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The Mereology of Events
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**The Mereology of Events
Robert Allen**[Foot note \*](https://www.sorites.org/Issue_16/allen.htm#FOOT*)

Two cars are moving towards an intersection, one traveling east the other going north. The driver of the eastbound car runs the red light; his car and the northbound one collide at precisely noon. Call the ensuing accident High Noon. Had the driver of one of the cars braked a second earlier, their collision would have occurred later than it did (if it occurred at all). Would that slightly postdated collision, however, have been the start of High Noon?

If an event's time of occurrence is essential to it, as maintained by Lawrence Lombard, the answer is `no'.[Foot note 1](https://www.sorites.org/Issue_16/allen.htm#FOOT1) An event, according to Lombard, is a *change*, that is, the exemplifying by an object of the «dynamic» property of going from the having of one «static» property to the having of a contrary static property: it is an altering under a determinable or, in his terms, within a «quality space.»[Foot note 2](https://www.sorites.org/Issue_16/allen.htm%22%20%5Cl%20%22FOOT2) An event occurs at the entire time that its subject is exemplifying the dynamic property involved therein: the closed interval from the last moment it possesses the about to be yielded static property to the first moment it instantiates its replacement.[Foot note 3](https://www.sorites.org/Issue_16/allen.htm#FOOT3) Lombard believes that this period is essential to the event, so that High Noon must commence at noon. In other words, an event such as High Noon could not have occurred without all and only the «temporal parts» it had occurring. (In «possible worlds» semantics, in any possible world in which an event occurs it has all and only the temporal parts it has in any other world in which it occurs.) Someone might simply *assume* that an accident involving the two cars in the above counterfactual situation would be High Noon rather than a distinct event. But a philosopher *arguing* for this position, he contends, would be guilty of committing a scope fallacy, confusing the true *de dicto* statement that the cars involved in High Noon could have collided earlier than they did with the false *de re* claim that High Noon could have begun sooner than it did.[Foot note 4](https://www.sorites.org/Issue_16/allen.htm#FOOT4)

This issue may seem arcane and only of interest to event theorists. But more is at stake here than initially meets the eye. For we are wont to speculate as to what difference a temporal difference would have made: historians and journalists, e.g., often speculate as to what would have been the case had movements, battles, rescue attempts, etc. begun or ended sooner than *they* in fact did. Such speculation, if Lombard's view is correct, is metaphysically groundless. Talk of how an historical event would have «gone down» differently had *it* occurred in even a slightly different time frame could not be taken literally. It would strictly speaking have to be understood as meaning that a *sentence* whose subject designates a distinct event having the same name as it would have had a certain truth-value. Likewise, a scientist claiming that a given experiment would have yielded the same result had *it* been performed at a different time must not be taken at his word: for his experiment itself could not have been performed at any other time. Those who engage in historical speculation or scientific experimentation may be disinclined to venture an opinion on this matter, leaving its resolution to metaphysicians. But, given their habit of speaking counterfactually of events starting or ending sooner than they in fact did, it appears that they are at least implicitly committed to the denial of Lombard's view. Thus, what is at stake here is the prevalent understanding of a common practice.

I shall argue below that the key assumption in Lombard's argument against identifying an actual event with a counterfactual event having a different time of occurrence is false. Specifically, it is my intention to show that it is possible for an event to be identical with one of its proper parts. Thus, we are going to address, in the context of individuating events, the issue of whether or not identity is a relation that holds, if it holds at all, of necessity. This issue also arises, of course, in regards to the identity of material substances. Along the way, it will be necessary to speak to this matter as well as propose and defend an alternative to Lombard's criterion of event identity. In the end, we will have settled a dispute between Ockhamists and Lockeans over how to characterize the relationship between a thing and its constituents.

Here is an overview of what follows. I begin by detailing Lombard's argument for temporal essentialism. I go on to point out how it relies on a questionable mereological principle, an analog of which he seems committed to denying. That is, I contrast the solution it yields to a familiar metaphysical puzzle, having to do with the relationship between a material substance and its parts, with the more plausible one entailed by its denial. I then adopt and apply the latter solution to the case of an event and its parts, showing how it supports the common practice discussed above. Next on the agenda is a discussion of Lombard's anti-atomism regarding events and how it compares with the mereological implications of my own view of the matter. The penultimate task is to formulate a suitable replacement for Lombard's criterion of event identity. I conclude by rebutting the objections that Lombard raises against my position.

We proceed to

**Lombard's argument**

Imagine the sinking of a ship, S. This event consists of the sinking of each one of S's (spatial) parts, these sinkings being the temporal parts of the event «the sinking of S.» Now had the last of the ship's actual parts to sink not sunk, the sinking of S would have ended sooner than it did (assuming, of course, that it had commenced at the same time as it actually did). Lombard's argument against identifying the actual and counterfactual sinkings is as follows:[Foot note 5](https://www.sorites.org/Issue_16/allen.htm%22%20%5Cl%20%22FOOT5)

* 1.If the sinking of S that actually occurs, A, were identical to the sinking of S that counterfactually occurs, C, then A could be identical to a proper temporal part of itself, since C is A minus the sinking of the absent part (viz., the sinking of S that occurs before the last part to sink sinks).
* 2. It is not possible that something be identical to one of it proper parts.
* 3. Therefore, A is not identical to C (nor to, generalizing from 1 and 2, any event that would have ended sooner than it did- A essentially ended when it did).

If sound, Lombard's argument would show that «mereological essentialism» is true of events: «across worlds» an event could not gain or lose temporal parts just as, if this doctrine were of material substances, such an object could not gain or lose spatial parts across time. His argument is modeled on a demonstration of Peter van Inwagen that material substances are not composed of temporal parts.[Foot note 6](https://www.sorites.org/Issue_16/allen.htm#FOOT6) Let us look then at van Inwagen's reasoning, since it is going to stand or fall with Lombard's:

* 1. If some now defunct material substance, O, had had temporal parts, then it had a temporal part, O\*, that existed as long as it did minus one minute.
* 2. If O had gone out of existence one minute sooner than it actually did, then it would have been identical to O\*, one of its proper temporal parts.
* 3. But no material substance could be (counterfactually) identical to one of its proper temporal parts, something from which (in fact) it is distinct.
* 4. Therefore, either O had to exist as long as it did or it had no temporal parts.
* 5. O could have gone out of existence sooner than it did.
* 6. O did not have temporal parts.

Though not wishing to be counted amongst the friends of temporal parts, I think that this argument is unsound: (3), I believe, is false. More importantly, for present purposes, I believe that Lombard himself is committed to its denial. To see why, let us consider the following puzzle.[Foot note 7](https://www.sorites.org/Issue_16/allen.htm#FOOT7) How should Lombard describe the relationship between that part of a man that is left following the amputation of one of his limbs and the man himself (the person who underwent the operation), which now seem to be «co-located,» that is, simultaneously occupying the same space? Are they simply identical, as maintained by Ockhamists, who believe that «plurality should not be posited without necessity»?[Foot note 8](https://www.sorites.org/Issue_16/allen.htm#FOOT8) Are they distinct with the man being (only) constituted by one of his former (spatial) parts, the Lockean solution favored by those who hold that co-located objects can be distinct?[Foot note 9](https://www.sorites.org/Issue_16/allen.htm#FOOT9) Or is it a new man that emerges from the operation, the one who underwent it having perished as the result of losing one of his parts, the solution of mereological essentialists?[Foot note 10](https://www.sorites.org/Issue_16/allen.htm#FOOT10) Or, finally, is that part of a man that is left following the amputation of one of his limbs something that did not exist prior to that procedure being performed, it being then merely «an arbitrary undetached (spatial) part»?[Foot note 11](https://www.sorites.org/Issue_16/allen.htm#FOOT11)

In the context at hand, the last two answers may be quickly ruled out. The third is not an option for Lombard, who eshews mereological essentialism vis-à-vis material substances. The fourth is put forth by van Inwagen, who denies that things have arbitrary undetached spatial parts.[Foot note 12](https://www.sorites.org/Issue_16/allen.htm#FOOT12) For Lombard, though, agreement here would be problematic, since he needs arbitrary undetached *temporal* parts to make his *reductio* work. Thus, sans an argument to the effect that events have arbitrary undetached temporal parts, even though material substance lack arbitrary undetached *spatial* parts, Lombard can not avail himself of van Inwagen's answer.

That forces him to choose between the first two solutions, that is, between holding that the arbitrary undetached part has become the whole of the person or that it has become merely co-located with and that which constitutes that person. Assuming that he does not wish to «multiply entities beyond necessity,» he is then left with answer one, the Ockhamist solution. And even if he lacks Ockhamistic scruples, there is a further reason why the co-location solution to this puzzle should appear unattractive to him: if we allow in the case of a material substance that the constituting and constituted are distinct objects, so that any space containing one such thing contains at least two,[Foot note 13](https://www.sorites.org/Issue_16/allen.htm#FOOT13) then consistency would seem to require us to say the same thing of an event and the events (temporal parts) «making it up». Now, while we do not think of the simple *sum* of events constituting an event as being itself an event, (lacking here the correlates of mass terms such as `lump', `portion', and `piece') in the way that we do think of, say, the lump of clay making up a statue as being itself a material substance, we do take any *member* of such a sum to be an event. (On the other hand, we do not take *every* spatial part of a material substance as being a material substance *on a par with* the material substance that, in conjunction with the other members of the constituting aggregate, it constitutes. Only a «component» is treated as such.) Thus, in the case of a baseball game, we should have to say, unless we identify an event with the events constituting it, that during any one of its innings there are really two events going on, the game itself, which occurs at any time during which one of its temporal parts takes place, and the inning then being played, which we are refusing to identify with the game that it makes up at that time. For my part, though, I take it that I am seeing only one thing taking place when I am watching the sixth inning of some ballgame: the sixth inning, that is, the ballgame at that time. Anyone who shares this intuition would have to be thinking of the event constituting an event at any given time and the longer occurrence of which it is a temporal part as in some sense one.

In the case of a material substance, it is not necessary to identify any one of its proper (spatial) parts with the object itself (although, in a sense explicated below, I would identify it with the *aggregate* thereof) since it does not (simultaneously) occupy the same space as any one of its (spatial) parts: a material substance and one of its spatial parts are, to use David Armstrong's terminology, «partially identical.»[Foot note 14](https://www.sorites.org/Issue_16/allen.htm%22%20%5Cl%20%22FOOT14) But it seems that we *are* forced to decide whether or not to identify an event with any given one of its (temporal) parts, since, as we have seen, an event and each one of its (temporal) parts do occur simultaneously (in the same quality space). (Presently, I shall give my reasons for thinking that this matter cannot be resolved by drawing a distinction between an event's occurrence and its occurring.) To put this point another way, «I see the church» while spotting only its steeple *is* elliptical for «I see the church's steeple», whereas, «I am watching the ballgame», said during its sixth inning, is not elliptical for «I am watching the sixth inning». (We begin to see, then, that the temporal parts of an event, unlike the spatial parts of a material substance, are all one and the same, an event's relation to the times at which it occurs being like that of an *in rebus* universal to its instances, an idea developed below.[Foot note 15](https://www.sorites.org/Issue_16/allen.htm#FOOT15)) Thus, answer one, according to which «constitution is identity,» best conforms to the way in which we typically individuate material substances and the events in which they are involved. (The reason that this practice does not commit us to mereological essentialism emerges below.)

Of course, as Lombard *et al* have pointed out, there are cases in which two events occur simultaneously in the same place. That is what happens anytime a single subject changes simultaneously in more than one «quality space.»[Foot note 16](https://www.sorites.org/Issue_16/allen.htm%22%20%5Cl%20%22FOOT16) But cases such as a metal ball becoming warmer while it rotates are importantly different than the one discussed in the last paragraph: they do not involve events one of which is a proper part of the other, that is, occurrences that are, to again borrow David Armstrong's terminology, partially identical. Their distinctness can be made intelligible by appealing, as Lombard does, to the difference between the quality spaces involved in each event, which makes for more than one change. How, though, could we account for the distinctness of an event with one of its temporal parts when the latter just is `how things are' with the event's subject at a given time of its progression through the quality space in which it is changing? There is only one change occurring here.

Lombard, thus, seems committed to the Ockhamist solution to our puzzle, according to which co-location entails identity. But notice what this solution implies. Unless he is willing to deny that the arbitrary undetached part in question survives the amputation,[Foot note 17](https://www.sorites.org/Issue_16/allen.htm#FOOT17) he is left with a case of something *becoming* identical to one of its spatial parts, refuting the key premise in both his argument and van Inwagen's. (Of course, the latter can continue to maintain that premise, since he, unlike Lombard, is not forced to accept the Ockhamist solution to our puzzle, as noted he can avail himself of the denial of the existence of arbitrary undetached spatial parts.) The time of an event, it seems, cannot be established as essential in the way that Lombard proposes. I believe that this result should not be seen as problematic, though, since there is a clear sense in which something *can* become identical to one of its proper parts. It would be our understanding of *diachronic identity* (henceforth D-identity) whereby something «perpetuates» itself by retaining its form in the process of losing an inessential part.[Foot note 18](https://www.sorites.org/Issue_16/allen.htm#FOOT18) Examples of such insubstantial change abound. We have the depleted military unit, the rump state, the eroded dune, etc.. At this point, we need to see how this concept of identity may be integrated with the earlier claim that «constitution is identity.» That is, we must account for

**Our Dualistic Understanding of Identity**

Such cases involve things being identical across time despite having once been distinct. Lombard, though, is concerned with the question of when to identify events across possible worlds. There is an interesting symmetry, as it turns out, between these matters. But before that parallel is discussed, an equally intriguing dichotomy must be accounted for. Events, it is being maintained, can be identical across worlds despite being mereologically distinguishable. On the other hand, simultaneously existing material substances cannot differ in parts without being distinct: a and b are distinct if a in w is constituted at t by different parts than b in w' is at t. However, as just noted, we countenance mereologically discernible material substances being identical across time. It seems that in some cases mereological distinguishability entails distinctness and in some cases it does not.

Why this dichotomy? It stems from the fact, remarked upon by Bishop Butler, Thomas Reid, Roderick Chisolm, *et al*, that our understanding of identity is dualistic: we are not applying the concept of D-identity in all cases in which we judge that x = y.[Foot note 19](https://www.sorites.org/Issue_16/allen.htm#FOOT19) Where we are considering some object existing at a given time and some «other» (putatively distinct) object existing *at the same time*, we employ an «extensional» and temporally relativized concept of identity (C-identity) whereby @ t, x = y iff they are constituted at that time by the same thing (i.e., co-located), to determine whether or not they are identical. That is why Dion and his erstwhile arbitrary undetached part are not *counted* as distinct things whereas he is to be distinguished «across worlds» from any *simultaneously* existing person constituted by something else. (This claim should not be taken to imply mereological essentialism, as it does not hold of temporally separated individuals.) By the same token, because the sixth inning of a ballgame «makes up» the game at that point we must take «them» to be one and the same in the sense of being C-identical.

So is the sixth inning the same event as the seventh? In a sense they are, since each one is the game's subject, whatever that is, changing in the quality space of «being played.» To support the claim that the sixth inning of a ballgame is the same event as the seventh, I would, thus, argue as follows:

* 1) If the sixth inning of a ballgame is not the same event as the seventh, then what occurs at the time of the sixth inning (in the quality space in which it is taking place) is not the same as what occurs at the time of the seventh (in the quality space in which it is taking place).
* 2) But the ballgame itself occurs at both of those times (in the same quality space as that in which those parts are taking place). At each time, the ballgame's subject is changing in the quality space of (let us say) «being played.»
* 3) Thus, the sixth inning and the seventh inning are the same event (not merely parts of the same event).

So in what sense is the sixth inning of a ballgame the same event as the seventh? In the same sense as the soldiers making up a regiment before the battle are identical to the group constituting it after the battle is over: though the latter may have fewer members it is *D-identical* to the former in virtue of the nexus provided by the regiment. That is, despite any numerical difference, they are D-identical given that each one makes up the regiment *at some time or other*. As we say, it is the same regiment but not the same group of soldiers. Likewise, the sixth and seventh innings are D-identical in that each «temporarily» constitutes the ballgame of which they are temporal parts. The following transitivity principle, a modification of the classical version that accommodates our «dualistic» understanding of identity, accounts for their being D-identical:

(T) ((x)(y)(z) @ t, x =c y & @ t', y =c z) ⇒ (x =d z)

This principle, which is forced upon us by our desire to avoid either co-located entities or mereological essentialism, allows us to develop a logically consistent ontology without abdicating either one of the above concepts of identity.

Mereologically, then, an event must be treated like a universal *in rebus*, being related to the distinct times at which it is occurring in the same way as the latter is related to the disjoint spaces at which it is located. It follows that we should not expect its identical instances either to begin simultaneously or to obey Leibniz's Law (unless it is temporally relativized). Compare: «The blueness of my tie is to the right of and occupies a narrower space than the blueness of my shirt pocket» vs. «The sixth inning started earlier and lasted longer than the seventh». And, just as there is no limit to the number of instances a universal *in rebus* can have, it is possible for an event to increase/decrease its duration by adding to/subtracting from its actual number of occurrences. (Here I am reminded of the relationship between a TV series and its episodes.) Thus, pace Lombard, who contends that an event *as a whole* does not occur but, rather, is only occurring when any one of its temporal parts occurs,[Foot note 20](https://www.sorites.org/Issue_16/allen.htm%22%20%5Cl%20%22FOOT20) an event itself occurs *and* is occurring at any time at which its subject is exemplifying the dynamic property involved therein, just as a universal *in rebus* is instanced at any and all of its spatial locations.

Let us digress here to consider the mereological implications of drawing a distinction between the time of an event's occurrence- its duration- and the times of its occurring-the duration of any one of its proper temporal parts. In particular, we must determine whether or not it allows Lombard to avoid having co-located entities in his ontology. Even if it were true that a *composite* event is only occurring at any time at which one of its proper parts occurs, so that they are just partially identical, what are we to say of an atomic temporal part of an event, one whose duration is no longer than what is temporally required for a change in the relevant quality space to occur and, thus, has no proper part at which it is only occurring? Here Lombard's occurs/is occurring distinction would be inapplicable. Thus, unless one assumes an anti-atomistic view according to which an event must be composed of proper parts that are the events that make up its occurring, which entails that the occurring of an event is always a proper part of its own occurrence when any event of which it is a part would be occurring, we would have two events *occurring* simultaneously in the same quality space were we not to identify an atomic temporal part of an event with the event of which it is a part, since the former occurs as it is occurring. This co-location of occurrings would be as ontologically profligate as the co-location of occurrences Lombard's distinction would obviate.

Lombard avoids having to answer this question by advancing the just mentioned anti-atomistic view of events. He is forced to accept this position, independently of his concern to avoid co-located occurrings, by his handling of the problem of direct change, that is, going from having one property to having of another property without having an intermediate property. Such a change would take place in a «discrete» quality space: one in which there are pairs of properties between which there lies no intermediate properties. The quality spaces in which one would go from having black to gray hair and one to two strikes are examples of this type of quality space. The following argument, however, seems to show that it would be impossible for changes to take place therein:

|  |
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|  |
| (1)  | is dense; between any two instants there are other times  | (Assumption)  |
| (2)  | If object o goes from having P for the last time at t to having Q for the first time at t', then there is a time t\* between t and t'  | (1)  |
| (3)  | If o's change from P to Q could be direct, then there is no property within the P/Q quality space that o has at t\*  | (Definition of direct change)  |
| (4)  | O goes from having P for the last time at t to having Q for the first time at t'  | (Assumption)  |
| (5)  | There is a time t\* between t and t'  | (2, 4)  |
| (6)  | If there is a time t\* between t and t', then there is a property within the P/Q quality space had by o at t\*  | (Assumption)  |
| (7)  | There is a property within the P/Q quality space had by o at t\*  | (5, 6)  |
| (8)  | O's change from P to Q could not be direct  | (7)  |

Lombard responds to this argument by noting that if a direct change could occur at an instant, instead of requiring more than one instant to occur (in effect, if 4 were false), it would not present a problem, since then there would be no need to account for o's status within the P/Q quality space during the interval between t and t' that must exist if time is dense.[Foot note 21](https://www.sorites.org/Issue_16/allen.htm#FOOT21) Given, however, that a change is a «process,» a «transition» from one property to another, there arises the problem of explaining the possibility of direct change. Lombard's solution is to maintain that «such (a change consists) of other events that are dense changes in (a dense quality space).» That is because all the «ultimate» quality spaces in which events occur are dense, with no direct changes taking place therein.[Foot note 22](https://www.sorites.org/Issue_16/allen.htm#FOOT22) Absolute atomic events are thus ruled out. Instead, atomic events are, relative to a scientific theory T, (and leaving out several details not germane to the present discussion) those temporally continuous events involving changes to T's atomic objects occurring within T's ultimate quality spaces.[Foot note 23](https://www.sorites.org/Issue_16/allen.htm#FOOT23)

There are several problems with this approach. To begin with, it saddles Lombard with anti-atomism regarding events. He believes that, «short of trying to take (seriously) the idea of an instantaneous event,» maintaining this view is unavoidable.[Foot note 24](https://www.sorites.org/Issue_16/allen.htm#FOOT24) I presently shall show that this dilemma is false. The second problem with it is that Lombard offers, in his own words, «no direct, independent argument» for the claim that all events are composed of dense changes.[Foot note 25](https://www.sorites.org/Issue_16/allen.htm#FOOT25) It is, thus, merely an expedient for solving the problem of direct change. Sans such an argument, then, it should be abandoned if a more plausible solution to that problem can be found. Thirdly, since an argument parallel to the one just given can be constructed to show that physical objects cannot touch, Lombard must accept that conclusion as well. Though he is willing to do so, we have here another move that had best be avoided if possible.[Foot note 26](https://www.sorites.org/Issue_16/allen.htm#FOOT26) In the case of events, he does not think that it can be eschewed without allowing that events can occur instantaneously. But that cannot be right, since there are other premises in the above argument one can challenge.

Finally, and most importantly, Lombard does not so much account for direct change as deny its occurrence. Direct change only appears to occur, on his view, since the difference between the quality space in which it would occur and the quality space in which an indirect change would occur precludes him from *identifying* it with an indirect change (given his criterion of event identity discussed below). What *really* happens in such a case is a series of indirect changes. His position here is eliminativist rather than reductionist: it is akin to the view that the posits of «folk ontology» are nothing more than collections of sub-atomic particles; they do not exist, so that the question of whether or not they are identical to such aggregates need not arise. When Lombard says that direct changes are «really composed» of indirect changes, he cannot mean (something analogous to) what the reductionist regarding material substances holds, for the latter accepts the reality of ordinary material substances, she simply believes that they are identical to that of which they are constituted. I should think that a solution to the problem of direct change that takes seriously the possibility of its occurrence would be preferable to one that treats it as an illusion.

I can make out two alternatives. First, there is the option of taking the above argument as a reductio on the thesis that time is dense, which, after all, is arguably not a part of common sense, unlike the belief in direct change. (And even if time were intuitively considered dense, this response would be more plausible than Lombard's, which makes direct change only apparent *and* requires atomic events to have parts, since its advocate must abdicate fewer intuitions than Lombard is required to give up.) If time were discrete, then there would be no need to account for o's status in regards to the P/Q quality space during the interval between t and t'. We could hold that, since the change is direct, the only times involved are t and t': they would be the times at which the event began and ended respectively as well as the times during which it took place, making it, in Lombard's terms, both an occurrence and an occurring. It would, thus, be an event having no *proper* parts at which it is occurring, raising the question Lombard had hoped to avoid of whether or not its occurring would be identical to the simultaneous occurring in the same quality space of any event of which it were an atomic part.

A more plausible option still would be to deny premise 6. Why should an object changing in a quality space exemplify a quality belonging to that space at *every* instant at which that event is occurring? If the quality space in question is dense, then, assuming time is also dense, there *would* be a one-to-one correlation between the instants that make up the interval at which the event occurs and properties that make up the quality space. But such a correlation would not obtain between the instants that make up a dense period of time and the properties composing a discrete quality space. Thus, if o goes from P at t to Q at t' in a discrete quality space, the instants between t and t' (which we are supposing to be infinite) must be times at which o is devoid of any properties belonging to the P/Q quality space. To suppose, as Lombard does, that between t and t' «(o) must have a quality in (such a) space»[Foot note 27](https://www.sorites.org/Issue_16/allen.htm#FOOT27) seems tantamount to denying the existence of discrete quality spaces, question begging in the present context. Real, not merely illusory, direct change is, thus, possible. In the bargain we secure atomic events, since a change from P to (its neighbor) Q in a discrete quality space will not break down into the occurrence of further events making up its occurring. Since it does not have a proper part at which it is occurring, it will occur at the same time as it is occurring. Thus, the question will again arise as to whether or not as an occurring it is identical to the simultaneous occurring of any event of which it is an atomic part. In the context of individuating events, therefore, the occurs/is occurring distinction cannot help Lombard avoid the dilemma of accepting either co-location or the identity of a thing with one of its parts.

Picking up where we left off before our digression, we must now formulate

**An alternative to Lombard's Criterion of Event Identity**

To individuate events across worlds we cannot rely on the notion of C-identity, since we are always dealing here with things taking place at different times: as in the case above in which the actual collision occurs at noon and the counterfactual one at noon plus one second. (Moreover, since an event, as we have just seen, does not have full-fledged parts (each one existing independently of the whole to which it belongs) it does not even make sense to ask of one, as it would in the case of a material substance, whose parts could exist in the absence of that which they make up, «could it be identical to an event constituted at some time by an event that is distinct from the event constituting it at that time?» -- that would be a different event, since an event (in effect) constitutes itself at any time at which it occurs.) Thus, we are in need of a criterion of cross-world event identity analogous to the criterion of diachronic identity for material substances sketched above.[Foot note 28](https://www.sorites.org/Issue_16/allen.htm#FOOT28) I propose the following (relying on Lombard's conception of an event as the changing of an object in a quality space):

(EI) Necessarily, E in w is identical to E' in w' iff a) the subject of E is identical to the subject of E' (or at least is a «counterpart» of), b) E and E' are changing in the same quality space and c) (parting company with Lombard) the time at which E occurs includes the time at which E' occurs or vice-versa

[EI](https://www.sorites.org/Issue_16/allen.htm#EI) gives us the desired result that an event could occur during an interval other than its actual time of occurrence. As stated, however, it is too narrow, since if an event could have begun earlier/later than it did and an event could have ended sooner/later than it did, then an event could have begun *and* ended earlier/later than it did, an event could have begun earlier than it did *and* ended later than it did, and an event could have begun later than it did *and* ended sooner than it did. To accommodate these intuitions, we must modify clause c of [EI](https://www.sorites.org/Issue_16/allen.htm#EI) to read «the time at which E occurs overlaps the time at which E' occurs».

The following case appears to show that [EI](https://www.sorites.org/Issue_16/allen.htm#EI) is also too liberal. In w, object o covers the distance between point A and point B during the interval from t1 to t6; in w', o journeys from A to B between t1 and t2, remains at B until t3, swiftly returns to A by t4, where it stays put until its departure at t5 for B, which it reaches at t6. By [EI](https://www.sorites.org/Issue_16/allen.htm#EI), the distinct passages of o in w' are identical to its single journey in w. This supposed defect could be removed by adding a fourth clause to [EI](https://www.sorites.org/Issue_16/allen.htm#EI):

d) there is not an event E'' that also meets a, b, and c in regards to one of either E or E' while not being identical to the other

This move, though, in addition to appearing *ad hoc*, entails the denial of David Wiggins' «only a and b rule,» stating that whether or not a = b is independent of what else exists. Since I am not comfortable with this position in regards to material substances, I am not inclined to adopt it here. Moreover, since I have already defended the contingency of identity in the case of material substances, consistency would seem to require me to treat the above case as an instance of (the possibility of) one *event* becoming two. Consider these others: in w, the Hundred Years War is interrupted by a one hour armistice; in w, I fly to Paris twice as fast as I actually did, realize upon touchdown that I left my luggage at the departure gate, immediately hop on a flight back to Detroit (travelling at the same high speed), retrieve the bags, and return as swiftly as I came. I would prefer to treat these cases as analogous to cases of «fissioning» material substances (as with an ameba dividing or so called «brain bifurcation»), the least implausible response to which being, as noted above, to deny the necessity of identity.

*Sans* a principle of unity for events ruling it out, EI implies, e.g., that the French Revolution could be identical to the Battle of Dienbeinphu. If the former had occurred for several month longer, it would have overlapped temporally with the Terrors, making them, according to EI and the thesis that the temporal «parts» of an event are identical, the same event (assuming that they share a subject and take place within the same quality space). But, then, by successive similar extensions of this event, an event that overlapped temporally with the Battle of Dienbienphu could be formed, making it and the French Revolution «temporal parts» of the same event and, thus, the same event (again assuming sameness of subject and quality space). T, propounded above, allows us to account for this result, just as it establishes that the innings of a ballgame are D-identical. (Indeed, a historian studying 19th and 20th century Europe would be inclined to posit the existence of just such an event: French history from the Revolution to Dienbienphu.)

I conclude by responding to

**Two objections that Lombard would raise against my rebuttal**

First, it is open to him to reject C-identity, to deny that constitution is identity. In fact, that is precisely his position. Before examining the arguments he puts forth in its favor, it is worthwhile asking whether or not it is a view with which someone with Ockhamistic scruples could reconcile herself. Does it leave her with any way of avoiding the awkward conclusion that our world contains vastly more entities (material substances and events) than ordinary inventorying would indicate? One might try to distinguish here between the notions of being an object and being a (countable) individual, refusing to grant constituting entities the latter status.[Foot note 29](https://www.sorites.org/Issue_16/allen.htm#FOOT20) But there does not seem to be any «conceptual space» between these ideas: it is not as if we never count portions of clay, hunks of wax, n-numbered collections of molecules etc.. Thus, those who deny that constitution is identity seem to be committed to biting the above bullet.

In the case of material substances, Lombard argues that the constituted and the constituting are not identical because: i) there can be a time when the one exists and the other does not, ii) at that time they would not be identical (since iii) a and b cannot be identical at a time at which one exists and the other does not) making them non-identical, since iv) if there is any time at which a and b are distinct then there is no other time when they are identical.[Foot note 30](https://www.sorites.org/Issue_16/allen.htm#FOOT30) But a defender of the «dualistic» view of identity sketched above would take each one of the previously noted cases of mereological alteration as a counterexample to (iv). The depleted military unit, rump state, and eroded dune is each C-identical to something from which it was once distinct by that same criterion. That is because the sums of parts to which each persistent has been «occasionally» identical are relata of another equally indispensable identity relation: D-identity. Lombard notes up front that his argument here «does not address the concerns of believers in relative (occasional) identity» and indeed it does not.

Lombard's argument against identifying an event with the temporal parts constituting it relies on modal considerations.[Foot note 31](https://www.sorites.org/Issue_16/allen.htm#FOOT31) No temporal part of an event is essential to its occurrence: had its subject had different spatial parts it could still have taken place, though it then would have had different temporal parts (owing to its subject having different spatial parts than the ones that are themselves the essential subjects of the events that are its temporal parts). On the other hand, the sum of an event's temporal parts, which is what constitutes it, could *not* occur unless each one of those parts did. This difference between their persistence conditions makes for the distinctness of an event and the sum of temporal parts of which it is constituted. Here I would point out, though, that the concept of an entity's essence should not come into play in the making of judgments of synchronic identity. Since it is supposed to tell us how an entity would behave across time- what sorts of changes it could and could not endure- its proper role is in facilitating the determination of whether or not there is «continuity under a sortal» between temporally separate entities. It is, thus, a category mistake to apply this notion, as Lombard does, in a context in which one does not need to know what an entity would have been like in the past had it *then* been identical to something, that is, where one's identity concerns extend only to entities existing simultaneously, such as an event and the sum of its temporal parts.

At this point, Lombard would no doubt question my claim that our understanding of identity is dualistic. It cannot be denied, however, that common sense works with more than one notion here: witness our embrace of both Okhamistic counting and continuants capable of mereological alteration. We would have to abdicate the former were we to repudiate C-identity; the latter would be a casualty of giving up D-identity in favor of mereological essentialism. We have shown, moreover, how these concepts can cohere. To avoid contradictions, all that is required is a refinement of the principle of the transitivity of identity, as formulated above. Letting go of the idea that an event's time is of its essence, on the other hand, costs common sense nothing, since, as Lombard himself concedes, it is not a part of that body of beliefs to begin with.

**Conclusion**

We began by establishing that those who deny the possibility of a thing becoming identical to one of it parts and accept the possibility of mereological alteration are faced with the dilemma of either denying the existence of arbitrary undetached parts or accepting co-located objects and events. Preferring the sparsest possible ontology, we embraced a dualistic conception of identity that allows for trans-temporal/modal numerical sameness of objects/events despite the changing of their parts while ruling out the sharing of a spatial/temporal location by more than one object/event. Mereologically distinct entities standing in the relation of D-identity, that is, obeying our transitivity principle T, form a continuant that is C-identical with its constituent(s) at any given time. Thus, we accomplished our main objective: refuting Lombard's essentialism regarding the time of an event, thus allowing for the adjustment of an event's temporal parameters in historical and scientific speculation. It is possible for an event to have taken place in a period of time that is longer/shorter than the one in which it actually occurred; i.e., to have had more/fewer temporal parts than it had in actuality. Out of this critique grew a novel view of the relation of an event to the times at which it occurs. An event turns out to be akin to an *in rebus* universal, enduring across time as the latter distributes itself throughout space. Admittedly, this view entails the counterintuitive result that temporally separated events such as the sixth and seventh innings of a baseball game are in some sense one. This single drawback must, however, be balanced against the conceptually troublesome moves of my opponent: his revision of the semantics of counterfactual discourse and embrace of co-locationism. Assuming that it is not possible to solve a philosophical problem without modifying one's system of beliefs, one should strive instead to preserve as many intuitions as possible. Moreover, the notion that temporally separated events are identical appears less strange when one considers our tendency to unify the stages of a material substance's career. Temporal parts theorists or «four-dimensionalists» suggest treating material substances as events.[Foot note 32](https://www.sorites.org/Issue_16/allen.htm#FOOT32) Here the opposite tack is taken: a diachronic principle of unity for material substances is applied to events. It should also be kept in mind that this principle co-exists with a concept that allows for judgments of distinctness in cases of mereological alteration, their applications being a function of temporal focus. Following this program, to be sure, requires cognitive nimbleness, given its bifurcation of the meaning of identity. Yet, given our willingness to accept shifting views of reality, it may be promoted as user-friendly.

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[Foot Note \*]

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[Foot Note 1]

This position is defended in «Sooner or Later,» *Noûs* XXIX, No. 2 (Sept. 1995) pp. 343-59. Lombard's overall view of events is presented in *Events: A Metaphysical Study* (London: Routledge and Kegan Paul, 1986) and «Ontologies of Events,» in *Contemporary Readings in the Foundations of Metaphysics*, ed. Stephen Laurence and Cynthia Macdonald (Oxford: Blackwell Publishers, 1998) pp. 289-90. Excellent discussions of his work are to be found in Greame Forbes *The Metaphysics of Modality* (Oxford: Clarendon Press, 1985) pp.207-15 and Helen Steward *The Ontology of Mind* (Oxford: Clarendon Press, 1997) pp. 58-65.

[Foot Note 2]

*Events*, pp. 166-72 and «Ontologies of Events,» pp. 289-90.

[Foot Note 3]

*Events*, 1986, pp. 132-6.

[Foot Note 4]

«Sooner or Later,» p. 344.

[Foot Note 5]

*Ibid.*, p. 349-51.

[Foot Note 6]

Peter van Inwagen, «Four Dimensional Objects,» *Noûs* XXIV (1990) pp. 245-55, esp. p. 253 and «The Doctrine of Arbitrary Undetached Parts,» *Pacific Philosophical Quarterly*, vol. 62, No.2 (1981) pp.123-37 esp. pp.132-5.

[Foot Note 7]

Due originally to the Stoic Chrysippus. The puzzle resurfaces in David Wiggins, «On Being in the Same Place at the Same Time,» *Philosophical Review* 77: 90-105. Cf. also Michael Burke, «Dion and Theon: An Essentialist Solution to an Ancient Puzzle,» *Journal of Philosophy* 91 (1994): 123-39, Mark Hellar, *The Ontology of Physical Objects: Four Dimensional Hunks of Matter* (Cambridge: Cambridge University Press: 1990), Samuel Levy, «Coincidence and Principles of Composition,» *Analysis* 57 (1997): 1-10, Harold Noonan, «Wiggins on Identity,» *Mind* 85: 559-75, Eric Olson, «Dion's Foot,» *The Journal of Philosophy* XCIV (1997): 260-65, Michael Rea, «The Problem of Material Constitution,» *The Philosophical Review* 104 (1995): 525-52, Peter Simons, *Parts: A Study in on Ontology* (Oxford: Clarendon Press, 1987), Judith Thomson, «Parthood and Identity across Time,» *Journal of Philosophy* 80 (1983): 201-20 and «The Statue and the Clay,» *Noûs* XXXII (1998): 149-73, and Peter van Inwagen, «The Doctrine of Arbitrary Undetached Parts», *op. cit.*

[Foot Note 8]

See Stephen F. Brown's «Foreword» to Ockham: *Philosophical Writings*, ed. and trans. Philotheus Boehner, Indianapolis: Hackett Publishing Company, 1990, pp. xx-xxi. Contemporary philosophers who defend this view are: André Gallois (in *Occasions Of Identity: The Metaphysics of Persistence, Change, and Sameness*, London: Oxford University Press, 1998), George Myro (in «Time and Essence,» *Midwest Studies in Philosophy* 11, 331-41), John Perry (in «Can the Self Divide?» *The Journal of Philosophy* 69: 463-880), and the present author (in «Identity And Becoming,» *The Southern Journal of Philosophy* XXXVII, 527-548).

[Foot Note 9]

See John Locke, *An Essay concerning Human Understanding*, ed. P.H. Nidditch, Oxford: Oxford University Press, 1975, II.xxvii.3. For a discussion of Locke's view on constitution see Michael Ayers, *Locke: Epistemology and Ontology*, London: Routledge, 1991, pp. 207-15. This position is advanced today by David Wiggins (in *Sameness and Substance*, Cambridge: Harvard University Press, 1980), Nathan Salmon (in *Reference and Essence*, Princeton NJ: Princeton University Press, 1981), Mark Johnson (in «Constitution is not Identity,» *Mind* 101, 1992: 89-105), Lynne Rudder Baker (in «Why Constitution Is Not Identity,» *Journal of Philosophy* 94, 1998: 599-621), and Judith Jarvis Thomson (in «The Statue and the Clay,» *Noûs* XXXII, 1998: 149-73).

[Foot Note 10]

The classical proponents of this solution are Peter Abelard (cf. D.P. Henry *Medieval Logic and Metaphysics*, London: Hutchinson University Library, 1972), G. W. Leibniz (in *New Essays Concerning Human Understanding*, Book II Chapter xxvii, Cambridge: Cambridge University Press, 1996) Thomas Reid (in *On the Intellectual Powers of Man*, Essay III Chapter 14, in *The Works of Thomas Reid*, ed. Sir William Hamilton, Thoemmes), and G. E. Moore (in *Philosophical Studies*, Paterson NJ: Littlefield, Adams, & Co 1959: 287-8). Amongst contemporary philosophers, Roderick Chisolm is its best known defender (in *Person and Object*, LaSalle: Open Court Publishing Company, 1976), 89-113.

[Foot Note 11]

The view of van Inwagen (in «The Doctrine Of Arbitrary Undetached Parts» *op. cit.*).

[Foot Note 12]

*Ibid.*

[Foot Note 13]

Only in the region of space occupied by a mereological «simple» is there one and only one thing. Cf. Ned Markosian, «Simples,» *Australasian Journal of Philosophy*, vol. 76 #2 (1998): 213-28.

[Foot Note 14]

D.M. Armstrong, *A World of States of Affairs*, (Cambridge: Cambridge University Press, 1997) pp. 17-8.

[Foot Note 15]

Thus, I commit myself to the view that an event, like a material substance of our folk ontology, endures: is wholly present at each moment of its existence. Trenton Merricks (in «On the Incompatibility of Enduring and Perduring Entities,» Mind vol. 104, (1995) pp. 523-31) calls this supposition «odd» but defensible: «Suppose events are property exemplifications (such as O's being red). Why couldn't O's being red be wholly present at more than one time?» Indeed. I would note further that this view avoids the dilemma Merricks poses for those whose ontology contains both enduring and perduring things.

[Foot Note 16]

In *Events*, op. cit., pp. 165-66.

[Foot Note 17]

A position advanced by Michael Burke in «Dion and Theon ...,» *op. cit.*. I criticize this view in «Identity and Becoming,» pp. 4-6.

[Foot Note 18]

I discuss this notion of trans-temporal identity and what I take to be the distinct one of «identity at a time» (C-identity) and the ineliminability of both from folk ontology in «Identity and Becoming.» Per groups, heaps, lumps, and other pluralities/aggregates, it is not clear that reference thereto is a *façon de parler*, as Lombard maintains («Lombard on Allen on Lombard: Comments on Allen's Paper,» presented at the 1998 APA Eastern Division Meeting). Bertrand Russell (*The Principles of Mathematics*, London: Allen & Unwin, 1903, p. 43, 55n.) views the class as a many as a plural «object,» while Peter Simon treats it as a concrete particular (*Parts: A Study in Ontology*, Peter Simons, Oxford: Clarendon Press, 1987, pp. 144-8). Further, plural reference seems ineliminable in a proposition such as `if there are two As there are three classes of As' (Simon's e.g.).

Reductionism, thus, seems preferable here to eliminativism. But, in any event, as Lombard notes, I can get by with arbitrary undetached parts, as in Chrysippus' puzzle. For such a case, he concedes that he «does not have (an acceptable solution)» («Lombard on Allen on Lombard: Comments on Allen's Paper»).

[Foot Note 19]

Roderick Chisolm, *Person and Object*, pp. 89-113; Joseph Butler, *First Dissertation to the Analogy of Religion* (London: 1736), reprinted in *Personal Identity* ed. John Perry (Los Angeles: University of California Press, 1975) pp. 99-105; Thomas Reid, *On the Intellectual Powers of Man*, Essay III, Chapter III, Section II. A dualistic approach to solving a philosophical problem has also recently been taken by a free will theorist. See Saul Smilansky, *Free Will and Illusion* (Oxford: Oxford University Press, 2000). Smilansky attempts to meld the truths inherent in both incompatibilism and compatibilism into a single concept of free will, maintaining that «there is no single or exhaustive notion of moral responsibility» (p.37).

[Foot Note 20]

«Lombard on Allen on Lombard: Comments on Allen's Paper,» and *Events*, pp. 132-6.

[Foot Note 21]

*Events*, p. 141.

[Foot Note 22]

*Ibid.*, p. 142.

[Foot Note 23]

*Ibid.*, p. 168-7.

[Foot Note 24]

*Ibid.*, p. 261, note 18.

[Foot Note 25]

*Ibid.*, p. 140.

[Foot Note 26]

Ibid., p. 138. Here is that argument:

|  |  |  |
| --- | --- | --- |
| 1.  | If o and o' touch, then there must be a place, p, at which they come in contact |  |
| 2.  | Two objects cannot simultaneously occupy the same place. |  |
| 3.  | Thus, there is no place p occupied by both o and o'  | (1,2)  |
| 4.  | o occupies p |  |
| 5.  | Thus, o' occupies p' and p ≠ p'  | (3,4)  |
| 6.  | Space is dense; between any two spaces there are other spaces  |  |
| 7.  | Thus, there are spaces p'', p''' between p and p'  | (5,6)  |
| 8.  | Those spaces are occupied by neither o nor o'.  |  |
| 9.  | If there are spaces between the spaces occupied by two objects, they do not come in contact  |  |
| 10.  | Thus, p and p' do not come in contact.  | (8,9)  |
| 11.  | Thus, p and p' do not touch (e.g. my hand cannot touch my computer's keyboard)  | (1,10)  |

[Foot Note 27]

*Ibid.*, p. 144.

[Foot Note 28]

Concerning physical objects we should have to say that necessarily, any two of them existing non-simultaneously in separate worlds are identical iff one is how the «other» would have perpetuated itself had it existed therein, although specifying the conditions under which x would have perpetuated itself as y would be tricky.

[Foot Note 29]

Arda Denkel defends this view in *Object and Property*, (Cambridge: Cambridge University Press, 1997) pp. 89-90.

[Foot Note 30]

*Events*, op. cit., pp. 250-52.

[Foot Note 31]

Cf. «Events and their Subjects,» *Pacific Philosophical Quarterly* Vol. 62 (1981): pp. 138-47.

[Foot Note 32]

See Heller, *op. cit*. and Theodore Sider, *Four-Dimensionalism* (Oxford: Oxford University Press, 2001) for expositions of this view.