

JIRI BENOVSKY

A Modal Bundle Theory*

ABSTRACT

If ordinary particulars are bundles of properties, and if properties are said to be universals, then three well-known objections arise : no particular can change, all particulars have all of their properties essentially (even the most insignificant ones), and there cannot be two numerically distinct but qualitatively indiscernible particulars. In this paper, I try to make a little headway on these issues and see how the objections can be met, if one accepts a certain view about persistence through time and across possible worlds – namely, four-dimensionalism and its modal analogue. The paper is especially devoted to the second and third of the three objections.

§1. Bundle theorists argue that concrete particulars are to be analyzed as bundles of properties, rather than as bare particulars that have or exemplify these properties, since they typically reject bare particulars as being unknowable and as having unclear identity conditions. According to this view, a person like my neighbour Cyrano is then nothing over and above the bundle of his properties, among which are, for instance, "having a big nose", "having blue eyes", and "being human". Depending on the account of what properties are, the bundle theory comes traditionally in two versions – according to the first, concrete particulars are bundles of tropes, and according to the second, they are bundles of universals (immanent universals, presumably). The second of these views has been defended only by a minority because it suffers from well-known weighty objections. It is the purpose of this paper to show that things are not as bad as they look, and that the bundle-theory-with-universals view is a respectable piece of metaphysics, although it comes at some serious cost and a certain amount of primitivism.

§2. The first well-known objection can be found, for instance, in Van Cleve (1985, p. 122) : "If a thing were a set of properties, it would be incapable of change. For a thing could change its properties only if the set

* I would like to thank Davor Bodrozic, Fabian Dorsch, Laurie Paul, Gianfranco Soldati, and Juan Suarez for helpful comments on earlier versions of this article.

JIRI BENOVSKY: A Modal Bundle Theory, METAPHYSICA. Vol. 7, No. 2, pp 19-33, ontos verlag 2006

identical with it could change its members, but that is impossible; no set can change its members." Taking an example of an individual that is supposed to change one of its properties over time, he adds : "[...] what we have is replacement of one individual by another, not change in the properties of one and the same individual." (Van Cleve (1985, p. 124)). The idea here is simple, and quite compelling : if an individual is identified with a bundle of properties, then if one of the properties changes, the bundle is not the same, and so, the individual who is the bundle is not the same – it simply ceased to exist, while another individual has taken its place. So, nothing can undergo change in properties.

This objection should sound familiar to those who are interested in the question of persistence through time : it is exactly analogous to the 'no-change' objection that is sometimes raised against four-dimensionalism. Four-dimensionalism, the doctrine that ordinary objects are temporally extended and persist through time by having temporal parts at different times, provides an account of change in intrinsic properties in terms of the having of different properties by different temporal parts. My neighbour Cyrano, for instance, has a big nose (say, at t_1). But suppose that he undergoes a plastic surgery operation and so, at t_2 , he has a small nose. What this amounts to, according to the four-dimensionalist, is that one of Cyrano's temporal parts has a big nose, and another has a small one.

When considering the four-dimensionalist's account of change, some object to it by claiming that what we want to give an account of is how a single object, a single individual like my neighbour Cyrano, can change, and the four-dimensionalist is telling us a story about different objects (different temporal parts) having different properties, and this is not the story we wanted to be told. What we have is not change of an individual, but replacement of one changeless object (one temporal part) by another changeless one. So, no concrete particular can ever genuinely change.

But, as many four-dimensionalists have argued, this objection is easily answered. What is intrinsic change ? According to Judith Jarvis Thomson, "a thing changes iff it has a feature at an earlier time which it lacks at a later time" (Thomson (1983, p. 210-211)). Berit Brogaard claims that "change takes place when a single entity has two incompatible states at different times" (Brogaard (2000, p. 341)). Both views follow the traditional view of Bertrand Russell that "change is the difference, in respect of truth and falsehood, between a proposition concerning an entity at a time t and a proposition concerning the same entity at another time t' , provided that the two propositions differ only by the fact that t occurs in the one where t' oc-

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curs in the other" (Russell (1903, §422)). The core idea these three views have in common is that change is the having of different properties at different times. But if this is right, the four-dimensionalist's answer to the 'no-change' objection is readily at hand : according to the four-dimensionalist's picture, Cyrano, the four-dimensional entity, has at t_1 the property of having a big nose, and at t_2 the property of having a small nose (by having a t_1 -part that has a big nose and a t_2 -part that has a small nose); he has a feature at t_1 that he lacks at t_2 – and that's all that's required to claim that a change occurs. Surely, an instantaneous temporal part of Cyrano does not change (it will, for instance, always be true that his t_1 -part has the property of having a big nose), but Cyrano does, and this is what we wanted to account for. The four-dimensional individual Cyrano can very well have different properties at different times and can, therefore, change.

Now, let us turn back to the bundle theory. Since Van Cleve's objection is analogous to the 'no-change' objection to four-dimensionalism, it is very easy to adapt the four-dimensionalist's reply to save the case of the bundle theory. The reply, then, goes as follows. (This strategy was pioneered by Casullo (1988, p. 138).)

Granted, if one property of a bundle of properties is taken away and replaced by another, then the resulting bundle is not numerically identical to the original bundle, and so, the original bundle did not change, but was replaced or followed by a new one. But ordinary particulars, like Cyrano, are not such bundles – they are *bundles of bundles*. That amounts to say that ordinary particulars are four-dimensional entities that are extended in time, as well as they are extended in space, by having temporal parts at different times. In the bundle theorist's vocabulary : they are bundles that are made up of bundles which are the temporal parts that make up the whole four-dimensional individual (the bundle of bundles). Now it is easy to see how the bundle theorist can give an account of change in intrinsic properties along the four-dimensionalist's line of thought : Cyrano, has a big nose at t_1 , then he undergoes a plastic surgery operation and so, at t_2 , he has a small nose. There was a bundle at t_1 , that included the property of having a big nose, which does not exist at t_2 , but there is at t_2 a bundle that includes the property of having a small nose. None of those two bundles of properties changed. But Cyrano did. Cyrano is the bundle of those two (and, probably, much more) bundles of properties and he, the four-dimensional individual, can be said to change from t_1 to t_2 , in virtue of having different temporal parts at those two different times. It takes then no more than

adopting the four-dimensionalist's strategy to answer this objection against the bundle theory.

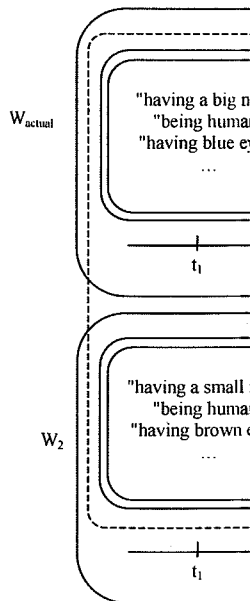
(Note that while the primary interest of this paper goes to the bundle-theory-with-universals view, the bundle-theory-with-tropes view is also subject to Van Cleve's objection and could also benefit from the same strategy to answer it.)

§3. The second well-known objection to the bundle theory (also to be found in Van Cleve (1985, p. 122)) is structurally similar to the first. Take Cyrano, who is, from now on, a bundle of bundles of properties. Now, the objector remarks, as before, that the identity of bundles depends on their constituents – a bundle must have the constituents it has, otherwise it would not be the same bundle. So, it seems that the components of a bundle are essential to it. But then, the bundle theorist faces the unwelcome consequence of her theory that any property of any object turns out to be a necessary property of it. Take, again, Cyrano who has blue eyes throughout his entire life. In the bundle theorist's vocabulary, what we have is a bundle of bundles of properties, among which is (always) the property of having blue eyes. But, since Cyrano is identified with this bundle, and since bundles have their components essentially, it is impossible for Cyrano to have had any other properties than he actually has – even the clearly contingent ones, like the colour of his eyes. If this is true, the bundle theory certainly does not look very appealing.

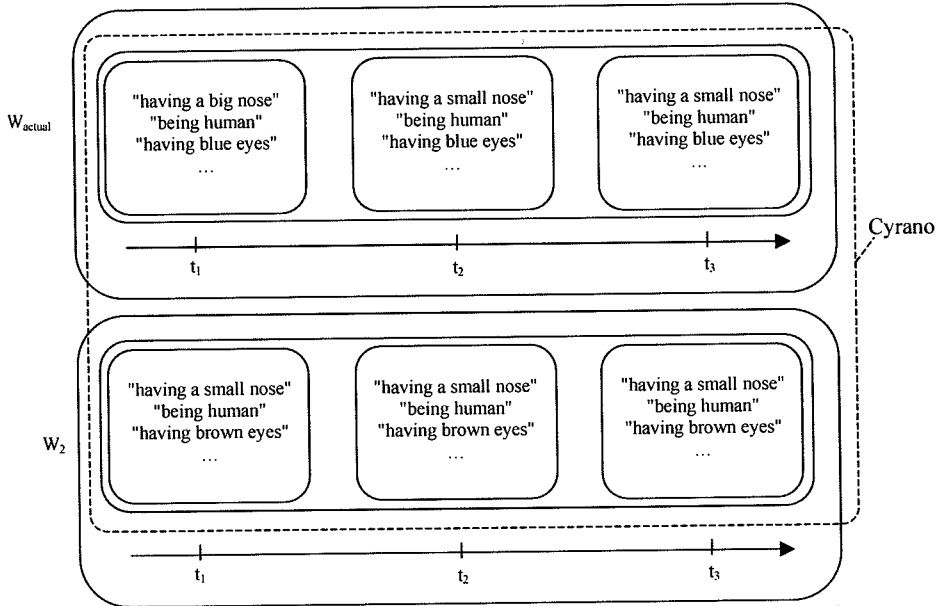
Fortunately for the bundle theorist, this is not true, or at least, need not to be. Since this objection is structurally similar to the first one, one can easily have at hand a reply to it that is structurally similar to the reply inspired by four-dimensionalism that we have seen above. What is being proposed here, is that individuals like Cyrano are to be conceived of as *bundles of bundles of bundles* of properties, and that one should not only be a temporal realist but also a modal realist (not only a four-dimensionalist, but also a 'five-dimensionalist'). Thus, not only is Cyrano spatially and temporally extended, but he is also 'modally extended', that is, he is a modal perdurant¹. In the bundle theorist's vocabulary : not only is he a bundle of his temporal parts (the bundles of properties), but he is also a bundle of several (many) such bundles, each of them existing in some possible world. So, Cyrano is to be identified with a bundle of bundles (of bundles of properties) inhabiting different possible worlds, and those bundles can of course

¹ The theory of modal perdurants goes also by different names : Lewis (1983) prefers the term "modal continuant" and Varzi (2001) the term "modal occurrent".

have different properties. One of them has the property of having blue eyes, not to be necessary. The actual Cyrano (who is in the actual world) undergoes plastic surgery. At the same time, he has a small nose and blue eyes (and does not have the property of having blue eyes). A modal perdurant that has the property of having brown eyes is a modal perdurant (that is, all modal perdurants share the property of having brown eyes). One of the actual modal perdurants is just an example to illustrate that "being human" is an essential property, just pick any human. In short, the actual Cyrano is in virtue of being a bundle of parts that have their own essential temporary properties. Some of these parts have those



have different properties. For instance, as illustrated on the figure below, one of them has the property of having blue eyes, and another has the property of having brown eyes – and this is how such properties turn out not to be necessary but only contingent properties of, for instance, the actual Cyrano (who is an actual ‘modal part’ of Cyrano the modal perdurant). So this is how Cyrano’s story goes, according to this modal bundle theory : in the actual world, Cyrano starts his life with a big nose but later he undergoes plastic surgery in order to change its size, and so, at some later time, he has a small nose. He also has, throughout his entire actual life, blue eyes (and does not undergo any operation to alter this feature), but this property can be said to be only a contingent one, since he is a part of a modal perdurant that has an other-worldly modal part which has the property of having brown eyes. And all of the modal parts of Cyrano the modal perdurant (that is, all of the bundles of bundles of properties that make up the bundle of bundles of bundles of properties that is Cyrano the modal perdurant) share the property of being human, and this is why it is said to be one of the actual Cyrano’s essential, non-contingent, properties. (This is just an example to show how the theory works, and I do not claim that "being human" is an essential property of Cyrano. If you don't like this example, just pick any other property you take to be essential to Cyrano.) In short, the actual Cyrano manages to have the contingent properties he has in virtue of being a part of a modal perdurant that has other-worldly modal parts that have them – exactly as the actual Cyrano manages to have intrinsic temporary properties by having different temporal parts at different times that have those properties *simpliciter*.



(As before, note that the bundle-theory-with-*tropes* view is also subject to the objection from this section, and could also benefit from the same strategy to answer it.)

§4. Now, fortified with the theory of modal perdurants, let us see how the bundle theory can face what is often taken to be a deadly objection to it². To see this, let's take two steps back, and consider again the original bundle theory, and leave the modal bundle theory aside, for just a moment. The objection then goes as follows. The bundle theory is committed to the principle of Identity of Indiscernibles. But this principle is false. So, the bundle theory is false.

The principle of Identity of Indiscernibles states that if an individual shares all of its properties with another individual, they are numerically identical – same properties entail numerical identity. More formally: for any objects x and y , if, for any property F , F is a property of x iff F is a property of y , then x is numerically identical with y .

It is easy to see why the bundle theory is committed to this principle. Concrete particulars, according to this theory, are bundles of properties. Now, take the well-known example of two objects that have the same properties, for instance two perfect spheres of the same size, same mass, same composition, same colour, and so on. Both spheres are bundles of the same properties – and so, according to the bundle theory, are the same bundles; as before, if two bundles have exactly the same components, they are numerically identical. But then the bundle theorist must accept that the two spheres, being bundles of the same properties, are numerically identical – that is, that there is only one sphere. And this is exactly what the principle of Identity of Indiscernibles claims.

Now, the objector argues, this principle is false, for it is quite possible for there to be two numerically distinct objects that have exactly the same properties. Our example of *two* spheres exactly alike in all of their properties is possible.

But wait, one could reply here, this is not possible – for, if we really have two spheres, they cannot share *all* of their properties. For instance, let us name the first sphere "Jean" and the other "Luc". Jean then has the property of being identical to Jean, which Luc lacks, and Luc has the property of being identical to Luc, which Jean lacks. So, the example is not one where two objects share all of their properties, but only some (perhaps many, but

² Hawthorne (1995) provides a different way to answer this objection. It is criticized by Valicella (1997).

not all). Furthermore, temporal locations at certain distance from the true of having different property of being on the right of Cyrano of their properties by the bundle theory. But the objector would say that properties such as "being identical to Jean", and "being identical to Jean" will most likely not be distinguished here to distinguish between those that do just that, and those that do not. Properties such as "being on the left of Jean" into the account of the bundle theorist don't want such extensions. A particular does not have all the same particulars as well). It is possible for some bundle theorist, precisely, we don't want to have certain particular with the bundle theorist (like Cyrano). The bundle theorist of what I am sure is true, surely does not want to have "being on the left of Jean" into the account of the bundle theorist after all. So, to get back to the bundle theorist, now have is the claim.

(Id.Ind.)' If x and y are numerically identical.

is true, but that the p

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not all). Furthermore, if there are two spheres, they have different spatio-temporal locations, they do not occupy the same place, and they are at a certain distance from each other – and so, have different properties in virtue of having different locations; one of them, for instance, has the property of being on the left of Cyrano, and the other has the property of being on the right of Cyrano. So, our example of two spheres exactly alike in all of their properties is not possible, after all. (And this is well accounted for by the bundle theory.)

But the objector will not accept that the bundle theorist can make use of properties such as "being identical to Jean", or "being on the left of Cyrano", and similar. Firstly, using properties such as "being identical to Jean" and "being identical to Luc" to distinguish between the two spheres will most likely not be a very useful strategy, for to appeal to such properties seems here to be *ad hoc* and to simply beg the question : we want to distinguish between two spheres and so we furnish them with properties that do just that, and nothing more. Secondly, and most importantly, properties such as "being on the left of Cyrano" should not be allowed to enter into the account of what a particular like Jean or Luc is. The reason we don't want such extrinsic properties (that is, 'external' properties that a particular does not have solely in virtue of the way *it* is, but that involve other particulars as well) involved here is that we don't want to say that to make it possible for something to exist, something *else* must also exist; more precisely, we don't want that while giving the conditions of existence of a certain particular we must mention and involve some other contingent particular (like Cyrano). For instance, it seems unwelcome that in the explanation of what I am some other particulars must be included – for my existence surely does not depend on *them*. So it seems that properties such as "being on the left of Cyrano" cannot be satisfactorily used here by the bundle theorist after all.

So, to get back to the objection from Identity of Indiscernibles, what we now have is the claim that

(Id.Ind.)' If x and y share *all* of their properties, they are numerically identical.

is true, but that the principle

(Id.Ind.)" If x and y share *all of their intrinsic* properties, they are numerically identical.

is false. And it is this second principle that the objector charges the bundle theorist with being committed to. To sum up : the bundle theorist cannot make use of extrinsic properties in her account of what Jean and Luc are, and so, she is committed to the claim that it is impossible for there to be such two numerically distinct objects. But this is possible, and (Id.Ind.)" is false. So, the bundle theory is false.

§5. The reply the bundle theorist can make to this objection is to claim that (Id.Ind.)" is *true* because Jean and Luc have not only actual properties like having the same size, or having the same colour, but also modal properties like having possibly a different size, or having possibly a different colour. The general strategy would be here to claim that while Jean and Luc share all of their actual intrinsic properties, there is a possible world where, for instance, Jean has a certain colour and Luc has another one, and they are thus distinguished in the actual world by having different modal properties – and so, they turn out not to be the same bundles of properties after all. The only counter-example to (Id.Ind.)" that the objector would have to find to trouble the bundle theorist would be an example of two particulars that share all of their properties as a matter of *necessity* – and plausible intuitive cases may be hard to find. But now, everything depends on the account one gives of modal properties. Indeed, it will be argued that there are two main problems with this strategy, both of which depend on the account of modal properties and the having of them. As it will appear, the modal bundle theory will provide a better solution than its competitors, especially modal counterpart theory, because invoking modal properties as understood by modal counterpart theory will turn out to be objectionable in a way in which invoking modal properties as understood by the modal bundle theory is not.

§6. Modal counterpart theory can, of course, provide the highly wanted claim that Jean and Luc have modal, as well as actual, properties, and does not make them to be world-indexed, like many actualist accounts do (which makes here these actualist views to be simply non-starters, since such world-indexed properties are clearly extrinsic in the unpalatable sense discussed in §4 above). But there are two serious problems. First, if we use counterpart theory here, it sounds plausible to say that Jean and Luc could *not* have different modal properties, because since they both have, by hypothesis, the same non-modal properties, they cannot have different coun-

terparts in any position of similarity and the same degree of worldly things. What of the other – or so principle³.

The second problem count it provides of Jean has of being p theorist will claim t tue of having an of that the counterpart we wanted to avoid individuals from other would then not be a

§7. Now, can the m second worry, she account *de re* moda show that even if th difficulties for *her* v does not arise again The modal bundle t being intrinsic, and it is a modal perdur ent possible worlds, instance. So *it* is the an actual part that i then a modal proper being a part of a mo rist's vocabulary : th ing the property of property of being p dle of bundles of p modal property of b intrinsic property be itself (unlike in th Cyrano"). And so, s

³ See, in particular,

terparts in any possible world – because the counterpart relation is a relation of similarity and Jean and Luc, being actually exactly alike, will bear the same degree of similarity or resemblance to exactly the same other-worldly things. What is a counterpart of one, is automatically a counterpart of the other – or so say the many supporters of the modal supervenience principle³.

The second problem with counterpart theory as used here lies in the account it provides of modal properties – for instance, of the property that Jean has of being possibly pink, while it is actually green. The counterpart theorist will claim that Jean has the property of being possibly pink in virtue of having an other-worldly counterpart that is pink. And so, it is clear that the counterpart theory makes modal properties to be extrinsic in a way we wanted to avoid since they are given an account in terms of other individuals from other possible worlds. This line of response to the objection would then not be a very compelling one here.

§7. Now, can the modal bundle theorist do any better? With respect to our second worry, she certainly can. First, she can try to show that under her account *de re* modal properties are, in a sense, intrinsic; second, she can show that even if they turned out to be extrinsic, this would not yield any difficulties for *her* view; and third, she can argue that the objection simply does not arise against her theory at all. Let us start with the first strategy.

The modal bundle theory provides an account of *de re* modal properties as being intrinsic, and so answers the objection. Take the sphere Jean: since it is a modal perdurant, it has as parts several particulars inhabiting different possible worlds, and some of them are pink, while others are green, for instance. So *it* is the one who really has one non-actual part that is pink and an actual part that is green. The modal property of being possibly pink is then a modal property had by the actual Jean-part, that has it in virtue of being a part of a modal perdurant which has a pink part. In the bundle theorist's vocabulary: there is an actual bundle of bundles of properties (including the property of being green), which can be said to have the modal property of being possibly pink by being a constituent of a bundle of bundle of bundles of properties which contains the property of being pink. The modal property of being possibly pink, had by the actual Jean-part is an intrinsic property because it does not involve any *other* particular than Jean itself (unlike in the case of properties such as "being on the left of Cyrano"). And so, such a property can, and must, be used in the account of

³ See, in particular, Zimmerman (1997, p. 307).

Jean's nature, and of Luc's nature – and this will then allow us to distinguish between the two actual allegedly indiscernible objects. What we now have is the principle

(Id.Ind.)^m If x and y share *all of their intrinsic, actual, and possible* properties, they are numerically identical.

which is true (unlike (Id.Ind.)^m). It would take an example of two distinct individuals that share *necessarily* all of their properties to make this principle false – and such examples do not seem to be easily and intuitively available.

But perhaps, one can disagree here. Granted, it is true that the having of modal properties of the actual part of Jean (Jean, the modal perdurant) does not involve any other particulars than Jean itself (unlike under modal counterpart theory), but still, the having of modal properties involves relations between the different modal parts of Jean – and perhaps one could suspect that this is enough to make these properties extrinsic, because these modal properties are, in a sense, external to Jean's actual part that has them, since it has them in virtue of its relations with Jean's other-worldly parts. But even if the modal bundle theorist gave this point to the objector, she could now ask : why is this an *objection* to my view ? Remember the motivation we had to rule out extrinsic properties here : we didn't want them in the account of what a particular *is* because we didn't want to say that *other* particulars must be involved in the account of what this particular is. Under modal counterpart theory, particulars are world-bound and the analysis of their having of modal properties appeals to other-worldly distinct particulars and so this account is unappealing here – but in the case of the modal bundle theory, we have the central claim that particulars (like the spheres Jean and Luc, or Cyrano) are modally extended and thus the account of what the having of modal properties amounts to is, so to say, already *built in* the definition of the notion of a particular. So, *de re* modality does not require any further explanation or piece of theory, it is already given in the explanation of what a particular *is*. Once this explanation of what it is to be a particular is given, we do not need to appeal to any other particulars to analyze modal properties and so, even if the objector insists on saying that modal properties turn out also to be extrinsic, there is no reason to think that this yields any difficulties *here*. Once we have said what a particular such as Jean is, we do not need to appeal to any other particulars to account for the modal properties of, for instance, its actual modal part – this is sim-

ply already included in the perdurant.

This quite naturally leads to an objection from Identity to the modal bundle theory because of cases alike in all of their modal properties (think of, for example, against the bundle theory again, it is easy to find cases of their properties such actual cases, and in the case of the modal bundle theory seem easy to find electrons that are actually concerned, certainly have to find a case that seems plausible that against the bundle theory and if the modal bundle theory is modally extended, then the objection.

§8. This brings us to the modal supervenience – the modal supervenience on actual objects – pervene on actual objects of different modal properties (properties after all). principle, since the modal bundle theory resembles one of the cases is it not plausible that is yellow ? It seems why it is of no use to be extrinsic in a world view, such a world is enough to help – since world where Jean is world where Luc is Jean and Luc (the

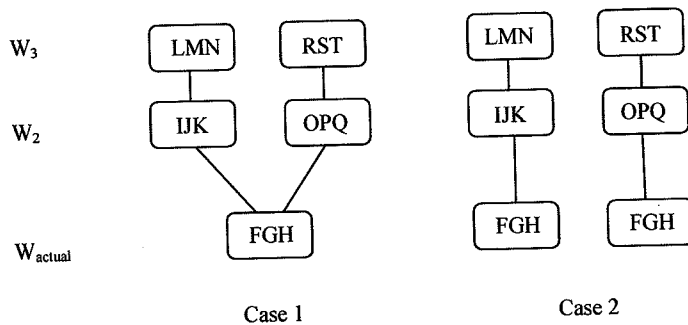
ply already included in the account of Jean's nature, since it is a modal perdurant.

This quite naturally leads to the third line of response : the claim that the objection from Identity of Indiscernibles simply does not even arise against the modal bundle theory. The objection arises against the original bundle theory because of easily imaginable cases of two objects that are exactly alike in all of their properties, and perhaps even because of some actual cases (think of, for instance, two electrons). The objection also arises against the bundle theory fortified with four-dimensionalism because, again, it is easy to imagine a case of two objects that are exactly alike in all of their properties during all the time they exist (perhaps, there also are such actual cases, as before). But the objection simply does not even arise in the case of the modal bundle theory because, as noted before, it does not seem easy to find plausible counter-examples here. Two spheres or two electrons that are actually exactly alike as far as their non-modal properties are concerned, certainly could differ in some way. The objector would have to find a case of two objects that are necessarily exactly alike, and it seems plausible that such cases simply don't exist – at least the charge against the bundle theory is here much weaker than before. If this is true, and if the modal bundle theorist insists that all particulars are maximally modally extended, then it seems that she does not even have to answer the objection.

§8. This brings us to the first worry we had with modal counterpart theory – the modal supervenience principle that claims that modal properties supervene on actual ones, thus *not* allowing two actual duplicates to have different modal properties (and so, making them to be bundles of the same properties after all). Modal counterpart theory seemed simply to imply this principle, since the counterpart relation is a relation of similarity, and what resembles one of the two actual duplicates, resembles the other as well. But is it not plausible that there is a possible world where Jean is pink and Luc is yellow ? It seems not, according to modal counterpart theory, and this is why it is of no use here (besides the fact that it makes modal properties to be extrinsic in a way we want to avoid). Under the modal bundle theorist's view, such a world seems to be more easily available, but this will not be enough to help – simply because even if we had it granted that there is a world where Jean is pink and Luc is yellow, there would then also be a world where Luc is pink and Jean is yellow, which means that the actual Jean and Luc (the actual 'modal parts' of Jean and Luc, the modal per-

durants) will still have exactly the same modal properties (being possibly pink, being possibly yellow), and so will be the same bundles of properties. Of course, one would not want to claim here that they have distinct world-indexed properties (being pink-in- w_1 , being yellow in w_1 , ...) and are discernible by them, since we ruled out the use of such extrinsic properties before. What is needed here is the two modal perdurants Jean and Luc to be distinct : that is, as wholes made up of bundles of bundles of properties, they must be distinct – there must be at least one property that they don't share. We have already encountered this claim when it was said above that cases of two objects that share all of their properties as a matter of necessity are not intuitively available. What this means for the modal bundle theorist is that she has to bite the bullet : her theory requires a rejection of the modal supervenience principle in the sense that there are no two modal perdurants that are duplicates of each other (while, of course, there can be duplicates of their this-worldly modal parts, which is the important point). No two things are exactly alike as a matter of necessity. If this claim is granted, she can then face our problem : if there are no duplicates of modal perdurants, then the modal perdurants Jean and Luc will differ in at least one small respect and this will make their actual modal parts (the two actual spheres) have distinct modal properties, and since modal properties are to be included in these two actual bundles of properties, the two bundles will turn out to be distinct.

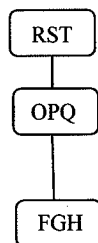
§9. Let us now see how the modal bundle theory allows us to distinguish between the two following cases :



On this very simple account for as its task. The first (four-dimensional case is one where world, but those ble with respect t ble spheres, or p under the modal two possibilities without begging individual in the can precisely be perdurants) are c durants – the two they are discerni guished by their "FGH" in the first also has the mod first of the two " of being possibly bly R, and this is possibly R but tha Here, we see the conceived of as r sent case to see t durants and ima dimensional part 'five-dimensional maximal) modal words; and, simil durants both have theorist's strategy that this shared m because to be an heavy is this claim it would probably other hand, it is unless they are co

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allows us to distinguish



Case 2

On this very simplified figure, we have two distinct cases that have to be accounted for as distinct by the modal bundle theory if it is to succeed in its task. The first case is one where two modal perdurants share an actual (four-dimensional) part (the bundle of properties "FGH"); while the second case is one where two modal perdurants have both a part in the actual world, but those two parts are numerically distinct while being indiscernible with respect to their actual and intrinsic properties (say, two indiscernible spheres, or perhaps two electrons). *Both* cases are, of course, possible under the modal bundle theory. And how does it distinguish between the two possibilities? That is, how can we distinguish between the two cases without begging the question by saying that in the first case there is *one* individual in the actual world, while in the second case there are *two*? This can precisely be done if the actual things (the actual part(s) of the modal perdurants) are conceived of as parts of the 'five-dimensional' modal perdurants – the two modal perdurants will be distinguished simply because they are discernible as wholes, and the actual things will thus be distinguished by their distinct modal properties: for instance the bundle-thing "FGH" in the first case has the modal property of being possibly L, and it also has the modal property of being possibly R; while, for instance, the first of the two "FGH"-bundles in the second case has the modal property of being possibly L, but does *not* have the modal property of being possibly R, and this is how it will be distinguished from the second thing (that is possibly R but that is not possibly L).

Here, we see the need for the following claim: all individuals have to be conceived of as maximally 'five-dimensional'. It is easy to adapt the present case to see the requirement for maximality: take the two modal perdurants and imagine that in the first case they not only share a four-dimensional part that exists in the actual world, but say that they share a 'five-dimensional sub-segment' – that is, they share a part that is a (non-maximal) modal perdurant that stretches across, say, thirty-six possible worlds; and, similarly, imagine that in the second case the two modal perdurants both have such a sub-segment. To be able to use the modal bundle theorist's strategy to distinguish between the two cases, we'll have to claim that this shared modally extended part is not a regular individual on its own because to be an individual is to be maximally modally extended. How heavy is this claim? Is it bad to be committed to it? Well, on the one hand, it would probably be better to remain neutral about such a claim, but on the other hand, it is not that odd to claim that individuals are not 'complete' unless they are considered not only with their actual intrinsic properties but

also with all of their modal properties – their 'potentialities', like their so-called 'secondary qualities', for instance.

§10. So, here is the cost of the modal bundle theory if it wants to answer the objection from Identity of Indiscernibles : all individuals are maximally modally extended, there are no duplicates of modal perdurants, and, finally, a primitive bundling relation – since we rejected the counterpart relation to be a suitable 'glue' that would make stick together the world-bound modal parts to make up a single modal perdurant, nothing else than a primitive 'glue' seems to be available. But perhaps this is not as bad as it seems, since bundle theorists often appeal to a primitive bundling relation anyway. Bertrand Russell, who was a bundle theorist but not a modal bundle theorist, tried to unify the different properties that make up a single bundle by a symmetrical and non-transitive relation called "compresence". This relation was taken as a primitive relation that ties together the different properties, where "compresence" means roughly "simultaneous presence" (see Russell (1948, pp. 54-55)) – which does not explain much, taking the bundling relation as being primitive. An alternative approach that takes the bundling relation as being primitive was taken recently by Paul (2002) and (2004) – she claims that the properties making up a single bundle are *parts* of the bundle and takes the bundling relation to be a primitive mereological relation of fusion. Here again, the bundling relation is not given an analysis but taking it as a primitive is probably the best theoretical option the modal bundle theorist can take, since, as we have seen, using some other relation, like the counterpart relation, as the 'glue' would not be a good option because of the difficulties with counterpart theory we have seen above. A primitive relation certainly does not explain much, but allows for individuating particulars without yielding any troubles, and can defend itself by arguing that alternative theories of particulars also have weighty primitives : primitive substrata, primitive substances, or primitively individuated tropes.

§11. The bundle theory fortified with four-dimensionalism answers satisfactorily the first objection. The modal bundle theory answers satisfactorily the second objection. This alone, I think, motivates the view to be taken seriously. And while its answer to the third objection from Identity of Indiscernibles comes at serious cost, it seems to do better than other options (world-indexed properties, and the modal counterpart theory), and could

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perhaps save the case of the bundle-theory-with-universals view and make it to be a respectable piece of metaphysics.

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