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ORIGINAL ARTICLE

New Reasons to Motivate Trope Theory: Endurantism and Perdurantism

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Abstract In this paper, I argue that (non-presentist)urantism is incompatible with the view that properties are universals. I do so by putting forward a very simple objection that forces the endurantist to embrace tropes, rather than universals. I do *not* claim that this is bad news for the endurantist—trope theory seems to me by all means more appealing than universals—rather, I would like to see this result as a further motivation to embrace tropes. I then also put forward a (more controversial) reason to believe that at least some versions of perdurantism also require tropes rather than universals.

Keywords Endurantism · Perdurantism · Tropes · Universals

In this paper, I argue that (non-presentist)urantism is incompatible with the view that properties are universals. I do so by putting forward a very simple objection that forces the endurantist to embrace tropes, rather than universals. I do *not* claim that this is bad news for the endurantist—trope theory seems to me by all means more appealing than universals—rather, I would like to see this result as a further motivation to embrace tropes. I then also put forward a (more controversial) reason to believe that at least some versions of perdurantism also require tropes rather than universals.

Tropes are spatio-temporal objects. The trope theory's rival universals view comes in two versions: either it claims universals to be abstract (non-spatio-temporal, platonic) objects or on the contrary, concrete (spatio-temporal, immanent) ones. It is the latter option, of an Armstrongian type, that I will be concerned with in this article. The debate between tropes and immanent universals opposes two views on the nature of properties that are different but that have in common the idea that properties are spatio-temporal entities—these are the two views that I am interested in comparing here.

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The story starts with the well-known objection to endurantism from temporary intrinsics (see Lewis 1986 (p. 202-205)). Take the case of an apple: it is first green, say at time t_1 , and later it is red, say at time t_2 . According to endurantism, in this situation, there is one and numerically the same entity—the apple—that exists wholly both at t_1 and at t_2 . This entity has both the properties of being green and of being red, and this is why Lewis has charged endurantism with a contradiction. To avoid this worry, endurantists have various strategies available, namely indexicalism, adverbialism, or relationism. In this article, I shall focus on indexicalism and adverbialism.¹

The indexicalist strategy, such as developed in the work of Peter Van Inwagen (see Van Inwagen 1985, 1990, 2000), claims that all properties are always time-indexed. In our case, the apple does not have the property of being green, and neither has it the property of being red. Instead, it has the properties of being-green-at- t_1 and being-red-at- t_2 —again, the idea here is that *there are no properties* like "being green *simpliciter*", the only properties there are, are always and only time-indexed ones. This is how the endurantist can easily answer Lewis' objection, since time-indexed properties such as these are simply not contradictory.

Suppose we accept this line of response—this is where we get to the point I wish to stress. Indeed, such time-indexed properties are tropes, rather than universals, for such properties are always "time-bound," in the sense that they cannot be exemplified at any other time. And of course, not only do properties have to be time-bound, but they have to be space-time-bound as well. The need for this is most salient in the case of a time-travel scenario. Let us send our apple back in time from t_2 to t_1 . At t_1 , it then has both the properties of being-green-at- t_1 and being-red-at- t_1 —a contradiction. But of course, the same remedy we have seen above can be applied here as well: just claim that all properties are always *space-time-indexed*, in which case, any threat of a contradiction is easily avoided, in the same way as before.

This situation, and this way that the endurantist has to deal with it, strengthens the claim I want to make to the effect that such properties are tropes. Indeed, any such space-time-indexed properties are bound to one particular space-time location, and are thus not multiply locatable. As a consequence, they cannot be universals, and they have to be tropes.

One might object here that such space-time-indexed properties could be instantiated by other things: although this-and-this particular space-time-indexed property is not actually instantiated by anything other than its actual bearer, something other could have had that property. Indeed, say that our apple has the space-time-indexed property of being-green-at- l_1 - t_1 (where " l_1 " stands for a spatial location) in the actual world. If we allow for identity or counterparts of spatio-temporal locations across worlds (which is not an easy thing to do, but let us grant that point here), there is then the possibility that another other-worldly object has the property of being-green-at- l_1 - t_1

¹ Endurantist Relationism is the view according to which whenever an object has a property F, it actually stands in a *relation*—a relation between the object and a time t . This has the significant disadvantage to explicitly make all properties that we thought to be monadic and intrinsic, like having a big nose, relations to times (which also seems to carry a stronger ontological commitment to times, as entities, than the other endurantist views). These relations may well be universals, and my argument in this article thus does not apply to this particular endurantist view.

in another world. But even if we grant this, this does not make the property in question to be a universal. A universal is an entity that is multiply instantiable in one world—and this possibility is simply ruled out for space-time-indexed properties. There is no possible world where the property of being-green-at- t_1 is instantiated twice.

As a consequence of all that was said above, it appears that if one follows endurantist indexicalism, one has to endorse the view that properties are tropes rather than universals.

What about endurantist adverbialism (which is the other option an endurantist can take when facing Lewis' objection)? Such a solution has been defended, for instance, by Johnston (1987) and Haslanger (1989). The adverbialist will not understand the apple's being green at a time t_1 in terms of its having a time-indexed property, rather she will suggest that it has the property of being green *in a temporally modified way*. Thus the adverbialist will say that the apple is *t_1 -ly green* and *t_2 -ly red* (see Johnston 1987 (p. 129)). Since all properties, according to this view, are always had t_n -ly, the Lewisian objection is easily answered since it is not contradictory to say that an object is green in one way (i.e. t_1 -ly) and red in another way (i.e. t_2 -ly).

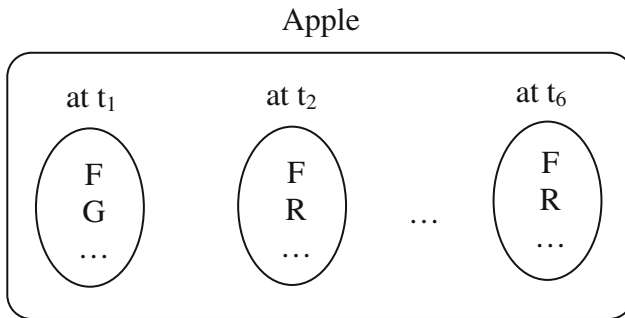
What plays a crucial role in the adverbialist story is then the relation of exemplification. It has to be a real and ontologically loaded relation (and not just a "non-relational tie" with no genuine ontological commitment), since it has to be the bearer of the temporal adverbial(ist) modification, and since it plays a crucial role in the way objects have their properties. And while it is true that the adverbialist is not forced to see properties like "being green" or "being red" as tropes, she has to acknowledge that *the relation of exemplification* has to be a trope, for reasons similar to those given in the case of indexicalism, since it always has to be space-time-indexed. Now, of course, the adverbialist could claim that the relation of exemplification is a trope, while other properties are relations are universals—as a logical possibility, this is indeed an available option to her. But once she has to accept that at least one type of (relational) properties have to be tropes, it seems to be more natural to endorse the idea that all properties are tropes, instead of holding a 'mixed view' where some properties are tropes and others are universals.

What about perdurantism²? Perdurantism is the view that objects like apples persist through time not by being wholly present at different times, but by having temporal parts at different times, and so the view does not have to worry about any threat of contradiction arising from the having of incompatible intrinsic properties at different times since the incompatible properties are simply had by (numerically) different things—different temporal parts of the apple. In fact, it is because perdurantism spatio-temporally indexes objects (temporal parts) that it does not have to face this worry and does not have to index properties. Thus, the view is compatible with both properties as universals and as tropes.

Or so it seems. I shall now try to show that the perdurantist who is a bundle theorist *does* have to embrace tropes rather than universals (for a different reason than the traditional complaint that the bundle theory with universals faces serious problems with Identity of Indiscernibles).

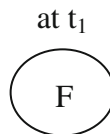
² I have here the 'worm view' in mind, but what I say can be easily applied to the 'stage view' as well.

According to this bundle theoretic perdurantist view, our apple is a bundle of bundles, as pictured on the following figure.



There are (say, for simplicity, instantaneous) temporal parts that are bundles of properties like F ("being round"), G ("being green"), and R ("being red"). These bundles are time-indexed, but the properties are not. The apple is then a bundle of all of his temporal parts, a four-dimensional space-time worm.

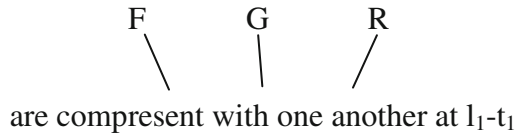
But now, suppose we start to cut one of the temporal parts into metaphysical pieces. Perdurantists typically embrace unrestricted composition so they shouldn't worry too much about this. It's like cutting an instantaneous but spatially extended object into spatially smaller objects, except that here we go even further and keep cutting until we reach the ultimate metaphysical components of the instantaneous object – single properties. So, we will end up with



which seems to be nothing more than a time-indexed property. The idea here is simply that components of an indexed bundle automatically *inherit* the index. It's like if you have a group of three people, John, Jane and Jim, and you say "they are crooks"—by saying this, you say that John is a crook, Jane is a crook, and Jim is a crook. Similarly, if you say about properties F, G, and R "they are all at t₁-t₁", you say that F is at t₁-t₁, and so F is space-time bound, and so it is a trope.

Probably not all ways of understanding the bundle theory will accommodate the idea that one can "cut up" a bundle into metaphysical pieces. Such a manoeuvre will only sound right to those who take the properties of a bundle to be its constituents in a way similar to how parts constitute wholes (a very good defence of such a view can be found in Paul 2002). But even if one is not convinced by this idea of inheritance of the index, *at least* it has to be accepted that, similarly to the case of the adverbialist, the perdurantist who is a bundle theorist has to accept that her central piece of metaphysics, namely the relation of compresence,

has to be a trope, rather than a universal. Indeed, in the figure above, the compresence relation is graphically represented by the circle and the index, but if we write it down we have



which makes it clear that at least the compresence relation has to be space-time bound and non-multiply located. (So, as before in the case of the adverbialist, one could try to defend a mixed view (tropes *and* universals), or one could more naturally say that properties are tropes, since one has to accept the existence of tropes anyway.)

As a cumulative effect of the arguments above, I hope I have succeeded in showing that when one considers the most interesting options with respect to the problem of persistence through time and the issue as to how objects have their temporary intrinsic properties, tropes seem to fit the bill better and more naturally than universals.³

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