any geographer attempting to resurrect belief in the flat-earth hypothesis, for example, would be harshly criticized by their colleagues, but this criticism cannot be adduced as evidence that flat-earthism is on the rise. As historian of science Michael Shermer has recently pointed out [31], “They laughed at Copernicus. They laughed at the Wright Brothers. Yes, well, they also laughed at the Marx Brothers. Being laughed at does not mean you are right.”¹

Many writers have advanced the notion that truth (or new ideas, or scientific theories) goes through a number of stages, starting with opposition and ending with acceptance. For George Bernard Shaw in his 1917 play *Annajanska: The Bolshevik Empress* [30, p. 245], there were two:

STRAMMFEST. You are uttering blasphemy.

THE GRAND DUCHESS. All great truths begin as blasphemies.

¹This quotation must have an interesting history itself. Here is another variant: “They laughed at Columbus, they laughed at Fulton, they laughed at the Wright Brothers. But they also laughed at Bozo the Clown.” — Carl Sagan [27, p. 64].

Shaw was echoing, perhaps unknowingly, the sentiments of biologist Thomas Henry Huxley [17], who wrote in 1880, “It is the customary fate of new truths to begin as heresies and to end as superstitions.” Others, as we will see, have suggested that there are three or even four stages.

The “stages of truth” quotes I discuss below are almost always adduced in favor of some strongly-held belief of the writer or speaker. However, the particular belief supported is as likely to be pseudoscientific as scientific.

2 The Stages of Truth: First Citations

The oldest quote which I have been able to find that suggests truth goes through several stages is due to the German philosopher Arthur Schopenhauer (1788–1860), who wrote in 1818 [29]

Der Wahrheit ist allerzeit nur ein kurzes Siegesfest beschieden, zwischen den beiden langen Zeiträumen, wo sie als Paradox verdammt und als Trivial gering geschätzt wird.

which is translated as follows:

To truth only a brief celebration of victory is allowed between the two long periods during which it is condemned as paradoxical, or disparaged as trivial. [29, Preface to the First Edition, p. xxv]

To Schopenhauer is often attributed another quote about the stages of truth; see below.

The next oldest citation of the “stages of truth” quote is located in an 1866 paper of the German embryologist Karl Ernst von Baer (1792–1876). Von Baer wrote [34, p. 92]

Deswegen sagt Agassiz, dass wenn eine neue Lehre vorgebracht würde, sie drei Stadien durchzumachen habe; zuerst sage man, sie sei nicht wahr, dann, sie sei gegen die Religion, und im dritten Stadium, sie sei längst bekannt gewesen.

which I translate as follows:

Therefore Agassiz says, when a new doctrine is proposed, it goes through three stages. First, people say it is not true; then, that it is against religion; and in the third stage, that it was long known.

Agassiz, of course, was Jean Louis Rodolphe Agassiz, the Swiss-American naturalist. However, I have not been able to find this passage in any of Agassiz’s writings. Von Baer’s use of the quotation was popularized by Stephen Jay Gould and Niles Eldredge in support of their theory of punctuated equilibrium [13].

A version of this quotation, also attributed to Agassiz, appears in Alan Mackay’s dictionary of scientific quotations [22],

Every great scientific truth goes through three stages. First, people say it conflicts with the Bible. Next they say it had been discovered before. Lastly they say they always believed it.

The second citation, taken from an 1896 book of John A. Zahm, also uses the quotation in reference to the theory of evolution.

Dr. Whewell, the erudite author of the “History of the Inductive Sciences,” was wont to declare that every great discovery in science had to pass through three stages. “First people said, ‘It is absurd!’ then they said, ‘It is contrary to the Bible!’ and finally they said, ‘We always knew it was so!’ ” The truth of this observation of the famous Master of Trinity is well exemplified in the case of Evolution. [36]

Dr. Whewell, of course, was William Whewell (1794–1866), the British philosopher of science and prolific author. Although Zahm attributes the quotation to Whewell, I have not been able to find it anywhere in Whewell’s writings.

In 1907, the renowned philosopher and psychologist William James (1842–1910) put forward a similar observation in support of his theory of pragmatism:

I fully expect to see the pragmatist view of truth run through the classic stages of a theory’s career. First, you know, a new theory is attacked as absurd; then it is admitted to be true, but obvious and insignificant; finally it is seen to be so important that its adversaries claim that they themselves discovered it. [19, p. 198]

James’ use of the word “classic” suggests strongly to me that the three stages predate his usage by some time. But what was his source? I do not know.

In 1911, the American philosopher and dispenser of folk wisdom Elbert Hubbard proposed that truth had four stages. His four stages seemed to merge the ideas of previous writers:

Truth, in its struggle for recognition, passes through four distinct stages. First, we say it is damnable, dangerous, disorderly, and will surely disrupt society. Second, we declare it is heretical, infidelic and contrary to the Bible. Third, we say it is a matter of no importance either one way or the other. Fourth, we aver that we have always upheld and believed it. [16]

3 The Stages of Truth: Later Citations

In 1963, the renowned geneticist J. B. S. Haldane (1892–1964) observed, in a review of a book of tables dealing with mortality of English men and women:

One does not have to be a profound Marxist to realise that a system of life tables which consistently overestimates future death rates will find favour with companies whose main business is “life insurance”, i.e. payment of fixed sums at death, rather than payment of life annuities to the aged. This will create a resistance. I suppose the process of acceptance will pass through the usual four stages:

1. This is worthless nonsense,
2. This is an interesting, but perverse, point of view,
3. This is true, but quite unimportant,
4. I always said so. [14]

In 1972, the science-fiction writer Arthur C. Clarke introduced the three stages with reference to space exploration:

Like all revolutionary new ideas, the subject has had to pass through three stages, which may be summed up by these reactions: (1) “It’s crazy — don’t waste my time.” (2) “It’s possible, but it’s not worth doing.” (3) “I always said it was a good idea.” [6, p. 70]

Similarly, Clarke also said

The speed with which those who once declaimed, “It’s impossible” can switch to, “I said it could be done all the time” is really astounding. [7, p. 4], [8, p. 18]

In a 1984 article discussing her theory that the pygmy chimpanzee is a good model for the common ancestor of man and African apes, UCSC anthropologist Adrienne Zihlman remarked

It has been said that the reception of any successful new scientific hypothesis goes through three predictable phases before being accepted.

First, it is criticised for being untrue.

Secondly, after supporting evidence accumulates, it is stated that it may be true, but it is not particularly relevant.

Thirdly, after it has clearly influenced the field, it is admitted to be true and relevant, but the same critics assert that the idea was not original. [37]

(Zihlman’s quote is also cited in Falk [10, p. 82].)

Astronomy professor John D. Barrow used a version of the quotation, without attribution, as an epigram to introduce his book, *The Artful Universe*:

Arguments against new ideas generally pass through three distinct stages, from ‘It’s not true’, to ‘Well, it may be true, but it’s not important’, to ‘It’s true and it’s important, but it’s not new – we knew it all along.’ [2, p. 1]

In a 1996 interview published in the *New York Times* [5], Dean Radin introduced the stages of truth to support his belief in the paranormal:

“There are four stages of adopting new ideas,” Radin mused. “The first is, ‘It’s impossible.’ The second is, ‘Maybe it’s possible, but it’s weak and uninteresting.’ The third is, ‘It *is* true and I told you so.’ And the fourth is, ‘I thought of it first.’ I believe an informed analysis over the years will show that parapsychology was stuck in stage 1 for decades. However, because of the weight of the data, around 1985 we began to move into stage 2. Now we are firmly in stage 2. I think around the year 2000 we will begin to move into stage 3, and maybe a few years later be firmly there. Stage 4 is inevitable.”

4 Apparently Spurious Attributions

I have also found what appear to be three spurious attributions of the “stages of truth” quote. The most prevalent is the following version:

All truth passes through three stages. First, it is ridiculed. Second, it is violently opposed. Third, it is accepted as self-evident.

This quotation and its minor variants, which may be found on many Internet web sites, Usenet news postings, and letters to the editor of newspapers, is nearly always attributed to Arthur Schopenhauer. For example, see [26, p. 93]. However, I have not found this particular quotation in Schopenhauer’s writings; neither have Schopenhauer experts that I have consulted been able to produce a citation.

Why has this quotation come to be attributed to Schopenhauer? It seems likely this is due in part to its citation in a popular book of quotations, first published in 1981, that has since gone through several different titles and printings [11]. In the United States, it is called *The Harper Book of Quotations*, and the quotation appears, for example, on page 451 of the 3rd edition:

Every truth passes through three stages before it is recognized. In the first it is ridiculed, in the second it is opposed, in the third it is regarded as self-evident.

However, there is some reason to doubt this attribution. The preface to Fitzhenry’s book states

These quotations represent a distillation from 50 years of reading books and manuscripts and magazines and book reviews and advertisements and epitaphs and signs in store windows. They come from other quotation books and from obituary pages, and from listening to friends and strangers and associates.

This, and the lack of references in Fitzhenry's book, cannot provide much confidence in the accuracy of the attribution to Schopenhauer.

For some reason, this particular version of the "stages of truth" is particularly popular with pseudoscientists of all stripes. For example, it can be found in a recent issue of the *Journal of Historical Review*, a crackpot anti-Semitic pseudohistorical magazine devoted to the belief that the Holocaust is a hoax [20].

This dubious Schopenhauer citation has been used to support non-mainstream or controversial views on such diverse topics as the feelings of fish [3], megadose vitamin C therapy [32], drug legalization [25], network marketing [12], acupuncture [33], supranational government [24], repressed memory [28], libertarianism [35], anti-vaccination [9], and human cloning [23]. It has even been cited in a court case in Florida [18]. A common feature of all these citations is the lack of any reference to where in Schopenhauer's work the quotation can be found.

Other than Fitzhenry, the earliest published citation I have found is in an interview with Edward Packard, who invented the popular "Choose Your Own Adventure" series of books for children [15]. In a letter dated January 19, 2000, Packard very kindly informs me that he got the quotation from a secondary source which he does not recall.

A third dubious citation, in reference to Sovietology [1], is to Gustav Le Bon:

The French scientist and philosopher Gustave Le Bon, forgotten today but famous a century ago, said that there are three stages in the establishment of any new truth. When it is mooted for the first time, its propounder is labeled a wishful thinker or a liar. At the second stage, the truth-seeker is told that the truth attempts to propound is a banality known to everyone. The third stage occurs when the same people who first violently rejected the new truth and then treated it as a banality, accuse the truth-seeker of having been opposed to it in the first place.

Finally, the following query appeared in *Harvard Magazine*:

Leslie Klevay wonders if it was Montaigne who observed: "Whenever a new discovery is reported to the scientific world, they say first, 'It is probably not true.' Thereafter, when the truth of the proposition has been demonstrated beyond question, they say, 'Yes, it may be true, but it is not important.' Finally, when sufficient time has elapsed to fully evidence its importance, they say, 'Yes, surely it is important, but it is no longer new.' " [21]

But no one answered the query.

5 Conclusions

Unfortunately, I have not been able to establish with certainty who first conceived of three or more stages of truth, starting with disbelief and opposition, and ending with acceptance and support. However, this idea has been used to support both science (evolution, common origin of man and ape) and pseudoscience (parapsychology, Holocaust denial, etc.). Use it at your own risk!

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David E. Cartwright of the University of Wisconsin, Whitewater, helped me locate the source of the Schopenhauer quotation cited in Section 2, after Jaap Engelsman located it the quotation (without specific attribution) in a 1935 Dutch book of quotations. Thanks to Tim Madigan for helping me get in touch with Prof. Cartwright, and to Nigel Rees for publishing my query in his "Quote, Unquote" newsletter.

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