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Proof of the Existence of Universals —from a Fallibilist

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Abstract. The paper puts forward a straightforward proof to the effect that, necessarily, if there are some distinct, finite, and spatially located particulars, then there are tropes, relational universals, and property universals, too. The structure of the proof looks as follows: there are particulars, therefore there are spatial boundaries, therefore there are tropes, therefore, there is a relational universal, therefore there are property universals. The existence of universals is not derived from any proposed features of language.

In spite of being an epistemological fallibilist, I will present what I take to be a proof of the existence of universals. Even fallibilists can speak of proofs. The tacit assumption, then, is of course that proofs can, just like probability reasoning and empirical investigations, turn out to be wrong. My fallibilism means that I believe that I have knowledge, but that my uncertainty in singular cases can be quite large. Being uncertain about singular truth-claims is not the same as being uncertain about all taken collectively. An analogy can make the point: one can be quite certain that a lottery has some winning tickets, without having any idea of which these are.

The knowledge of each individual person has three sources: perception (*observation*), thinking (*reasoning*), and information from others (i.e., *trust* in information from others). In relation to these sources, fallibilism means that one can never be sure that a specific perception is veridical, that a specific inference is valid, or that someone one trusted really could be trusted. However, one cannot live without – mostly – accepting as veridical what one perceives, believing in one's reason, and trusting much information.

This being stated, I will now put forward my proof – or "proof thinking" if the reader so wants – that there are universals, both relational universals and property universals. In passing, it will also be proved that there are monadic tropes (i.e., property instances regarded as specific particulars). Therefore, the common view that "if one believes in the existence of universals there is no need to posit tropes, and if one believes in the existence of tropes there is no need to posit universals" is shown to be false. Often, this view is grounded in a pragmatic interpretation of Ockham's razor, but a pragmatic principle can never abolish the result of a proof.

1. *The Existential Premise*

In his famous lecture "Proof of an External World" G. E. Moore holds up his two hands, first makes a gesture with one of them and says "Here is one hand," and then a gesture with the other and says "and here is another"; after that he concludes that that there are at least two external things, and that a similar proof can be given for many other kinds of things, too. My proof of the existence of universals has a similar character and a similar ground zero. I ask you, the reader, to look at this spot ●, and I assert "Here is a black, circular spot." Then I ask you to look at this spot ●, and I assert "Here is another black, circular spot." At last, I ask you to look at the next spot, ●, and I assert "Here is a third black, circular spot." After some reflections, that soon will be presented, we can conclude that there are at least two universals: perceived *blackness* and perceived *circularity*. For those who, like me, are convinced that there can be three mind-independent circular entities, the same reflections have as a conclusion that there can also be a mind-independent universal: *circularity*. This proof – just like Moore's – can be repeated for an innumerable number of entities.

Moore claims that his proof satisfies the three fundamental conditions that a proof should be able to satisfy, and I am of the same opinion with regard to mine. The three conditions are:

a) The premises, individually or collectively, are not identical with the conclusion (the conjunction of the assertions "Here is a black, circular spot," "Here is another black, circular spot," and "Here is a third black, circular spot" is not identical with the assertion "There are at least two universals: *blackness*, and *circularity*").
b) One knows that what the premises state is the case (the reader knows that are three black, circular spots here: ● ● ●).
c) The conclusion follows from the premises.

In order to satisfy the third and last condition, I have to show that four hypothetical statements can be regarded as incontestably true; I will call them 'if–then–truths'. When the existential premise is combined with the first if–then–truth, a new true existential statement can be derived. This statement (or what trivially follows from it) can then be added to the second if–then–truth, whereby a third true existential statement can be derived; and so on until with the help of the fourth if–then–truth the wanted conclusion that there are property universals is reached.

2, *The first if–then truth*

The first incontestably true hypothetical statement reads as follows:

(1) Necessarily, if there are distinct, finite, and spatially located particulars, then there are spatial boundaries, too.

It is a truism that in fact there are spatially extended particulars (individuals) with boundaries; at least in perceptions. Assume now, counterfactually, that there are *no* naturally given boundaries; neither of something in space nor of something that is a part of space itself. Since a boundary is a discontinuity, this assumption means that space as a whole, and everything that it contains, is either absolutely homogeneous or a continuum of some kind. In either case there are no distinct finite spatially located particulars. Hence, the existence of distinct finite spatially located particulars presupposes the existence of spatial boundaries.

We can now make the following derivation:

premise A:	There are here three distinct, finite, spatially located, black, circular spots: ● ● ●.
premise B:	Statement (1)
conclusion:	There are here at least three spatial boundaries: ● ● ●.

3. *The second if–then truth*

(2) Necessarily, if there is a spatial boundary, then there are at least two tropes that are not exactly similar, too.

In order to show this truth, five remarks are needed. First, spatial boundaries cannot possibly be constituted *only* by an empty or in some other way homogeneous space. Space is continuous (between two points in space there is always a third), and if space in itself would be individuating, then in a homogeneous space each point would be equally individuating. However, if this were the case, then each extended particular would be nothing but a collection of an infinite number of point particulars.

Second, a spatial boundary between two spatially extended particulars must itself be a particular. Such a particular must be either (a) a particular surface, or (b) a particular line.

Now, thirdly, it is the case that: (a) a boundary *surface* is either infinitesimally thin or a very thin three-dimensional body, and (b) a boundary *line* is either infinitesimally thin or a very thin surface. This holds true independently of whether or not the infinitesimal boundary entity is for its existence dependent on what it delimits.

Fourth, if a boundary is a thin body or a thin surface, then the problem "thin or infinitesimally thin?" reappears. Why? Answer: because then there must be boundaries also between the original boundary and the particulars which it delimits. Example: let the original boundary be the thin black line that in O distinguishes the white surface within from the white surface outside. The boundary that distinguishes this black line from the interior surface must – if not an infinite regress of boundaries is allowed – be infinitesimally thin. In other words, if there are spatial boundaries at all, then there are infinitesimally thin boundaries, too.

Fifth, if an infinitesimally thin boundary delimits two tropes that are exactly similar, then it cannot itself be exactly similar to these tropes. If it were, there would be no boundary but only something completely homogenous. That is, there must here be two tropes that are not exactly similar: the boundary and the exactly similar tropes that the boundary separates. If, on the other hand, the boundary separates tropes that are not exactly similar, then it is trivially true that there are two tropes that are not exactly similar (and the boundary can belong to either of them, or be of a third kind). In the example with O there is both a black trope, i.e., the color trope of the black line, and a white trope, the color trope of the surface that the line circumscribes. If this surface were black, too, then there would be no boundary between it and the line. And, conversely, if the line were white, then there would be no real boundary (only an imagined one) between the line and the white surface inside. Each extended, finite property bearer has to have a delimiting shape trope, but a shape trope needs for its existence also two other but different tropes, one on each side of the shape.

Taken together, the if–then–truths (1) and (2) constitute a real argument in favor of the usual rejection in ontology (with Gustav Bergmann as an exception) of so-called 'bare particulars'.

We can now make derivations of the following kind:

premise A: Here is a spatial boundary: ●.
premise B: Statement (2)
conclusion: There are here at least two tropes: ●.

4. *The third if–then truth*

(3) Necessarily, if there are three tropes that are exactly similar, then there is a relational universal, *exact similarity*, too.

The vicious infinite regress that I will now make use of was first noted by Edmund Husserl in *Logical Investigations* and expounded by Bertrand Russell in *The Problems of Philosophy*.[1]

Assume, that there are *three* exactly similar tropes, *a*, *b* and *c*; for instance, the three circular shape tropes (not the spots) ● ● ●. In my opinion, with only two tropes the argument can be questioned. Furthermore, assume that there is *no* common property universal (e.g., *circularity*) that can explain the exact similarity at hand. How can then the similarity be explained? A first possible answer comes automatically: with similarity tropes. In detail, the answer looks as follows:

– between *a* and *b* there is the similarity trope $\mathrm{l}_1(a,b)$
– between *a* and *c* there is the similarity trope $\mathrm{l}_1(a,c)$
– between *b* and *c* there is the similarity trope $\mathrm{l}_1(b,c)$.

This answer has to be kept strictly distinct from the following one:

– between *a* and *b* there is the universal *exact similarity*
– between *a* and *c* there is the universal *exact similarity*
– between *b* and *c* there is the universal *exact similarity*.

However, in order to make *a*, *b* and *c* exactly similar, this answer with its reference to similarity tropes is not enough. Since the expressions '$\mathrm{l}_1(a,b)$', '$\mathrm{l}_1(a,c)$' and '$\mathrm{l}_1(b,c)$' name three particulars that by definition are *completely distinct*, the unity of exact similarity that is required (and which a universal explains) does not arise. In order to see this clearly, one can think that at first only the exact similarity between *a* and *b* is there, and that then *c* is created; whereupon the question becomes how the exact similarity that already exists between *a* and *b* also can arise between *a* and *c* and between *b* and *c*. Someone who wants to avoid universals can now try to use similarity tropes of a second order, $\mathrm{l}_2(x,y)$, and claim that:

– between the similarity trope $\mathrm{l}_1(a,b)$ and the similarity trope $\mathrm{l}_1(a,c)$ there is the similarity trope $\mathrm{l}_2[\mathrm{l}_1(a,b), \mathrm{l}_1(a,c)]$
– between the similarity trope $\mathrm{l}_1(a,b)$ and the similarity trope $\mathrm{l}_1(b,c)$ there is the similarity trope $\mathrm{l}_2[\mathrm{l}_1(a,b), \mathrm{l}_1(b,c)]$
– between the similarity trope $\mathrm{l}_1(a,c)$ and the similarity trope $\mathrm{l}_1(b,c)$ there is the similarity trope $\mathrm{l}_2[\mathrm{l}_1(a,c), \mathrm{l}_1(b,c)]$.

Now, however, the same old unity problem reappears. What is here uniting the three completely distinct similarity tropes $\mathrm{l}_2(x,y)$? Again, *three* new similarity tropes, $\mathrm{l}_3(x,y)$, are needed, and this number will be required independently of what level in the regress one has reached. No convergence appears. The exact similarity of *a*, *b*, and *c* that is to be explained, is for its existence dependent on the exact similarity of the three $\mathrm{l}_1(x,y)$, which, in turn, is dependent on the exact similarity of the three $\mathrm{l}_2(x,y)$, and so on to infinity. That is, the first triple of exact

[1] Cf. Husserl 1970, vol. 2, section II, §4, last paragraph; and Russell 2004, chapter 9, eleventh paragraph, respectively. In some details, it has been further elaborated by David Armstrong in Armstrong 1978, vol. I, chapter 5, vi; and by Herbert Hochberg, 2001.

similarity is for its existence dependent on all the infinitely many levels of similarity tropes that the regress gives rise to.

This means that regress in question is a *vicious* infinite regress. The kind of definition and unity searched for is always displaced one step ahead. However, if the existence of the relational universal *exact similarity* is accepted, no regress arises; and no other alternative seems to be available. If one accepts the existence of three exactly similar tropes, then for purely logical reasons one has to accept the existence of the relational universal *exact similarity*, too. And if one accepts the *possibility* of three exactly similar tropes, then for purely logical reasons one has to accept the *possibility* of the relational universal *exact similarity*, too. (I am of the opinion that there are similarity tropes, not only monadic tropes, but note that I am not here claiming to have proved their existence; they are introduced only as a possible substitute for the universal *exact similarity*.)

We can now make the following derivation (with respect to both the shape tropes and the color tropes):

premise A: Here are three exactly similar tropes: ● ● ●.
premise B: Statement (3)
conclusion: There is a relational universal: *exact similarity*.

Ontologists who stop here are today sometimes, but misleadingly, called 'resemblance nominalists'; it is misleading because they are not only positing trope particulars, but also a universal, if only a relational universal. They claim that properties are nothing but similarity classes of tropes. There is, however, yet another true hypothetical statement to consider (Johansson 2000).

5. *The fourth if–then truth*

(4) Necessarily, if there is a relational universal *exact similarity*, then there is a (monadic) property universal, too.

If this is true, then we can make the following derivation:

premise A: In ● ● ● there are instances of the universal *exact similarity*.
premise B: Statement (4)
conclusion: There are two property universals: *circularity* and *blackness*.

For simplicity's sake, I will prove statement (4) with *circularity* as my example.

Assume a universe that has such a nature that it in principle can be empty (such is for instance the space posited by Newton). However, assume also, that in this space there are two (and only two) perfectly circular discs. The argument requires only that such a two-body world is logically possible. Let us focus on the shape tropes, the relational universal *exact similarity* (with respect to shape), and the possibly existing property universal *circularity*. According to resemblance nominalists, the predicate 'is circular' can be applied to the two shape tropes because they belong to the same similarity class.

If a world with only two discs is logically possible, then so should a world with only one disc be. Therefore, let us in our thought experiment remove one disc. In the new world there is only one shape trope, and the world does not contain the relational universal *exact similarity* (with respect to shape). The question is whether the property universal *circularity* has to be posited. A *reductio ad absurdum* shows this to be the case; it looks as follows.

Assume that in the described one-body world there is no universal *circularity*, but only the circular shape trope. Since neither the relational universal *exact similarity* is instantiated, it is impossible to construct a nominalistic circular-similar class of entities. This means that the single disc cannot be described as being circular. This conclusion is absurd. Hence, the initial assumption has to be rejected; there must in this world be an instance of the property universal *circularity*. Two circular things are not circular because they are similar, but are similar because they are circular.

Put generally: if properties presuppose and are constituted by similarity classes, then there can in a one-body world be no properties. The nominalistic predicate ‘is a circular shape trope’ is as inapplicable in a one-body world as the predicate ‘has a sibling’ is in a one-person world.

Of course, one might say that even a single shape trope has a similarity relation in the sense that it is exactly similar to itself; but to introduce relations to oneself is to conjure up entities that are not relevant. The similarity classes that for the resemblance nominalists function as a substitute for properties, should be given a posteriori, but it is an empty a priori truth that every entity is identical to itself, and so is exactly similar to itself.

The conclusion is now reached: there are property universals. However, as has also been shown, there are tropes and relational universals, too.

6. *Concluding addendum*

The structure of my proof can be abbreviated as follows: (0) there are particulars, therefore, (1) there are spatial boundaries, therefore, (2) there are tropes, therefore (3) there is a relational universal, therefore, (4) there are property universals. As can be seen, the existence of universals is not derived from any proposed features of language. The mere existence of general terms does not prove that these must refer to universals. The distinction between sign type and sign token is, by the way, only the distinction between universals and particulars applied to language signs. I took my departure from the perception of three circular, black spots, but I could equally well have started with a perception of three sign tokens. The existence of universals can be proved even on the (to my mind false) assumption that everything at bottom is language. I am convinced that there are universals also in language, both as concepts and as propositions, but the proof put forward is about universals that are external to language.

In the proof, I talk only about space and never about time, but this is only for pedagogical simplicity’s sake. The proof can be repeated with the expression ‘distinct, finite, and spatially located particulars’ exchanged for ‘distinct, finite, and *spatiotemporally* located particulars’. A proof of the existence of universals can be made even on the philosophical assumptions of so-called four-dimensionalism and eternalism.

I have consciously avoided a discussion of the antagonism between immanent and transcendent (Platonic) realism with respect to universals. This is the reason why in the concluding derivation of Section 4, there is a change from the expression ‘*here* are’ to the expression ‘*there* is’. I am, however, an immanent realist, and am of the opinion that there are arguments – even if weaker than those put forward in the proof above – that show that the expression ‘here’ can be kept all the way to the end.

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