



A. J. Kreider

## INFORMAL FALLACIES AS ABDUCTIVE INFERENCES

**Abstract.** All who teach logic are familiar with informal fallacies such as *ad ignorantium* (appeal to ignorance) and *ad populum* (appeal to popularity). While it is easy to give clear examples of poor reasoning of this sort, instructors are also cognizant of what might be called “exceptions”: when it is legitimate to appeal to popularity or to an absence of evidence. The view I defend here is that appeals to popularity and ignorance (and some other fallacies) should best be viewed as instances of abductive reasoning, or inferences to the best explanation. Thus, determinations of whether these types of arguments are good ones will rest on the criteria that determine good reasoning for abductive arguments generally.

**Keywords:** abduction; *ad ignorantium*; *ad populum*; explanation; fallacy; inference; informal

### 1. Introduction

All who teach logic are familiar with informal fallacies such as *ad ignorantium* (appeal to ignorance) and *ad populum* (appeal to popularity). While it is easy to give clear examples of poor reasoning of this sort, instructors are also cognizant of what might be called “exceptions”: when it is legitimate to appeal to popularity or to an absence of evidence. Specifying the differences between fallacious and legitimate reasoning in these cases is not obvious. The view I defend here is that appeals to popularity and ignorance (and some other fallacies) should best be viewed as instances of abductive reasoning, or inferences to the best explanation. Thus, determinations of whether these types of arguments are good ones will rest on the criteria that determine good reasoning

for abductive arguments generally.<sup>1</sup> As such, determination of whether instances of *ad populum* and *ad ignorantium* are indeed fallacious will be decidedly informal.

## 2. *Ad Ignorantium*

To begin, let's look at *ad ignorantium* in more detail. It is fairly standard to characterize appeals to ignorance as inferring from a lack of evidence for a claim, that the claim is false (or conversely, inferring from a lack of evidence for the negation of a claim that the claim is true). It is not difficult to find examples of such fallacious inferences. Instructors discussing God's existence will find this student argument familiar:

There is no evidence that God exists.

Therefore, God doesn't exist.

That such arguments are fallacious is fairly straightforward. However, this is not the end of the matter for appeals to ignorance, for it is also not difficult to find examples of appeals to ignorance which seem reasonable; so reasonable, in fact, that it would be irrational for a person *not* to form beliefs on the basis of the lack of evidence. For instance, it is completely reasonable for me to form the belief that there is no tiger in the room, when my sole reason for having this belief is that there is no evidence of a tiger in the room. Merely remaining agnostic as to the existence of a tiger in the room (were the question posed) would be evidence of a defect of reason. To make things a bit more relevant, this argument seems at least reasonable:

Since the time of the coalition invasion of Iraq in the spring of 2003, no evidence of significant weapons of mass destruction has been found.

Therefore, since the time of the coalition invasion of Iraq in the spring of 2003, there were no significant weapons of mass destruction in Iraq.

How, then, to account for this apparent difference between legitimate and illegitimate appeals to ignorance? Oddly, many textbooks say nothing at all on the matter. Those that do ground the difference in one

---

<sup>1</sup> For the purposes of this paper, I assume a) that there is a type of reasoning such as inference to the best explanation that is distinct from other types of reasoning, and b) that at least some instances of inference to the best explanation count as good reasoning.

of two ways: they claim either that there are contextually-dependent pragmatic considerations that can justify appeals to ignorance, or that some appeals to ignorance have suppressed premises that, if made explicit, make it clear that the inferences are justifiable.

Concerning the first explanation, it is claimed that there are some cases such that the consequences of failing to believe truly (or believing falsely) are so dire that a lack of evidence can justify forming the belief (or at least acting as though one had the belief). Taking an example from Douglas Walton's book, *Informal Logic*, not having evidence that a gun is not loaded is reason to presume that it is loaded, given the possible negative consequences of being mistaken as to its not being loaded. Similarly, in legal proceedings, it might be reasonable to presume innocence from a lack of evidence of guilt, given the moral cost of restricting the rights of innocent people.

Concerning the second explanation, it is claimed that some instances of what look like *ad ignorantium* are really enthymemes with hidden premises concerning expectations of evidence. Taking an example from Fogelin and Sinnott-Armstrong's *Understanding Arguments*, the inference to the claim that my wife doesn't keep a Winnebago in our garage, from the claim that I've never seen one there, is good reasoning. This is so because, if my wife did keep a Winnebago in our garage, then I would see it there. Thus, arguments of this sort are really disguised instances of *modus tollens*:

If my wife kept a Winnebago in our garage, I would have seen one there.  
 I've never seen a Winnebago in our garage.

---

Therefore, my wife doesn't keep a Winnebago in our garage.

This seems a plausible explanation of what's going on in the "Iraq" example above. If Iraq had weapons of mass destruction, we'd expect to have found them by now. We haven't, so there aren't (or weren't) any.

Is either of these accounts a good explanation of the seeming difference between good and bad instances of appeal to ignorance? I don't think they are. Concerning the "enthymeme" explanation, there are a couple of worries. First, I think claims that arguments enthymemes should be approached with caution, because such claims presuppose a lot about the person giving the argument; probably too much. I'm reticent to even bring the concept up in my logic classes, because once students are introduced to the idea, they see every bad argument as an enthymatic good argument. More troublingly, if we take the enthymeme route, we could implausibly apply it for *all* instances of apparent *ad ignorantium*. We might claim that, in the "God" argument above, there is a hidden premise to the point that, if God did exist, we'd have found evidence

for this by now. We haven't, so God doesn't exist. We can take this route with any apparent instance of *ad ignorantium*, which would yield the result that appeals to ignorance may not be errors in reasoning at all. Rather, the strength of the arguments in question will reduce to the reasonableness in accepting the premises; particularly those concerning the expectation of evidence.<sup>2</sup> If however, one wishes to maintain that the enthymatic cases are only *apparent* cases of *ad ignorantium*, how then are we to distinguish, non-arbitrarily, between genuine and apparent instances of *ad ignorantium*? Further, how is the reasonableness of such premises to be assessed? They are subjunctive conditionals (we would have found . . .). Such conditionals are notoriously difficult to evaluate, and identification of instances of *ad ignorantium* don't seem to require well-considered views of the truth conditions of such premises.

The claim that "good" appeals to ignorance depend on contextually-dependent pragmatic conditions is also unsatisfactory. If this view were correct, what should we say about whether or not to form the belief that there is no tiger in the room? If I am mistaken, there would indeed be negative consequences. Surely, this isn't sufficient reason to believe there is a tiger in the room (or to act as though there were).

### 3. *Ad Populum*

So, appealing to pragmatic concerns or enthymemes isn't going to help resolve the difficulty in distinguishing between genuine and only apparent instances of appeal to ignorance. The problem is not limited to *ad ignorantium*, however, as it also seems to apply to *ad populum*.

While there are several ways to characterize *ad populum* fallacies, when I speak of them here I mean those inferences of the form, roughly:

It is generally believed that  $p$ .

Therefore, it is true that  $p$ .

As with *ad ignorantium*, there are instances where such appeals to popular belief are justified. In fact, there are so many such instances, I'm inclined to think that the majority of *ad populum* arguments are reasonable. Consider how many of your own beliefs you possess primarily or exclusively because they are widely accepted; in most cases making no attempt to ascertain the expertise of those asserting the claims (say, concerning the capitals of various countries,

---

<sup>2</sup> Here, I am referring to the idea that errors in reasoning reside in the inference from premises to conclusion. This is not uncontroversial, and is reasonably challenged by fallacies such as begging the question and false dichotomy. I am not taking a firm stand of that here, and resolution of this dispute must wait for another time.

the location of a neighborhood bar, etc). And of course, a great many of these beliefs, probably the significant majority, are true. That said, there are obviously bad inferences of this form. For instance,

Most people in the world believe that some supernatural being exists.

Therefore, some supernatural being exists.

It seems clear that the mere common-ness of the belief is not sufficient to justify it. So again, how do we distinguish between justifiable and unjustifiable appeals to popularity?

It should be clear that the tact taken concerning instances of *ad ignorantium* will fail concerning *ad populum* as well. Walton, again, suggests that pragmatic concerns will weigh heavily here. If a decision must be made, appealing to popular belief provides “weak, but sometimes reasonable” arguments.<sup>3</sup> That the standards of evidence justifying belief formation will vary from case to case is a truism. But still, many of the beliefs we have, and that are completely reasonable, are not forced upon us by circumstances. I believe that the earth travels around the sun (roughly), and my reason for believing this is just that it is widely accepted. But, there are no significant negative consequences of remaining agnostic about this.

#### 4. Inference to the Best Explanation

The problem in both of these cases results, I think, from a mischaracterization of the type of argumentation involved. Invariably, when textbook-authors point out the fallacious nature of these inferences, they rightly state that the conclusions “do not *follow* from the premises”, that “lack of evidence does not *prove* non-existence”, etc. And what they mean here (or seem to mean) is that the conclusions do not follow *deductively* from the premises. In other words, they are claiming that such arguments aren’t valid. This is entirely correct, and it might be the end of the matter if deductively valid arguments were the only reasonable arguments. But of course they aren’t. There are also inductive and abductive arguments; arguments which do not have deductive validity as a good-making feature. The reason, then, for the difficulty in separating fallacious and non-fallacious instances of the above-mentioned forms of reasoning is that these forms have been misconstrued as kinds of deductive reasoning when they should have been construed as instances of abductive reasoning. They are inferences to the best explanation.

---

<sup>3</sup> I confess, I think the idea of an argument’s being ‘weak’ loses its meaning if such arguments can still be reasonable. To admit that popular opinion can lead to reasonable arguments is to admit that it carries some evidential value; enough even, to justify belief. And what is logic for, if not to aid in belief revision?

Abduction, as a kind of reasoning differing from induction and deduction, was first highlighted by Charles Sanders Peirce. He proposed that abduction takes roughly this form:

The surprising fact, B, is observed.

If A were true, then B would be the case.

Therefore, it is likely that A is true.

This may appear disturbingly like the fallacy of affirming the consequent, since there may be several possible causes of B. However, some of the possible causes of B will be much more likely than others. The attempt to say that one of a group of potential causes is the real cause is to attempt to infer the best explanation. Such reasoning is both common in science and with more mundane affairs. For instance, this will be familiar to many:

Looking out the window, I notice that the grass, driveway, and street are wet.

The best explanation for the wetness is that it rained.

Therefore, it rained.

Here, it is being inferred from the fact of the wetness of the grass, etc., that it rained. The raining is the *best explanation* for the wetness. Such reasoning is indeed deductively invalid, but it is seemingly good reasoning nonetheless. There are other potential explanations, say, that there was a significant water main break, or that aliens had a massive water balloon fight on my lawn. But these are rejected in favor of the better explanation.

Returning to *ad ignorantium*, while it is certainly true that it does not follow from a lack of evidence that  $p$ , that it is false that  $p$ , there will be many cases where the best explanation for the lack of evidence for  $p$  is that it is false that  $p$ . Of course, in such cases there will always be competing explanations for the lack of evidence, but they won't be reasonable explanations, and can thus be dismissed. What is the best explanation for the fact that there is no evidence of a tiger in the room? It is, of course, that there is no tiger in the room. The possibility that there is an invisible, silent tiger in the room can be ignored.

It should be clear that many, perhaps even most, instances of *ad ignorantium*, so interpreted, will still turn out to be cases of flawed reasoning. Students who claim that God doesn't exist, because they have yet to find evidence of God's existence, reason poorly, because there are reasonable competing explanations for their lack of evidence: principally that they haven't considered many, if any, of the extant arguments for God's existence.

There will also be cases where it is not easy to determine whether or not the lack of evidence for a proposition is best explained by its falsehood. Concerning purported Iraqi weapons of mass destruction, critics of the Bush administration and the CIA will argue that the best explanation for not having found such

weapons is that they never existed. Some apologists for the administration claim that there are competing explanations: namely that the weapons were smuggled off to Syria or some other neighbouring country or that they were destroyed after the war began. In determining the best explanation in such cases, other factors will weigh in favor of one explanation over another (the feasibility of moving such weapons without detection, the likelihood of other nations willing to risk incurring the wrath of the West, etc.).

## 5. Other Fallacies as Abductive Inferences

Treating *ad ignorantium* as a case of abductive reasoning seems to work well enough, but what of other informal fallacies? Something similar can be said, I think, of *ad populum* inferences. While it is certainly true that it does not follow deductively from the fact that a proposition  $p$  is widely believed that  $p$  is true, it seems rather more reasonable to infer that the best explanation for the fact that  $p$  is widely believed is that it is, in fact, true. The supposition here is that, if a large number of people believe that  $p$ , then it is reasonable to suppose that some in the group would be in a position to determine definitively the truth of  $p$ , and there would be no reason for this information not to be disseminated throughout the population, etc.<sup>4</sup> This is why we trust the judgment of the populace at large on such a wide range of issues.

However, there will be other cases such that there will be competing explanations for the wide acceptance of a claim. Say, concerning the widely-held belief in God or god-like beings, it might well be reasonable to suppose that belief in a supreme being gives comfort to the believers, or that human beings have a tendency to appeal to the supernatural as explanations for phenomena that are properly explained naturalistically. Or concerning widely held moral beliefs, one might suppose that the explanation for the fact that people hold such beliefs is that people are guided by their emotions on such matters. Thus they are not trustworthy as a guide to moral truths, whereas they might well be trustworthy concerning, say, which is the best hotel to stay in while in Amsterdam. As with *ad ignorantium*, instances of *ad populum* should not be viewed as cases of faulty reasoning, full-stop. Rather, there will be a sliding scale of better or worse inferences of this sort, depending on the quality of explanations involved.

What of other inference types? I'm less convinced of viewing other fallacies as inferences to the best explanation, but I think a case can be made for some. Concerning *ad verecundiam*, or appeal to inappropriate authority, I think it

---

<sup>4</sup> It is important to note that I am not here suggesting that there are suppressed premises with this content.

not implausible to suppose that what goes on in such cases is poor abductive reasoning. Consider a case where a television viewer accepts the claims of an endorser with regard to the medical benefits of an herbal supplement:

The guy in the lab coat on TV asserts that  $p$ .  
Therefore, he believes that  $p$ , and believes he has good evidence that  $p$ .

and

He believes that  $p$ , and believes he has good evidence that  $p$ .  
Therefore, it is true that  $p$ .

The idea here is that (implicitly<sup>5</sup>) the best explanation for someone's asserting a proposition is that they are in a position to know of the truth of the proposition and also that they assert what they believe is true. (Surely, no one would assert a proposition unless they have good reason to believe it, right?) And further, the best explanation for that person's believing and believing that they have good evidence that  $p$ , is that  $p$  is true. There are two ways, then, for such reasoning to go wrong. There might be a competing explanation for why someone asserts that  $p$ , other than that they believe it. If one discovers that someone may benefit by asserting a falsehood, this provides a reasonable alternative explanation for why they assert the claim in question. So, even if one is an expert (and thus in a position to know), we ought not to accept the claim where there is apparent bias, because this bias is a reasonable explanation of their assertion. Of course, another way such reasoning can go wrong is if the person is not in a position to know, and there are familiar examples here. People believe things because they sincerely but falsely believe that they are experts, or because they are enamoured with their own intellect, and so on — the point being that these beliefs would not track the truth.

What of the *post hoc ergo propter hoc*, or false cause, fallacy? Such inferences seem reasonably construed as inferences to the best explanation. They amount to the argument such that the best explanation for  $b$  following  $a$ , or being correlated with  $a$ , is that  $a$  is the cause of  $b$ . Clearly, there are fallacious such inferences, and when they are fallacious, it is because there are competing, reasonable alternative explanations for why  $a$  follows  $b$ . There might be a

---

<sup>5</sup> It might reasonably be wondered whether the account defended here is susceptible to the worries about enthymemes considered earlier. A key difference is that whether a premise of the form, "A is the best explanation for B", is implicitly present is not arbitrarily assumed as a way of differentiating the fallacious and non-fallacious instances of a reasoning type. Neither is the reasonableness of that premise determinate of the kind of reasoning involved. At most, the fallaciousness of an instance of a reasoning type would rest on the reasonableness of the premise, not its presence or lack thereof. Further, on this account the form of the implicit or explicit premise at issue is the same across the fallacies discussed.

common cause for both. The correlation is perhaps merely coincidental, and so on. However, as these alternative explanations appear more and more unlikely (say, as there is a lack of evidence of a third factor or the correlation is a strong one), the inference is better. It is a better explanation of the correlation than the alternatives.

Similarly, with the fallacy of division, it is clearly faulty reasoning to conclude that because a thing has certain properties, its parts have those properties. It is faulty reasoning, that is, *if the inference is construed as deductive*. If it is construed abductively, then it is not so clear. There will be some cases where the best explanation for the properties of *a* is that the constituents of *a* also have these properties. The best explanation for the fact that Brazil has a great soccer team is that they have great players. We know this is a good explanation, because we have good evidence that the quality of the players affects the quality of the team. The best explanation for the fact that the U.S. Congress is incompetent is that its members are incompetent. There are, of course, cases of great teams without great players (though these seem to be in the minority), and there are incompetent bodies with competent members. What this shows, then, is that there are often competing explanations for the properties of wholes, other than there being those properties in the parts.

## 6. Conclusion

So, again I think it not implausible to characterize at least some informal fallacies as inferences to the best explanation. The benefit of this characterization is that it admits of degrees of the worth of the inferences, even to the point where some of these “fallacious” inferences are in fact justifiable; and it does so while treating the good and bad versions as inferences of the same type (as opposed to arbitrarily treating some as enthymatic as some as not). Abductive reasoning is ampliative, meaning that further evidence will raise or lower the quality of the explanations. Such inferences are thus defeasible. Merely pointing out that “the popular view might be wrong” in response to an appeal to popularity will not settle the matter. One can admit this, and yet still hold to the view that popularity is warrant-conferring. Whether something like an appeal to popularity or ignorance is sufficient grounds to accept the conclusion will depend on the reasonableness of competing explanations. Again, in this respect, Walton is correct in concluding that the reasonableness of these inferences is context dependent.<sup>6</sup>

---

<sup>6</sup> It may be the case that pragmatic concerns are also relevant. If the stakes are very high, the mere best explanation may not be enough for rational belief in its truth. The explanation will have to be sufficiently good to justify taking the risk of believing a falsehood.

However, I've said nothing so far concerning the particulars of how, exactly, to so distinguish between good and bad inferences of these types. What is it that makes certain explanations good ones, to the point of recommending acceptance? All I've done to this point is provide what I think are intuitively plausible cases of good explanations. Sadly, I've little more to say on the matter here. There has been much written on abduction in the last 100 years, and yet no consensus has been reached. Some characterize the best explanation as the most probable explanation. Others prefer to focus on the aesthetic properties of explanation: simplicity, for instance. (There may of course be a connection between the two, as simpler theories will be more probable.) Peter Lipton prefers to speak of the best explanation as the "loveliest". But each of these has their critics and reasonably so. Some, like Bas Van-Frassen, have claimed that inferences to the best explanation do not track the truth, as the best explanation will only be the best of what we've got. Perhaps we're just poor at thinking of alternative explanations, in which case our best explanation may simply be the best of a bad lot.

The fact that it has proven so difficult to give an adequate account of "good explanation" at least serves to highlight the non-formal nature of this inference type. It would be appropriate, then, if inference to the best explanation were essential in understanding arguments types in informal logic.

**Acknowledgements.** Thank you to the International Society for the Study of Argumentation, at whose conference an earlier version of this paper was presented, and for the comments of an anonymous reviewer of this journal.

## References

- R. Fogelin and W. Sinnott-Amstrong. *Understanding Arguments*. Harcourt, Fort Worth, 2001.
- P. Lipton. *Inference to the Best Explanation*. Routledge, London, 2004.
- C. S. Peirce. *Collected Papers of Charles Sanders Peirce. Volume 5*. Harvard lectures on pragmatism, 1903.
- B. Van Fraassen. *Laws and Symmetry*. Oxford University Press, Oxford, 1989.
- D. Walton. *Informal Logic*. Cambridge University Press, Cambridge, 1999.

A. J. KREIDER  
Miami Dade College  
500 College Terrace  
Homestead, FL USA 33030  
akreider@mdc.edu