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# Real Presence in the Eucharist and time-travel

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**Abstract:** This article aims to bring some work in contemporary analytic metaphysics to discussions of the Real Presence of Christ in the Eucharist. I will show that some unusual claims of the Real Presence doctrine exactly parallel what would be happening in the world if objects were to time-travel in certain ways. Such time-travel would make ordinary objects multiply located, and in the relevantly analogous respects. If it is conceptually coherent that objects behave in this way, we have a model for the behaviour of the Eucharist which shows the doctrine to be coherent, at least with respect to the issues discussed.

## Introduction

The aim of this article is to bring some work in contemporary analytic metaphysics to discussions of the Real Presence of Christ in the Eucharist, with the hope of offering insight into some of the philosophical issues surrounding the doctrine. The relevant parts of metaphysics are the debate about how objects continue to exist through time (or *persist*) and the discussion of the relation of parts and wholes (mereology). In particular, it concerns the possibility of objects time-travelling. The article is speculative in nature, so will undoubtedly overlook some of the subtleties both in the doctrine of Real Presence and in the metaphysics. Nevertheless I hope to open up some conceptual space for the application of different theories in contemporary philosophy to the long-standing problem of how to understand what it would be for Christ to be fully present in the Eucharist.

The next section of the article will briefly introduce the theological doctrine in three steps, and elaborate three sets of philosophical issues that correspondingly arise. The first is mentioned simply because overlooking it would be perverse, but I will not attempt to discuss it. The second and third issues are the target of this

article. They will be discussed in the third and fourth sections of the article respectively. In brief, they offer philosophical challenges to the coherence of the doctrine of Real Presence; they lead one to doubt that what is claimed of the Eucharist is even possible. I will show that these issues for the Real Presence doctrine exactly parallel what would be happening in the world if an object were to undergo certain sorts of unusual procedures (specifically time-travel). If it is conceptually coherent that objects can behave in this way, then we have a model for the behaviour of the Eucharist which shows the doctrine to be coherent (with respect to the second and third issues raised). Therefore if time-travel is coherent then it is at least *possible* that the Eucharist behave in the way described by the Real Presence doctrine, though I offer no positive arguments to the effect that it does.

Before beginning in earnest, however, it is worth making a disclaimer with respect to the conditional claim above. The article attempts to show that some of the philosophical issues connected with the doctrine of Real Presence are no more problematic than those that arise from objects time-travelling in certain ways. If you think that time-travel (of the sort I appeal to below) is impossible on conceptual grounds, you may not find such a result especially interesting. For this I apologize. But there are many, metaphysicians and others, who think that such time-travel is not conceptually incoherent.<sup>1</sup> If you do not belong to that number, I hope that the article still retains some interest in virtue of showing that your misguided colleagues who *do* believe in the conceptual coherence of time-travel ought be no more perturbed by some of the seemingly peculiar claims of the doctrine.<sup>2</sup>

### **The doctrine of Real Presence**

In Roman Catholic theology, as well as in the Eastern Orthodox and some other Christian Churches, the Eucharist is a process by which Christ becomes really present. I will focus on the Catholic doctrine for the sake of simplicity. Without going into the complexity of the view, the idea is that as a consequence of the actions of the priest during the mass, the bread and wine once consecrated *literally become* the body and blood of Christ. To make it a little more precise, let's label the things on the altar A and B. A is what begins as the bread, and B is what begins as the wine. Before the consecration has happened, A and B are bread and wine. After the consecration, however, A and B are the body and blood of Christ.<sup>3</sup> Call this thesis RP (for Real Presence):

*RP: A and B are the body and blood of Christ*

But things are more complicated than this makes it appear. First, both the bread and the wine *each* become both the body and blood of Christ; A is the body and blood of Christ, as is B. Moreover, not only are A and B each transformed into the

body and blood of Christ, but they each are transformed into the *whole* of the body and blood of Christ.<sup>4</sup> This is captured by our thesis below:

*RP1: A and B are each the whole body and blood of Christ*

A yet further level of complication is added by an additional claim. When A and B are distributed among those who consume them, it is claimed that each of the receivers receives the whole body and blood of Christ. A, which is bread pre-consecration, can be distributed by being broken into seemingly smaller pieces. B, which is wine pre-consecration, is distributed when individuals consume portions by having a sip. Thus we have the thesis:

*RP2: When A and B are distributed, all of the resulting entities are the whole body and blood of Christ.*<sup>5</sup>

These theses raise a number of philosophical problems. I shall consider the theses RP, RP1 and RP2 in turn.

1. The most obvious problem is with RP and is twofold. On the one hand what is there on the altar after the consecration doesn't look like a body and some blood, doesn't act like a body and some blood, doesn't smell, taste, or feel like a body or some blood. How can it, then, actually *be* Christ's body and blood? On the other hand what is on the altar looks, acts, smells, tastes, and feels like bread and wine. How, then, can it not be bread and wine? One thought might be that it is *both* bread and wine *and* the body and blood of Christ, which would at least deal with the second aspect of this worry. But this view, known as consubstantiation, is explicitly denied in a Catholic setting. It is claimed that the post-consecration material ceases to be bread and wine; it is only Christ's body and blood.

This has puzzled Christian theologians for some time. Drawing on Aristotelian metaphysics, Aquinas and others developed a theory according to which the *accidents* of the entities remain the same while the *substance* changes.<sup>6</sup> This is the interpretation known as transubstantiation, which attempts to address this twofold problem. There are, of course, reasonable questions about Aristotelian metaphysics and the theory of transubstantiation generally. There is also a need to try to understand this doctrine in a way informed by progress in philosophy since Aquinas and Aristotle. But this large task will not be addressed here. Instead, this article is restricted to two other problems that arise from the doctrine of Real Presence, and in particular from RP1 and RP2.

2. RP1 raises a second issue. It states that the *whole* of the body and blood of Christ is present in the Eucharist. But it is possible (and in fact the case) that there are multiple consecrations. Suppose that the

appropriate events happen in both London and Mumbai at the same time. This means that the body and blood of Christ is simultaneously present as a whole in both London and Mumbai. How is it possible for one thing to be simultaneously present as a whole in more than one place? How can all of the body and blood of Christ be present in different locations?

In fact, this problem is apparent even if there is only one consecration at any time. For RP1 states that *each* of A and B are the whole body and blood of Christ. So Christ's whole body and blood are present at the same altar twice over; once in A and once in B.<sup>7</sup>

Thus RP1 commits one to the view that Christ's body and blood can occupy different regions of spacetime in some way that vindicates the claim that the whole of his body and blood are present in each region.<sup>8</sup> This seems unusual to say the least. We are owed further explanation.<sup>9</sup>

3. The third issue is even more troubling, and is derived from RP2. It states that entities resulting from the distribution of A and B are also themselves the whole body and blood of Christ. That is, the entities consumed, which seem smaller than A and B and appear to be parts of A and B, are the whole body and blood of Christ. It is not immediately clear how to understand this. It is not simply like the case of water, where every part of some water is water (at least down to the molecular level). Rather, the *object* that is A is numerically identical with some object which we find after the distribution of A. This strange claim will raise issues of mereology; the relation of parts and wholes. It is unclear whether any objects can be this way, and therefore whether it's coherent to assert this of the Eucharist.

The three issues that have been introduced by no means exhaust the puzzling philosophical aspects of the theological claims encapsulated by RP, RP1 and RP2. But the latter two are topics that I hope to shed light on through contemporary metaphysics. In the next section, I begin with RP1.<sup>10</sup>

### Modelling RP1

To provide a way of understanding RP1, I first need briefly to introduce some metaphysical concepts. These concern the continued existence of material objects over time. Consider, for example, a tree, which begins life as an acorn, grows into a sapling, and then into an adult tree. Eventually, it dies and ceases to be. The tree comes into existence, continues to exist throughout its lifetime, and then perishes. Or consider a clock, which is carefully constructed by a clockmaker and then ticks away until one day it is taken apart. Likewise, the clock comes to be, exists for a period of time, and then ceases to exist. The world is populated by

such objects. But there are competing philosophical theories to account for this phenomenon. A neutral term for existence through time is *persistence*. The tree, the clock, we ourselves, and many other things persist. The two ways to understand persistence are called *endurance* and *perdurance*.<sup>11</sup> While the precise difference between these is a matter of detailed debate, the general idea is that an object *endures* if it is wholly present at each time at which it exists, and an object *perdures* if it exists through time by having different parts at different times. The perdurance account suggests that objects have temporal parts in the way that, for example, roads have spatial parts. Endurance theorists deny this, and claim that objects can have spatial but not temporal parts. To put it in metaphorical terms, an enduring object *moves through* time, whereas a perduring object is *spread out* across time.

Now, let's consider RP1 with these in mind. First it can be shown that perdurance accounts can provide the conceptual machinery to avoid the worry that RP1 has elicited. For the perdurantist, being really present somewhere will be a matter of having some relation to something located at that place.<sup>12</sup> For instance, Jane's being really present in the football stadium is a matter of something located in the football stadium (Jane's temporal part) being related to Jane by the relation 'being a temporal part of'. Now, the nature of this relation is up for discussion; one plausible candidate is some counterpart relation that holds among all temporal parts. But whatever the relation is, it should be able to hold of more than one thing at a time. For instance, consider what the perdurantist will want to say about Jane if she time-travels back to a period in which she previously existed. There will then be two distinct things at a time, one of which is older than the other. But both seem to be Jane, i.e. have appropriate temporal-part relations.

If this is so, the perdurance account gives one model for the Eucharist as described by RP1. RP1 states that A and B are each the whole body and blood of Christ, and therefore that Christ's body and blood is multiply located at a time. But if this is just a matter of certain relations holding then there is no reason why God couldn't coherently miraculously make these relations hold.<sup>13</sup> This is particularly clear if the relations are fundamental, but even if they are derived from some further relations or properties it is plausible that God could imbue A and B with the appropriate further relations or properties to ensure that A and B are indeed both the whole body and blood of Christ.

To an endurance theorist this will not be an acceptable interpretation of RP1. For the endurance theorist doesn't accept that any relation other than identity can be what holds between an object at one time and the same object at another time. Hence, to give a full account of RP1 we need a model for the Eucharist within an endurance picture. Luckily, it is quite simple to provide one. Being really present somewhere, for the endurantist, is a matter of being wholly present somewhere, i.e. it is simply a matter of *being* somewhere. So the body and blood of Christ,

which is wholly present in A on the altar and in B on the altar (and in C in Mumbai, and . . .) is an enduring object multiply located in space at one time. But this can also be understood by appeal to the analogous situation of time-travel. Imagine you have an enduring object, say a pencil, which time-travels. Suppose the pencil is put in a time-travel machine by a scientist and is sent back to the previous week. In such a case you have a pencil which is wholly present at more than one spatial location at a time. This pencil will therefore give an analogue of the multiply located Eucharist.<sup>14</sup>

Thus it seems that RP<sub>1</sub> is explainable both in perdurance and in endurance terms, relying on an analogy with a time-travelling object. If you accept the metaphysical possibility of time-travel, therefore, you ought to accept the metaphysical possibility of multilocation and hence the metaphysical possibility of RP<sub>1</sub>, given that God can do at least whatever is metaphysically possible.

### **Modelling RP<sub>2</sub>**

To explore the philosophical issues raised by RP<sub>2</sub> it is necessary to be precise about what it claims. It says that A and B are the whole body and blood of Christ, and that when A and B are distributed each portion is also the whole body and blood of Christ. This is obviously unusual. Consider a typical example of distribution: a family stew, say, being divided into servings. You would not say that each of the servings is the whole stew; the servings are rather parts of the stew which together compose the whole of the stew. In order to show the conceptual coherence of RP<sub>2</sub> I offer two ways that it could be satisfied. The first is simpler but requires numerous miracles. The second is more complicated but gives a more elegant account. Either, I take it, is sufficient to prove the possibility of an object behaving in the way the RP<sub>2</sub> describes.

The first of the ways to conceive of an object satisfying RP<sub>2</sub> is to appeal again to the notion of an object time-travelling.<sup>15</sup> This furnishes us with the concept of a single object multiply located at a time. What RP<sub>2</sub> states is that during distribution the individual portions are in fact a single entity multiply located. Thus after A is broken into two equal portions, the left portion (A<sub>1</sub>) and the right portion (A<sub>2</sub>) are both identical with the whole body and blood of Christ. If the whole body and blood of Christ is labelled C then the following identities hold: A<sub>1</sub> = C, A<sub>2</sub> = C. By the transitivity of identity, A<sub>1</sub> = A<sub>2</sub>. But this is perfectly acceptable, as A<sub>1</sub> and A<sub>2</sub> can be related in the way that a time-travelling enduring particular relates to itself at that earlier time: they are strictly identical (though may have different properties).<sup>16</sup>

So A<sub>1</sub> = A<sub>2</sub>. Furthermore, A<sub>1</sub> = A and A<sub>2</sub> = A. The results of the distribution (the portions) are identical with the whole pre-distribution entity. And, as noted in relation to RP<sub>1</sub>, A = B, so A<sub>1</sub> and A<sub>2</sub> are identical with B as well. Though these identity relations might appear strange, they are not formally inconsistent.

This picture asserts that when one seemingly breaks A into pieces what you end up with is multiple instances or versions of the very same A, akin to the results of time-travel. You end up with an entity with additional locations at that time. Likewise when one distributes what was originally wine, B (paradigmatically by having a sip).

How this happens is manifestly unclear, however. One way to conceive of it is that at the point when A is seemingly divided A time-travels to *exactly the same moment of time*: it already exists at this time so it thereby becomes present twice over at that time. Both the time-travel and the non-time-travel versions of A would also have to shrink in size by a half.<sup>17</sup> This seems metaphysically possible, i.e. an omnipotent God who could bring about anything metaphysically possible could bring about such a state of affairs. It would require a huge number of miracles to produce such a result: every time consecrated material is distributed God would have to act repeatedly to ensure that this quasi-time-travel occurs. God would have to change the world in this strange way every time the consecrated host was apparently divided. This makes it much less plausible as a theory of what is actually supposed to happen. But this *could* happen, and hence RP2 is not metaphysically incoherent.<sup>18</sup> However, to underwrite this claim further I offer a second interpretation of what happens that is also consistent and requires less in the way of miraculous intervention.<sup>19</sup>

This second interpretation looks more closely at the mereology involved, i.e. the relations of parthood that obtain. Rather than requiring a miracle every time A or B is divided, this approach only requires a single miraculous change from bread or wine to the body and blood of Christ in consecration, but posits that the body and blood of Christ has a complex and unusual mereological structure. Let's give some more detail. RP2 states that the portions that result from a distribution of A or B are all the *whole* body and blood of Christ. One way for this to be is for each part of A and B to be identical with the whole body and blood of Christ. In other words, A and B have parts and each of these parts is identical with the whole body and blood of Christ. So A has a right half and a left half, and each of these halves is identical with the whole body and blood of Christ. Furthermore, A itself is also the whole body and blood of Christ. This certainly sounds odd. But to see its coherence, imagine the following situation:

Consider a wall, which is made up of bricks.<sup>20</sup> Call the wall *W* and the bricks  $b_1$ - $b_n$ . Now imagine a time-travel machine that not only sends objects back in time but also significantly decreases their size. Thus if I put a pencil in this machine it will appear at some time in the past and significantly smaller. Now suppose that *W* is put in this machine at some time *t*. It is sent back in time to  $t^*$  and is significantly reduced in size, say to the size of a brick. Let's call the brick-sized wall that arrives  $w_1$ .<sup>21</sup> After some time, and after *t*, suppose that  $w_1$  is then put in a converse machine and sent back to *t*, arriving at its original size. The operation is then repeated on *W* so that numerous other brick-sized objects identical with *W* arrive

at the past time,  $t^*$ . These are labelled  $w_2-w_n$ . So far everything seems plausible (if rather bizarre). As a final step, put  $w_1-w_n$  together at  $t$  to create a wall. The twist is the following: suppose the resulting wall is in fact  $W$ . The bricks which make up the original wall are actually the wall itself, having time-travelled and shrunk, i.e.  $w_1-w_n$  are in fact  $b_1-b_n$ .

This scenario may be extremely strange, but it seems conceptually possible. The consequence of such an odd occurrence would be that there is an object,  $W$ , which is multiply located at a time and whose locations at that time arrange it in the form of a large object composed of smaller objects.  $W$  seems to be composed of parts, each of which is  $W$ . This is akin to what is asserted in RP2 of the Eucharist: there is an object (the whole body and blood of Christ) which seems to be composed of numerous versions of itself.<sup>22</sup> The example is not quite perfect, though. In RP2 it is claimed that *every* part of A and B are the whole body and blood of Christ. This isn't true for  $W$ , as parts of  $W$  that are smaller than brick-sized are not wholly  $W$ . There are two options here to perfect the example, corresponding to the two ways the world could be. In the first place, the world could contain simples (objects which cannot be divided into parts). In the second place, the world could be infinitely divisible: at every level of magnification there would be complex objects which can be divided into parts. Let me give a version of the example for each option.

If the world is as described in the latter way, it is called *gunky*. Then one can simply iterate the example to accommodate the fact that *every* part of A and B are the whole body and blood of Christ: every brick  $b_1-b_n$  (which are all shrunken, time-travelling  $W$ ) is itself made up of parts which are the brick itself sent back in time and decreased in size by an equivalent machine. And the same applies at the next level down, and so on, and so on. You would then have an object in which, no matter how closely you looked, you would still find the whole original object. Thus if the world is gunky one can use this as a model for the behaviour of the Eucharist.

If the world isn't gunky, i.e. if there are mereological simples, then the example can be adjusted accordingly. Take a mereological simple  $m_1$ . Put it in a standard time-travel machine repeatedly. Then collect  $m_1-m_n$  and arrange them in the form of a composite object  $O$ . What the precise status of  $O$  is to be is a matter of debate.<sup>23</sup> But whatever our preferred interpretation of such cases, one can use exactly the same interpretation for the Eucharist according to RP2. For you can take the whole body and blood of Christ to be a mereological simple; A can then have a mereological structure just like  $O$ . When A is broken and distributed, each of the resulting entities will be the whole body and blood of Christ, and this will be true for every way of distributing A. And at the most fine-grained level you will reach analogues of  $m_1-m_n$  that can be all identical with one another and Christ's body and blood. Thus it has been proven that, whether the world is gunky or contains simple objects, time-travel can give models for how the Eucharist is supposed to be behaving according to RP2.

Though these models do not require frequent miracles, as with our first example, they do need strange parthood structures that make A and B into bizarre objects (and it isn't clear what the best way of understanding this is). Whether one prefers the miraculous approach or bizarre mereology is, I feel, a matter of taste. But either proves it is possible for an object to be the way that RP2 alleges that A and B are, and hence demonstrates that RP2 is conceptually coherent.

## Conclusion

In this article I have been trying to offer the doctrine of the Real Presence of Christ in the Eucharist some resources independently garnered from analytic metaphysics. The central claim is the following: some significant subset of the problems faced by the doctrine can be shown to be analogous to issues for normal objects in some bizarre cases. Although the examples used are esoteric, this is how ordinary objects would behave in extraordinary circumstances. This being so, the defender of the Real Presence doctrine can claim that the Eucharistic process furnishes precisely such extraordinary circumstances. I have argued that she would therefore be able to avoid at least some of the philosophical issues that have been raised.<sup>24</sup>

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## Notes

1. There is extensive debate on this topic, but a good starting point is Smith (2013) and Arntzenius & Maudlin (2013), with their bibliographies. Time-travel is difficult to square with a view in the philosophy of time called *presentism*: the theory that the only objects that exist are those that presently exist. Presentists, therefore, might be inclined to resist the thesis of the article. But note that in order to resist in this way, presentists would need to claim not only that presentism is true, but that the

alternative to their view (eternalism) is conceptually incoherent, otherwise the conceptual coherence of time-travel in eternalism would establish the conceptual coherence of the behaviour of the Eucharist described in the next section.

2. See Leftow (2004) for a similar methodological approach: he uses a time-travel example to provide an analogy for an account he develops of the Trinity. For those unconvinced of the possibility of time-travel see especially *ibid.*, 308–310, where Leftow argues both for the possibility of time-travel and for the distinct claim that, *even if impossible*, time-travel analogies might be useful to make clear how to understand the doctrine.
3. The idea here is that A and B are *converted into* the body and blood of Christ, not simply *replaced* by them (thanks to John Heil for this point). Therefore I am not using ‘A’ and ‘B’ to refer to one thing before the consecration and another thing afterwards, which would raise questions of the reference of terms. This sort of issue belongs to a group of problems I will not address, as described later.
4. This might suggest that the result of the consecration is a perfect mixture of the body and blood of Christ.
5. RP1 and RP2 are asserted in by the Council of Trent (XIII iii) thus:

Wherefore it is most true, that as much is contained under either species as under both; for Christ whole and entire is under the species of bread, and under any part whatsoever of that species; likewise the whole (Christ) is under the species of wine, and under the parts thereof.

The Catechism of the Catholic Church (1377) puts it as follows: ‘Christ is present whole and entire in each of the species and whole and entire in each of their parts, in such a way that the breaking of the bread does not divide Christ.’ RP1 and RP2 are therefore included in the Roman Catholic doctrine. I interpret ‘part’ here to refer to entities resulting from the distribution of A or B, rather than to mereological parts of A and B before distribution. If we take ‘part’ in the latter sense, RP2 is entailed by but weaker than the doctrine. The stronger view can still be accommodated, though one interpretation is ruled out (see notes 18 and 19). Thanks to Gonzalo Rodriguez-Pereyra for highlighting this.

6. John Heil has pointed out to me that the whole substance, i.e. the whole hylomorphic compound of matter and form, is what changes according to transubstantiation.
7. It is less often noted that another consequence of RP1 is that the body and blood are present as a whole at different times as well – both at the Christmas mass and at the Easter celebration. A straightforward reading of this implies an endurance rather than perdurance picture of the persistence of the Eucharist.
8. There is a connected concern here, given that Christ is supposed to exist not only in the consecrated material but also in heaven. This issue deserves attention, but it will not receive it here. It would require a serious discussion of the metaphysics of heaven and theories of location that permit non-spatiotemporal location, and such a discussion is beyond the modest scope of this article.
9. One might think that there are further issues if the different instances of the Eucharist at one time have different properties. But it isn’t clear that the Eucharist has different properties in different places, and even if so this seems reducible to the problem of change raised by Lewis (1986, 204ff.), which has its own solutions. See Pruss (2009), 528–531 for discussion.
10. Baber (2013, 25–28) has a discussion of location and multiple location for the Eucharist. Her convention-based solution, however, takes a less realist approach than what is presented here.
11. I use the term ‘perdurance’ here to include both the traditional Lewisian four-dimensional spacetime worm and the endurance or stage-theory view popularized by Sider (2001) and Hawley (2002). Thus I take endurance and perdurance to categorize possible of theories of persistence exhaustively (or, at least, actual theories of persistence).

It is important to note that the endurance/perdurance debate has a complex relationship to the presentism/eternalism debate (indicated in note 1). I consider the debates orthogonal, but this is a matter of continued discussion. Even those who consider the distinctions connected should admit at least that it isn’t clear that endurance entails presentism (which is, at least on the surface, hostile to time-travel).

12. This is key. One seemingly natural way to understand the notion of Real Presence is through whole presence, in the endurantist’s terms. But the perdurantist must have a different interpretation of the claim that something is ‘really’ present somewhere (or else the doctrine of the Real Presence entails endurantism, and the two seem independent). One option would be to claim that the formulation of the doctrine should be understood as almost completely metaphysically neutral, so that the terms involved should not be given any metaphysical weight (my thanks to Robin Le Poidevin for this

suggestion). 'Real' presence could then simply be a way of ruling out contrary notions of presence such as metaphorical or analogical presence.

13. It should be clear from this and the above note that, for the perdurantist, the 'whole' in RP1 means something other than wholly present in the endurantist's sense.
14. Pruss (2009, sect. 2) discusses these issues at greater length, and investigates the coherence of multiple location in general. I only make the conditional claim here that, if multiple location is reasonable, then the Eucharist can be understood as multiply located. I also think that multiple location is reasonable, especially as it is a consequence of the seemingly coherent cases of time-travel mentioned, but I don't argue for this. While Pruss takes the Eucharist to be 'non-robustly' multilocated, I am happy to consider it multilocated in a robust sense, i.e. just as a time-travelling object is multilocated.  
There are connected questions concerning universals; they are normally understood as those things which are capable of being multiply located. But I'm not tempted to the view that the body and blood of Christ is a universal, nor by the view that time-travelling objects become universals. I think what needs to be adjusted is our definition of universals (but space will not allow a longer discussion).
15. Here and in what follows, I will use the language of endurance. I do so for ease of exposition, but either endurance or perdurance can give appropriate notions of multiple location and parthood to make the analogies work.
16. This might seem to violate the indiscernibility of identicals. There isn't space to discuss this here, but it is a problem for any account of time-travel in changing particulars. It is closely related to the problem of change, solutions to which give some alternatives here too. See also note 9.
17. The non-time-travelling version of A would also continue to exist through time, which is unlike typical cases of time-travel.
18. A second way to imagine that A<sub>1</sub> and A<sub>2</sub> are identical with A is to view A as an extended simple (i.e. an object which has no parts but occupies a region of space). When A seems to be divided, then, what is actually occurring is that the extended simple A is becoming multiply located as A<sub>1</sub> and A<sub>2</sub> in smaller regions of space. The mechanism for this would have to be, it seems, as in the text, miraculous intervention. This would also trivially capture the stronger version of the doctrine indicated in note 5, where Christ is wholly present in any mereological parts of A and B, because A and B would not have parts.
19. A second motivation for looking for another interpretation is that it accommodates the stronger version of the doctrine noted in note 5 and in the above note, without requiring extended simples.
20. This example is similar to those in Gilmore (2007), which were introduced as an argument in favour of endurance over perdurance, and Effingham & Robson (2007), which is an argument in the other direction. Effingham and Robson introduce a wall of time-travelling bricks: here there is the reverse example.
21. It may be inaccurate to label something brick-sized as a wall. What the necessary conditions are for falling under this sortal are not obvious to me, but the example is unaffected by whether or not the arriving object is a wall. It is still, at least, the same object.
22. Though see the next note.
23. One view is that *O* is an object in addition to  $m_1-m_n$ . This entails a denial of classical mereology, specifically the principle of weak supplementation which states that a composite object will have more than one proper part. Another view is that it is not, in which case *O* might simply be identical with  $m_1-m_n$  (i.e. with  $m_1$ ). Either of these options has costs (see Effingham & Robson (2007) for discussion) and there will be other alternatives (e.g. Gilmore (2009), who argues for a four-placed parthood relation). But I take it that none of the costs makes the options incoherent, and hence simply provide further precision about the conceptual model that such a view of the Eucharist would entail. The key point is that the example is coherent.
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