

Is the Identity of Indiscernibles refuted by Max Black's thought experiment?

Introduction

In this essay I will first describe Leibniz's law of identity and what the "Principle of Identity of Indiscernibles" (PII) means. I will then describe some criticisms of the PII, before considering Black's article, and commenting on how successful he is in his attempt to refute the PII. I will conclude with some thoughts on whether there may be other approaches which might be used to better understand the PII.

What is the Principle of Identity of Indiscernibles (PII)?

According to the Indiscernibility of Identicals, "X is identical with Y if and only if every property of X is a property of Y and every property of Y is a property of X" (Baggini & Fosl 2003:100). This principle says that if two objects are the identical, then no matter what property we find pertaining to one of them, we will find the same property on the other. For example, if "the sun" and "the body at the centre of our solar system" are identical objects, then any property of the sun will also be a property of the body at the centre of our solar system, and vice-versa.

The corollary of this (and the other part of "Leibniz's Law of Identity") is the Principle of Identity of Indiscernibles (PII). Leibniz himself wrote "To suppose two things indiscernible, is to suppose the same thing under two names." (Alexander 1956:37). This principle then, says that if we are unable to find any difference between properties that X

and Y have, they must be the same object. Consequently, it is impossible for two separate things to be exactly alike.

There are reasons why we might question the validity of the first formulation of Leibniz's law (the indiscernibility of identicals), but I shall pass over those here. It is the PII which is generally seen as being more contentious, and in this essay I will look at some of the grounds on which the PII might be challenged, and specifically Black's essay (Black 1952), which claims to refute the PII.

What are some of the weaknesses that apply to the PII?

In the case of either formulation of Leibniz's law, we need to have a definition of what it means to be a "property". Specifically, in the case of PII, we need to know what it is meaningful to compare when we have two entities whose identity is in question. I will take as my definition that a property of X is something that can be described by a proposition which asserts something true *about* X. Note that the proposition must be (a) true, and (b) relevant, which means that of the following four propositions, only the first describes a property of my football:

- the football is round [true, relevant]
- the football is yellow [relevant, false]
- the cat likes Weetabix [true, irrelevant]
- the panda gave birth to a submarine [false, irrelevant]

I will also distinguish between different types of properties in two ways. Firstly, we can

divide properties up into essential and accidental: essential being those which remain constant for any object, and accidental those which may change. An example of an essential property of a football might be "the football is a ball", while an accidental property might be "the football is inflated".

Secondly, properties may be intrinsic or extrinsic. An intrinsic property is "a property that a thing has (or lacks) regardless of what may be going on outside of itself" (Yablo, 1998). An example of an intrinsic property would be "the football is black", while an extrinsic property could be "the football belongs to me"; extrinsic properties pertain to an object without directly being part of the object. Obviously, there is a fair amount of room for debate about whether a particular property is essential(E) or accidental(A), intrinsic(I) or extrinsic(X). It is possible to have all four combinations of properties, for example:

- I am a person (E,I)
- I am happy (A,I)
- I am the only son of John and Mary (E,X)
- A book belonging to me is in this room (A,X)

As regards the PII, there are two problems when we come to consider how objects may be compared. Firstly, it is not clear which kind of properties are legitimate for comparison. Essential ones seem fair game: if one object has the property "is a ball" and the other doesn't, then it seems certain that they must be different objects. But it is less clear that we can rely on accidental properties. For example, a football may be inflated one day and deflated the next, but it arguably remains the same football. So the fact that one of the things we're comparing has the property "is inflated" may not be a safe basis for ruling that

the two are distinct objects.

The most obvious problem with PII is it makes identity dependent on the ability of an observer to have the ability of discernment: If I know that X and Y are both red balls, but that's all I know about them, then according to PII, X and Y are the same ball. This doesn't seem very satisfactory.

The second, and potentially more serious problem, with the PII is that in order to apply it to X and Y, we have to involve another entity, namely the observer who is discerning (or not) differences between properties of X and Y. Clarke's third law : "Any sufficiently advanced technology is indistinguishable from magic" (Clarke 1962:39) points to the problem with doing this: that there may be situations where we an observer is ignorant of, or incapable of discerning properties of X or Y which which could be used to distinguish them (this is especially true for extrinsic properties).

The PII then, is subject to certain criticisms that apply in the real world. For example, does it operate only with respect to essential properties, or might a complete change of all accidental properties render an object sufficiently different as to no longer count as identical with its former self? Are there any properties which can count as truly essential anyway? What about properties that we are ignorant of, but which, so far as we know, might turn out to be significant?

There is some room for debate on these matters, and perhaps a defence of the PII could be mounted by being selective about the kinds of properties which it is meaningful to consider. Black's essay though, sets out to undermine any of these potential avenues of defence.

How does Black attempt to refute the PII?

Black claims to refute PII completely using a thought experiment, where he proposes an imagined universe containing two spheres which are absolutely identical: for every property we can imagine of one sphere, the other sphere has exactly the same corresponding property. Given this scenario, the distinction between essential and accidental properties becomes irrelevant: the objects are essentially the same, and for any change in an accidental property of one, we are asked to conceive of the other experiencing a corresponding change. Even the extrinsic properties are the same: since the universe contains nothing *but* the two spheres, properties such as “being adjacent to a sphere” are also guaranteed to be equivalent for both objects.

Black also specifically rules out the possibility of an observer entering the universe: it is central to his argument that the universe contains *only* the spheres, and no observer. As "A" complains, it sounds as if Black is saying that "nothing unobserved would be observable", but whether or not this is the case, it does seem that Black is underlining here one of the potential weaknesses raised earlier with respect to the PII, namely that in order for it to operate, there needs to be something involved as well as the objects which are being compared.

Is Black successful? Does his thought experiment refute the PII?

One criticism that may be levelled at Black's argument is that it concerns an imagined

universe, which may be logically conceivable, but has no plausible real world counterpart. As "A" argues, the characteristics of such a universe are unverifiable, and it is therefore unreasonable to use it to refute the PII. An empiricist might say that whenever we come across objects in the real world, there will always be some property that we can find which will be present in one and absent in the other. One property in particular, which we are prevented from using in Black's universe, is spatial location. In the physical world, the property of location, even though it may be accidental, does seem to be something which prevents a fairly convincing way to tell whether two objects are distinct from one another. However, as has already been mentioned, there are many differences which may not themselves be identifiable to an observer who has a limited capacity for discernment.

I think a more serious criticism of Black's imagined universe is that it admits no observers. While it may appear to be a weakness of the PII that it depends on an observer to be present to make a judgement about whether two things are identical, it is nonetheless a fundamental requirement. And so I am not sure that it is possible to refute the PII by using an imagined situation which has no possibility of an observer, because, by definition, the PII cannot apply in this situation: it has nothing to say about it. If I wanted to refute the proposition "wood floats", it wouldn't be much use my going somewhere that there was no wood and no water.

One possibility that Black doesn't discuss is whether it is possible for us to imagine that one of the spheres disappears. If we can do this, then we must be imagining a property of one of the spheres that doesn't apply to the other. Perhaps B would refuse to discuss this unless on the basis that we are not able to specify which sphere we mean, but if we are

asked to imagine a universe with two distinct spheres that are not mutually dependent, it must be possible for us to declare that one of them could exist despite the absence of the other.

Conclusion

In conclusion, I think Black is successful in designing a scenario where we are unable to identify differences between two objects, while seemingly being forced to acknowledge that there is more than one object involved. However, the limitations enforced on us by this imagined universe are such, I believe, as to render the application of the PII in such a situation meaningless. There are other ways in which the PII is vulnerable to attack: primarily due to the fact that it relies on the workings of an external observer.

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