

# Tell-Tale Signs of Pseudoskepticism (Bogus Skepticism)

Marcoen J.T.F. Cabbolet\*

*Department of Philosophy, Vrije Universiteit Brussel  
Pleinlaan 2, 1050 Brussels (Belgium)*

**Abstract** — Pseudoskepticism, which typically is portraying someone’s work as despicable with scientifically unsound polemics, is a modern day threat to the traditional standard of discussion in science and popular science. This paper gives seven tell-tale signs by which pseudoskepticism can be recognized.

In Ancient Greece, skepticism was an elaborate system of teachings, which, among other things, gave an interesting guideline to a happy life. Oversimplifying things, this boiled down to the following: most people are unhappy because the things they experience do not meet the expectations they had on the basis of some belief, so we can avoid disappointment by not believing in anything—and therein lies happiness. This aspect of ‘not believing’ is still present in modern-days scientific skepticism. The idea is that when researcher A publishes a claim, a skeptical researcher B replies that he doesn’t believe in it for this and this reason: by exposing a weak spot in A’s proof of the claim, A now has a problem. It may be that A can solve the problem, which makes the proof stronger, but it may also be that A has to retract the claim: this is the usual course of affairs in science, this is how science progresses—skepticism thus plays a crucial role in it.

Pseudoskepticism, on the other hand, is something completely different: the term has been introduced by Truzzi for making negative claims about someone else’s work without satisfying the burden of proof that these claims require (1987). So where the skeptic merely states that he doesn’t believe in someone else’s claims, the pseudoskeptic comes himself up with claims and these are always (very) negative. But pseudoskepticism is not just making negative claims: the keywords are ‘dishonesty’ and ‘foul play’.<sup>1</sup> And it is not aimed at finding out the truth, but at discrediting someone’s research. A feeling for the term is best acquired by an illustrative example. For that matter, we can have a look at peer review, which plays a central role in modern science: it serves as the filter both for the publication of research papers in scientific journals and for the allocation of research grants. Peer review is supposed to be an objective assessment of the scientific quality, but unfortunately, that is not always the case: with the advent of peer review a new form of charlatanry has namely silently crept into science, and that is passing off fabricated negative conclusions about someone else’s work as the genuine findings of a serious evaluation of the scientific quality of the work—e.g. stating that the mathematical formulas in the work are syntactically wrong, while this is not at all the case. That is an example of pseudoskepticism at its worst: a modern day violation of the commandment “Thou shalt not bear false witness against thy neighbor”. But unfortunately, it happens that this way scientific findings that are not in line with the prevailing paradigm are kept out of important scientific journals.

Pseudoskepticism in peer review reports rarely surfaces in the public domain because these reports are confidential, but it is not something that rarely occurs, nor is it limited to any particular branch of science: its occurrence in physics, mathematics, philosophy is so widespread that probably every working researcher has encountered it at least once in his or her career. Indications that it already in the 1950’s occurred on a large scale can be found in the literature, e.g. (Schweber, 1989). In addition, pseudoskepticism isn’t confined to confidential peer review reports: it also occurs in opinion pieces in newspapers and university weeklies as well as in articles in popular science journals—in particular when from the hand of professional scientists with a university affiliation, or even a Nobel laureate,

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\*E-mail: Marcoen.Cabbolet@vub.ac.be

it can severely discredit someone's work because readers generally trust authorities and will therefore believe the allegations to be true.

Now one can be complacent with the situation that modern science finds itself in, but pseudoskepticism poses a major structural problem and the issue has to be addressed. In (Cabbolet, 2014) preventive measures have been suggested, including the proposal to start treating pseudoskepticism as scientific misconduct. In addition to that, the purpose of this paper is to give the tell-tale signs of pseudoskepticism. This might help editors to recognize it in peer review reports or articles submitted for publication, thus giving a reason for rejection (one can easily say to a referee: look, that review report of yours doesn't satisfy our standards, write a decent one). For the members of the general public this might help to distinguish pseudoskepticism from genuine scientific skepticism.

Below seven tell-tale signs of pseudoskepticism are given. The crux is that in science, it is not the case that "anything goes" when commenting on someone else's work: these tell-tale signs indicate that an author uses tactics that are inadmissible in science. That doesn't mean that each of them is always present in a pseudoskeptical attack, but any single one of these tell-tale signs is a serious indication of dishonesty and foul play—in other words, that the piece is not written with truth finding in mind, but merely to discredit someone's work!

### **#1: ad hominem attacks.**

Typically, a pseudoskeptic is so eager to portray the author of the targeted work as an amateur that he resorts to ad hominem attacks: this is a rhetorical technique that is absolutely inadmissible in a scientific discourse, and therefore this is the number one tell-tale sign that a piece is nothing but a pseudoskeptical attack.<sup>2</sup>

It is thus a real giveaway when the author of the targeted work is called "incompetent", an "amateur", a "charlatan", a "crackpot", "ignorant", "only out to brag about it in a pub", etc. So, the occurrence of any of these words alone is already an indication that the entire piece is of doubtful merit.

Of course it can happen that someone, say, researcher A, has misunderstood a result, and one can then write in a reply that obviously the result was misunderstood by A to mean X, while in reality it means Y. But that is a very specific reply, well within the framework of a scientific discussion, that addresses the argument of A: pseudoskepticism, on the other hand, typically concerns lashing out at the author instead of addressing the argument.

### **#2: vitriolic tone.**

Typically, a pseudoskeptical attack portrays the targeted work as despicable: usually this is done by riddling the text with belittling phrases and strong pejoratives. Consequently, the piece has a vitriolic or even libelous tone that is immediately evident even from a quick superficial reading: that tone is the tell-tale sign of pseudoskepticism.

The archetypical belittling phrase is "every first-year student could have come up with the same thing". Illustrative examples of strong pejoratives are "nonsense", "perverse", "a disgrace", "worthless", "meaningless", "inferior", "devoid of content", "complete rubbish", and the like, which are then typically said about the targeted work as a whole.

Of course, there are also pejoratives that are used in a scientific discourse, such as 'logically inconsistent', 'mathematically at fault', 'conceptually incoherent', but these have a precise meaning and must be proven when used. The belittling phrases and pejoratives used by pseudoskeptics, on the other hand, have no scientific meaning whatsoever and are not admissible in a scientific paper: they merely express an author's dislike of the targeted work. However, as Feynman put it: when we have a new theory then it is not relevant whether we like it or not, the only relevant question is whether it is consistent with experimental data (Feynman, 2011, 16-3).

### **#3: non-specific comments.**

In science, when commenting on someone else's work, one very specifically addresses the details of the work in question. A pseudoskeptic, however, typically doesn't go through the hard work of really understanding the targeted work. This feature manifests itself in superficiality of the comments. It is

therefore a tell-tale sign of pseudoskepticism when a piece concerns nothing but negative allegations at the metalevel, that is, negative allegations about the targeted work as a whole, without going into the details of the targeted work.

More often than not, these allegations also apply to established scientific theories, which immediately shows that the negative statements are not an argument against the targeted work. A typical example is to state that the targeted work is nothing but a bunch of formulas, as if that is somehow a bad thing: the same can be said of virtually all established theories, which shows that it isn't a real argument.

#### **#4: absence of proof.**

Another typical feature of pseudoskeptics is that they have no shame: one of the most shameless ways to attack someone else's work is to put forward outright fabrications, which, if true, would imply gross incompetence of the author of the targeted work. But fabrications cannot be proven by their very nature. Consequently, absence of proof of the (usually grave) allegations in a piece is a sure tell-tale sign of pseudoskepticism at its worst, and a strong indication that the piece may contain fabricated allegations.

An illustrative example is an absence of proof of the one statement that is probably the most abused phrase of all in modern science: "this work is of insufficient scientific quality". In a pseudoskeptical attack, this is typically said of the targeted work without specifying which criteria of scientific quality are not met, and why or how they are not met—there are peer review reports that consist of just this one phrase.

#### **#5: false metaphors.**

In science, comments on someone else's work remain confined to that work: one doesn't indulge oneself in metaphors. In a pseudoskeptical attack, however, often the targeted work is compared to a theory that is known to be false or that is obviously ridiculous, *as if* it is the same thing. Illustrative examples are phrases like "this is the same as saying that the earth is flat", or "this is the same as saying that the phenomenon is caused by angels": these are tell-tale signs of a pseudoskeptical attack.

There are more sophisticated cases, but the point is that this use of metaphors is a rhetorical technique that is absolutely inadmissible in a scientific discourse. The error is the same in all these cases: contrary to what is stated by the pseudoskeptic, it is **not at all** the same thing.

#### **#6: contradiction with history and basic principles of science.**

When attacking a new theory that has not yet been experimentally tested, a pseudoskeptical piece often blatantly contradicts well-known facts from the history of science, as well as basic scientific principles. The three archetypical examples that turn up time and time again are (i) stating that scientific discoveries are nowadays only made by large international collaborations, to insinuate that the work of a single author cannot be a scientific discovery; (ii) stating that scientific theories are always developed from experimental facts, to insinuate that anything else cannot ever be a scientific theory; and (iii) using an accepted model (other than Einstein's Special Relativity) *beyond its established area of application* as a criterion of truth, to insinuate that a work that contradicts that model cannot be a scientific theory.<sup>3</sup>

The arguments (i) and (ii) completely ignore that virtually all of modern science is built on the work of individuals, who more often than not theoretically predicted phenomena before these were experimentally observed (Einstein: time dilation and curvature of space; Dirac: antimatter), and who often did their groundbreaking work in relative isolation (Einstein, Bohr). The argument (iii) ignores the fact that historical breakthroughs in science often went squarely against the accepted model of the time, and contradicts a basic principle of science, put into words by Feynman as follows: "experiment is **the sole judge** of scientific truth" (Feynman, 2011, 1-1).

#### **#7: straight to the mass media.**

It is a bad sign when a scientific claim is taken straight to the mass media (e.g. the cold nuclear fusion case), but it is an equally bad sign when an attack on someone else's work is taken straight to

the mass media. When writing a scientific critical comment on a work, the right method is to first contact its author and discuss the criticism with him/her. When submitting the critical comment for publication in a scientific journal, one is often required to present evidence of such a prior contact with the author of the targeted work.

But not so the pseudoskeptic. Typically, he doesn't contact the author of the targeted work, nor does he attempt to publish his "findings" in a peer reviewed journal: he takes his allegations straight to the mass media. So an editor of a newspaper or university weekly who sees that an attack on someone's work is submitted for publication, can—especially when the piece contains grave accusations—simply ask for evidence of contact with the author of the targeted work: any failure to provide such evidence is then a tell-tale sign that the piece is nothing but a pseudoskeptical attack, and an indication that it may contain fabrications.

In addition, but that is not an immediate tell-tale sign, pseudoskeptics *never* publish a retraction. Usually in science, if researcher A publishes a claim and researcher B refutes the proof, then A publishes a retraction of the claim. But not so the pseudoskeptic. Even when confronted with conclusive proof that his allegations are false, he will refuse to publish a retraction or to publicly acknowledge that the claims were fabricated: the typical pseudoskeptic will stick to his fabrications as if not a word has been said—as in the Biblical proverbs, like a dog back to his own vomit, or like a washed sow back to the mud pool (2 Pet. 2:22). This surfaces only after some discussion, yet it indicates that the original piece was a pseudoskeptical attack.

## Notes

<sup>1</sup>Pseudoskepticism has the same connotation as pseudoscience: both entail a drastic departure from the framework of a scientific discourse.

<sup>2</sup>Here ad hominem attacks are taken to include name calling.

<sup>3</sup>Of course a new work is unscientific if it makes predictions that contradict the outcome of well-established experiments. E.g. we *know* that the gravitational force on an object above the earth's surface is larger than that on an identical object at identical height above the moon's surface: if a new work predicts otherwise, then it is false—no question about it. But there is a huge difference between contradicting things that are known to be the case on account of well-established experimental results, and contradicting things that are believed to be the case on account of extrapolating the validity of a theoretical model beyond its established area of application: the latter is even a *necessity* for a scientific revolution. The pseudoskeptical attacks meant here confuse these two scenarios in a grotesque way: these attacks concerns variations of "dear Dr. Schroedinger, it is well known that electrons orbit nuclei as particles on continuous trajectories. Therefore, your wave mechanics is complete rubbish."

## References

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