

## Working Paper 100



## The Meaning of Hoaxes

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One of Barry Barnes's most well known interventions in the debate about the meaning of knowledge is to make a distinction between social kinds and natural kinds. Natural kinds, like 'mountain', refer to something outside society, whereas social kinds, like 'money', get all their meaning from the way they are thought about and talked about. I cannot claim to be making any significant contribution to this distinction here but it is my excuse to think about hoaxes. Someone else may be able to say what kind of kinds they are – I'll just provide some material.

In 1996 Alan Sokal, a physicist, published a paper in the cultural studies journal *Social Text* which he immediately declared to be a hoax, having no serious content (1996). This severely embarrassed the editors of *Social Text* and, depending on how you view the matter, it also embarrassed a larger or smaller number of social scientists.

From November 2001 onwards, the Bogdanov brothers published a series of paper in scientific journals: *Classical and Quantum Gravity* (Bogdanov and Bogdanov 2001); *Annals of Physics* (Bogdanov and Bogdanov 2002a); *Il Nuovo Cimento* (Bogdanov and Bogdanov 2002b); *Czechoslovak Journal of Physics* (Bogdanov 2001); and *Chinese Journal of Physics* (Bogdanov 2002). The content of the papers was something to do with 'string theory' and the brothers were awarded PhDs on the strength of their work by the University of Burgogne in France. In late 2002, it was widely bruited that their work was a hoax but within a day or two the Bogdanov brothers, who were not the source of the hoax accusation, denied it was any such thing. Embarrassed scientists had to apologize for the hoax accusation. In the meantime, the work was read more carefully and while a few scientists said they thought it contained grains of interest, most agreed that it was bad work – a pastiche at best – that should not have been published.<sup>1</sup> Of course, the Bogdanov brothers may or may not have had a hoax in mind; only they know.

The obvious consequences for the Bogdanov hoax/non-hoax are roughly the same as for the Sokal hoax. It is just as embarrassing, or even more embarrassing, for a scientific community to discover that it cannot tell whether it has been hoaxed as for it to discover that it has been hoaxed. This, of course, is not as embarrassing as it might be since most published scientific work is not very good anyway, and most is not cited by anyone except its authors. If there is some 'funny business' taking place within the big soft underbelly of published work which never makes it far into scientific consciousness it may not matter very much except to the referees and editors who are immediately involved. Sociologists of science have long known that the acclaimed gold standard of peer review contains a lot of base metal. Nevertheless, the logic of hoaxing remains intriguing and there may be a lesson about the logic (as opposed to the well understood 'sociologic'), of the peer review system to be drawn out.

In the following, when I refer to a 'hoax' what I will have in mind is a published hoax of the Sokal type. What are the characteristics of a hoax of this kind? First, to be a hoax a number of readers must initially take the paper to be the 'real thing'. Ideally, all readers will take it to be the real thing until they are *told* it is a hoax (compare this with a spoof). In the case of a spoof, the writer makes it obvious that it is a pastiche or irony. In the case of a hoax this is not made clear until later – after people have taken it seriously).

It follows that a hoax must resemble the real thing. In an ideal hoax the resemblance will be all in the ‘form’ with no resemblance in the content. The hoaxter wants the readers to be ‘taken in’ by the form and thus demonstrate their lack of integrity when it comes to evaluating the content.<sup>2</sup> Even if the content has to resemble the real thing to some extent the bigger the deficiency the better; if the content is too good there is no hoax, just a contribution to science.

A hoax, then, has to pass initial scrutiny even though the content has to be pretty deficient for the subsequent ‘revelation’ to have a satisfactory sting. We can be fairly sure that the reason this is possible is that a hoax passes its initial hurdle in something of the same way as a confidence trick; the ‘mark’ will do most of the work in ‘repairing’ any more obvious faults because to do otherwise means a large disturbance in life’s routines. In confidence tricks there is usually a positive incentive for repair – for example you get a lot of money, preferably via illicit means, if the offer/person is genuine. But being able to get on with ordinary life without disturbance is also a worthwhile reward. It has been argued that this is why bogus doctors succeed so well (Collins and Pinch 2005). Busy academics also want to get on with their lives hence reviewers and editors are more likely to let something pass than cause a lot of trouble for themselves by exploring the possibility that a contributor is not what they say they are.

What all this helps to establish, if it was not already clear, is that detecting the difference between a hoax and the real thing is not straightforward – that is the very nature of a hoax. It is particularly hard to tell the difference between a hoax and a bad paper because both have the same characteristics: appropriate form with content that is poor but not obviously beyond the pale on first reading. So what is the difference between a hoax and a bad paper? It is the intention of the author. If the author deliberately writes nonsense then it is a hoax; if the nonsense is there even though the author was writing with the best of intentions, then it is not a hoax. As illustrated by the Bogdanov’s, the same paper could be a hoax or just (what most people count as) bad work.

But wait! Maybe the author is a bit more dead than this. Suppose the author writes nonsense deliberately but never reveals his or her intention. Then the nonsense simply joins all the rest of the bad stuff in the underbelly of science and that is the last we hear of it. If no one knows it is a hoax, then it is not a hoax. Part of the idea of a hoax is to reveal its true nature at some time in the future; if it is not revealed, then what is the point? (I am reminded of that wonderful moment in *Doctor Strangelove* when an astounded President of the United States asks the Soviet Ambassador why the Russians had not declared the existence of the Doomsday Machine since deterrence is the entire point and no one can be deterred by something they do not know about.) A hoax isn’t a hoax unless you know you’ve been hoaxed. So the hoaxishness depends on the knowledge of the readers, not just on the intention of the author.

In the Bogdanov case, for about two days (when I was lucky enough to be deeply involved in conversations about the matter with physicists), the work was taken to be a hoax and was treated as a hoax, including readings of the work accompanied by loud

guffaws and ‘How-could-they-possibly-have-got-away-with-that?’s. Those readings ceased when the Bogdanov’s denied that their intention was to bring off a hoax; the Bogdanov’s preferred to have their work interpreted as either brilliant and original, or failing that, just another contribution to the soft underbelly of bad science.

Incidentally, it is almost sure that no-one would have accused the Bogdanov’s of hoaxing in the first place if hoax consciousness had not been engendered by the ‘Sokal affair’. The early reports of the Bogdanov ‘hoax’ all referred back to the Sokal affair. Had Sokal not done his work the Bogdanov pieces would almost certainly have disappeared within the body of other non-influential scientific work (unless the brothers themselves had decided to publicize it in some other way).

We can also imagine the opposite case. Suppose someone writes nonsense inadvertently, realizes only later that it is nonsense, and announces it as a hoax in order to save face? Maybe that is what Alan Sokal did! (I’m sure it isn’t what Sokal did but it doesn’t spoil the logic of the situation.) Furthermore, some commentators, working in a ‘post-modern’ spirit, declared that Sokal’s paper was not a hoax at all but a genuine contribution which Sokal had declared to be a hoax for mischievous reasons.

So where does hoaxishness lie? Where is the locus of hoaxishness? Is it in the author’s intentions, in the author’s declarations about their intentions, or in the community’s beliefs about the author’s intentions? The way this actually works out in practice, at least on the basis of the two cases we have before us, is that since it is well known that the most authoritative view of inner states such as intentions, comes from the experiencer of those states, it is the author’s declarations that count for most. Since Freud we have known that even we can’t be sure about our inner states but, if there is to be an argument about it, outside mental institutions etc, our own view of our inner states still carries more weight than the view of others. In sum:

- The ontological locus of a hoax is in the intention of the author: if the author did not intend a hoax there was no hoax.
- The consequential locus of a hoax is in what the audience believes: the hoax only has its intended effect if the audience believes it has been hoaxed.
- The epistemological locus of a hoax is the *declaration* of the author: if the author does not declare that the work was intended as a hoax no-one can prove it.

Try the last point any other way: try arguing that the Bogdanov’s really were hoaxing or Sokal really wasn’t – What do you use for evidence? Thus, so long as the authors’ *declarations* remain unchanged Sokal, as far as we know, hoaxed us and the Bogdanov’s did not.

So, where are we going with all this? First, a hoax cannot be so damaging to science as many have made it out to be since it depends on the declaration of the author rather than the content of the publication. The damage caused by a hoax ought to be about the same

as the damage caused by a bad publication. If the journals are full of bad papers, that's just about as damaging as the journals being full of hoaxes. There is practically no damage caused by the journals being full of bad papers so any additional damage caused by hoaxes is just to do with the way they are publicized – science remains just as unchangingly bad as it always was. If someone could get the newspapers interested in the fact that they had published a really bad paper it would be just as damaging as someone publishing a hoax. This, effectively, is what happened in the case of the Bogdanovs. Luckily, there are so many bad papers that public interest would be unlikely to remain aroused for long.

Second, the whole enterprise of science, notably the idea of scholarly journals, anonymised peer-reviewing, and so forth, depends on the notion that the value of a piece of work is visible within the text alone. Only that way could a peer reviewer judge an anonymous submission to a journal (strangely enough, the hard sciences depend just as much on the idea that 'the author is dead' as the post-modernists – the author is not consulted when a paper is being reviewed). Yet in the case of a hoax, the value depends on much more than the text – it depends on the declarations that the author makes about his or her intentions. Therefore (a) Roland Barthes is wrong about the author being dead in the case of a hoax and (b) the standard model of peer review in science does not work. And 'b' is for quasi-logical reasons as well as the well-understood sociological reasons.

Having noticed this we are alerted to other similar instances where there is more to an article than what is in it. One such is any paper which rests on statements of statistical confidence. The value of such a result depends on more than what is in the paper – it depends on the history of the work described. If many other statistical tests have been tried on the data before the one that gives a significant result emerges, then the result is not as significant as it looks. Peer reviewers of statistical papers are, then, in an impossible position. In that case too the author is not dead.

Less subtly, the reviewing of every empirical paper turns on the belief that the author actually did the experiments or measurements and did not just make them up, as cases of scientific fraud continually remind us. So the reviewing of every empirical paper turns on knowing more than what is in the paper (even as anonymity, which is supposed to prevent the reviewer knowing more than is in the paper, is encouraged).

We return, then, via this quasi-logical excursion to the established sociological point, that in spite of the claims of science to 'objectivity' each result we accept rests on a complex web of trust for the author who produced it and therefore the author cannot possibly be dead. To rupture that web of trust deliberately, is in the case of frauds or hoaxes, is to play a dangerous game with the delicate fabric of science.

## Notes

1 A long exchange among physicists (with a couple of small contributions from the author), can be found at Google, groups, sci.physics.research.

2 That incidentally is one of the beauties of Sokal's hoax; once you forget the content you can see how hilariously he has captured the form.

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