‘WHOLLY PRESENT’ DEFINED

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Four-dimensionalists say that spatiotemporal continuants persist by being spread out in time in the way that things like the Taj Mahal are spread out in space. They’ll sometimes put it thus: continuants have *temporal* as well as *spatial* parts. Three-dimensionalists disagree. According to them, continuants persist by being “wholly present” at every time at which they exist. So Peter Simons:

> At any time at which it exists, a continuant is wholly present. (1987: 175)

And D. H. Mellor:

> things are wholly present throughout their lifetimes. (1981: 104)

But what is it for something to be “wholly present” at a time? It’s surprisingly difficult to say. The three-dimensionalist is free, of course, to take ‘is wholly present at’ as one of her theory’s primitives, but this is problematic for at least one reason: some philosophers claim not to understand her primitive.[1] Clearly the three-dimensionalist would be better off if she could state her theory in terms accessible to all. We think she can. What’s needed is a definition of ‘is wholly present at’ that all can understand. In this paper, we offer one.

After some preliminary remarks, we lay out what we take to be requirements on a successful definition of whole presence. We then consider several definitions on offer in the literature and argue that each runs afoul of one or more of our requirements. Finally, we offer our own definition and consider an objection.

1. PRELIMINARY REMARKS

First, as we shall use terms, ‘four-dimensionalism’ and ‘three-dimensionalism’ are the names of two theories about how objects persist through time. We shall think of them as follows:

> *Three-Dimensionalism*: Necessarily, for any x and any times, the ts: if the ts are more than one and x exists at each of the ts, then x is wholly present at each of the ts.

[1] E.g., Theodore Sider (1997: 208-213); see too his 2001: ch. 3.

> *Four-Dimensionalism*: Necessarily, for any x and any times, the ts: if the ts are more than one and x exists at each of the ts, then x is not wholly present at any of the ts.

'Eternalism' and 'presentism', as we'll use these terms, name two theories about the temporal extent of reality. Eternalists say that our most inclusive quantifiers range over past and future things as well as present things. Presentists disagree: our most inclusive quantifiers, they say, range over only present things.

Secondly, we shall assume that spatiotemporal objects *occupy* or *overlap* regions of space or spacetime. We take the *overlaps* relation born by an object to a region of space or spacetime as an undefined two-term relation, and assume that it works in such a way that if x overlaps a region R of space or spacetime, then x overlaps every superregion[2] of R (though not necessarily every subregion of R). We assume substantivalism about space and/or spacetime. We shall talk as if objects are wholly present at regions of space or spacetime, and as if objects are wholly present at times. We shall understand the latter talk to be reducible to the former in the following way. Times, we shall assume, are three-dimensional spacelike hypersurfaces of spacetime. Something is wholly present at a time t iff it is wholly present at some n-dimensional (n<4) subregion of t. Something *x exists at* a time t, we'll say, iff, for some subregion R of t, x overlaps R. (Near the end of the paper, we'll relax our assumption about substantivalism and show how to translate our results into language compatible with relationalism about spacetime.)

Thirdly, we assume a "classical" conception of identity on which identity is a two-term relation governed by the usual logic of identity. A word about this assumption. Later we shall take seriously the possibility that the relation expressed by 'x is a part of y at region R' is a primitive, three-term relation. The definition of 'is wholly present at' we eventually defend will be officially neutral on the question whether 'x is a part of y at R' expresses a primitive, three-term relation, or a relation analyzable in terms of the primitive, two-term parthood relation of classical mereology. Why not then be similarly agnostic about the identity relation? Why not take seriously the possibility that 'x is identical with y at R' expresses a primitive, three-term relation linking things and regions? By way of reply, we have no knock-down argument that this possibility shouldn't be taken seriously. The best we can do here is to report that, on reflection, we can make no sense of the suggestion that identity is a three-term relation. (Whereas we think we *can* make sense of the suggestion that parthood is a three-term relation.) Readers who think they can make sense of three-term identity are invited to think of the conclusions of our paper as conditional: if identity is classical, then 'is wholly present at' can be defined thus-and-so.

And finally, by a "definition" of 'is wholly present at', we mean what Quine calls an "explication". When giving an explication,

> we do not claim synonymy. We do not claim to make clear and explicit what the users of the unclear expression had unconsciously in mind all along. We do not expose hidden meanings . . . we

[2] R_1 is a superregion of R_2 iff R_2 is a subregion of R_1.

supply lacks. We fix on the particular functions of the unclear expression that make it worth troubling about, and then devise a substitute, clear and couched in terms to our liking, that fills those functions. (Quine 1960: 258-259)

Our aim, then, is to find a substitute expression for 'is wholly present at', one that is clear and well-suited for the functions filled by our talk of whole presence. What we must do now is to say something about what those functions are. We shall let recent literature on the metaphysics of persistence and the metaphysics of material objects be our guide. In the next section of the paper, we examine various uses to which 'is wholly present at' and cognate expressions have been put in this literature. Then we examine several recent attempts to define 'is wholly present at' and argue that no one of them yields a concept capable of doing all of the work done by these expressions. Now, one possibility here is that there *is* no concept capable of this, and talk of whole presence in the literature is either equivocal or incoherent. That is a possibility, but one we take to be unrealized. In the last section of the paper, we offer our own definition, one which we think is capable of doing the work done by 'is wholly present at' and cognates in the literature.

2. On the Uses of 'is Wholly Present at'

The basic intuition underlying talk of whole presence by metaphysicians is put well by Hud Hudson:

> Informally, when an object [is wholly present at] a region of spacetime, that region is just the same ... size and shape as the object itself.... (2001: 63)

Borrowing Peter van Inwagen's term (1990b: 246), we can put it thus: something is wholly present at a region *R* just in the case that it "fits exactly into" *R*.

Such is the basic idea, roughly stated. Now to fill it in some. First. According to many writers, it's metaphysically possible that something is wholly present at more than one region—i.e., that something is *multiply located*. Some of these writers, those who hold the conjunction of eternalism and three-dimensionalism, think that persistence through time *just is* multiple location in spacetime.[3] Something persists through time, on this view, when it is wholly present at disjoint regions of spacetime separated from one another by a timelike distance. If a definition of 'is wholly present at' is to yield a substitute expression capable of filling the functions these writers wish 'is wholly present at' and cognates to fill, then, it will need to satisfy this requirement:

(**R1**) It makes sense to say that an object is wholly present at more than one region of space or spacetime.

[3] For a clear statement of this sort of position, see van Inwagen 1990b. See too Mellor 1981 and 1998.

It "makes sense" to say *p*, let us say, iff *p* isn't formally contradictory or so obviously false that any reasonable person who understood it would be inclined to reject it. A definition *D* "satisfies" (R1), say, iff the sentence obtained by translating talk of whole presence in (R1) in terms of *D* is true. (Likewise with the requirements to follow.)

Second. Trenton Merricks (1999) thinks that every material object is wholly present at the present time and such that its only parts are parts *simpliciter*. (Something *x* is a part *simpliciter* of something *y*, let us say, iff *x* bears the primitive two-term *is a part of* relation of classical mereology to *y*.)[4] So if a definition of 'is wholly present at' is to yield a substitute expression capable of filling the functions Merricks wishes 'is wholly present at' to fill, it will need to satisfy this requirement:

> (**R2**) It makes sense to say that an object is wholly present at a time or region and is such that its only parts are parts *simpliciter*.

Third. According to Hud Hudson (2001), no material object has a part *simpliciter*. This isn't to say, though, that according to Hudson, all material objects are mereological simples. There are composite objects, on his view, but all such objects are related to their parts by a primitive, *three*-term parthood relation that links an object to its parts, on the one hand, and to regions of spacetime on the other. (Let us say that an object which enters into this three-term parthood relation with its parts has "parts-at-a-region"; similarly, we'll say that an object which enters into a three-term parthood relation with its parts, on the one hand, and with *times*, on the other, has "parts-at-a-time.") Hudson thinks that composite objects of this sort—objects whose only parts are parts-at-a-region—are wholly present at various regions of spacetime.[5] So for Hudson, it makes sense to say that something with no parts *simpliciter* but with parts-at-a-region (or, presumably, parts-at-a-time) is wholly present at a region (or time). Since he is also a *four-dimensionalist* about persistence, holding that objects persist through time by being wholly present at temporally extended, four-dimensional regions of spacetime without being wholly present at any one time, he'd also think that it makes sense to say that something with no parts *simpliciter* but with parts-at-a-region is wholly present at a temporally extended, four-dimensional region without being wholly present at any one time. So our third requirement:

> (**R3**) It makes sense to say that an object with no parts *simpliciter* but with parts-at-a-region (or parts-at-a-time) is wholly present at a region or time, and it makes sense to say that such an object is wholly present at a temporally extended region without being wholly present at any one time.

[4] We shall follow the usual convention of using 'part' in such a way that everything is a part of itself. When precision is called for, we'll talk of *proper* and/or *improper* parthood, and we'll use these terms in the standard ways.

[5] Though he puts it thus: composite objects "exactly occupy" various regions of spacetime. Henceforth, we'll talk as if Hudson uses our terminology.

Fourth. Peter van Inwagen, a three-dimensionalist and an eternalist, thinks that persisting material objects gain and lose parts over time.[6] He thinks that we humans are such objects, that we are wholly present at every time we exist and that we gain and lose parts over the course of our lives. So a definition of 'is wholly present at' capable of satisfying the functions van Inwagen wishes that expression to fill will need to satisfy:

(**R4**) It makes sense to say both that eternalism is true and that an object that is wholly present at every time at which it exists gains and loses parts over time.[7]

Fifth. Trenton Merricks (1999: 431) invites us to imagine a world in which every cell persists through time by fitting exactly into a four-dimensional region of spacetime and having instantaneous temporal parts. (We shall understand the concept of an instantaneous temporal part—henceforth, just *temporal part*, as follows:

(**TP**) *x* is a temporal part of *y* at $t =_{\text{df.}}$ (i) *x* exists at, but only at *t*, (ii) *x* is a part of *y* at *t*, and (iii) *x* shares a part at *t* with everything that is a part of *y* at *t*.[8])

He invites us to imagine further that no two cells in this world overlap and that there exists an organism *O* that is entirely composed of these cells and is such that (a) these cells and their parts are *O*'s only proper parts, and (b) *O* exists at a multitude of times but is wholly present at no one time.[9] (Let us call an object of the sort Merricks invites us to imagine a Merricks Organism or *MO* for short.) According to Merricks, to imagine an object matching the preceding description is to imagine a perduring object that lacks temporal parts. That a MO lacks temporal parts follows from the fact that, if it had any

[6] See, e.g., 1981 and 1990a.

[7] It is worth noting that some philosophers have maintained that a requirement such as (R4) simply *cannot* be satisfied. For instance, Merricks (1999: 429) says,

> Indeed, if we allow for change of parts, I think that there is no way at all to make sense of an object's "being wholly present at every time at which it exists" *without the doctrine of presentism*. [Our emphasis added.]

As we shall show below, Merricks is mistaken. Our definition of 'is wholly present at' does indeed satisfy (R4). Hence, presentism is not needed in order to make sense of an object's changing its parts and being wholly present at every time at which it exists.

[8] Here we follow Sider 1997: 205. Henceforth, when we speak of temporal parts, we'll have this definition in mind. We'll take talk of parthood-at-a-time in the definition as neutral between irreducible parthood-at-a-time and parthood-at-a-time analyzable in terms of parthood *simpliciter* as follows:

($\mathbf{P_t}$) x is a part of *y* at $t =_{\text{df.}}$ (i) x is a part *simpliciter* of *y*, and (ii) x exists at t.

[9] Two points. First, we shall suppose that *O* exists at a multitude of times without being wholly present at any one time because it fits exactly into a four-dimensional region of spacetime but no *n*-dimensional region (*n*<4). And second, we shall take talk of proper parthood in the foregoing description of *O* as neutral between parthood *simpliciter*, parthood-at-a-time and parthood-at-a-region.

temporal parts, it wouldn't be true that its only parts are its cells and their parts.[10] Some will question Merricks's claim that a MO counts as *perduring*, but let us set that aside; for our purposes, nothing much hangs on this question. Others will complain that a MO is impossible. But Merricks doesn't say otherwise; his claim is only that we can "consistently" describe such a thing (1999: n. 22), where here, we take it, he means that it makes sense to talk of such a thing—that in talking of such a thing, we don't thereupon lapse into contradiction, paradox or gibberish. Merricks's thought experiment suggests our next requirement:

(**R5**) It makes sense to say that something is a MO.

Sixth. Theodore Sider (1997: 211-212) invites us to imagine a lump of clay that is fashioned into the shape of a statue and holds this shape for only an instant. He notes that some three-dimensionalists—those who believe that lumps of clay sometimes *constitute* numerically distinct, spatially coincident statues—may wish to say that, in that instant, a statue comes into being, and thereupon ceases to exist. Sider points out (1997:211) that he does not wish to suggest that instantaneous, coincident statues are possible, only that they seem to be "consistent" with the three-dimensionalists view of things. As above, we take Sider to mean by this that three-dimensionalists can talk of instantaneous coincident statues without *ipso facto* lapsing into contradiction, paradox or gibberish. Sider's thought suggests this as our next requirement:

(**R6**) It makes sense to say that there is a lump of clay that (a) is wholly present at disjoint, timelike separated regions of spacetime, and (b) is wholly present at a region *R* such that a numerically distinct, instantaneous statue constituted by the lump is also wholly present at *R*.

Seventh. It's clear that, for Sider, one can also say consistently that an object is wholly present at one and only one time. So:

(**R7**) It makes sense to say that an object is wholly present at one and only one time.

Eighth. Obviously enough, each of the above writers holds that one can consistently say that an object with proper parts at a time *t* or region *R* is wholly present at *t* or *R*. So:

(**R8**) It makes sense to say that an object with proper parts at a region or time is wholly present at that region or time.

Lastly, each of the above writers thinks we can sensibly talk of an object's being wholly present at a region smaller than the whole of spacetime. So:

[10] Unless, of course, there was a time at which the organism was the size of a single cell. Let us suppose that there is no such time.

(**R9**) It makes sense to say that an object is wholly present at a region smaller than the whole of spacetime.

This completes our discussion of the uses of ‘is wholly present at’ in the contemporary literature. We realize that we haven’t said even a fraction of what there is to be said about the work this expression and cognates do in philosophical talk about persistence and material objects. We think we’ve said enough, though, to make two interesting claims. First, no one to date has produced a definition of ‘is wholly present at’ capable of doing the work described by our nine requirements. Secondly, we think we can. We’ll treat these claims in order.

2. Some Recent Definitions of ‘is Wholly Present at’

2.1 Merricks

Trenton Merricks (1999) proposes a definition along these lines:[11]

(**WP$_M$**) *x* is wholly present at *t* $=_{df.}$ (i) *x* exists at *t*, (ii) for some *y*, *y* is a part *simpliciter* of *x*, and (iii) for every *z*, *z* is a part *simpliciter* of *x* only if *z* exists at *t*.

But (WP$_M$) has this shortcoming: it fails to satisfy (R3). It would satisfy (R3) if we could translate

[11] See especially the discussion on pages 428-430. We should note: Merricks might be up to something other than offering a definition, in our sense, of ‘is wholly present at’. He might be aiming to state necessary and sufficient conditions for the truth of ‘x is wholly present at t’—aiming, that is, to produce a sentence that is necessarily extensionally equivalent to ‘x is wholly present at t’. (S_1 is *necessarily extensionally equivalent* to S_2 iff the universal closure of $\ulcorner S_1 \equiv S_2 \urcorner$ expresses a necessary truth.) Or, he might be aiming to produce a sentence that contains no occurrence of the expression ‘is wholly present at’ or expressions that can be trivially defined in terms of ‘is wholly present at’ and is necessarily extensionally equivalent to ‘x is wholly present at t’. These projects differ from ours. One can find a sentence that is necessarily extensionally equivalent to ‘Fx’ without *ipso facto* providing a substitute expression capable of filling the functions filled by ‘F’; one can find a sentence that contains no occurrence of the expression ‘F’ or expressions that can be trivially defined in terms of ‘F’ and is necessarily extensionally equivalent to ‘Fx’ without *ipso facto* providing a substitute expression capable of filling the functions filled by ‘F’. To illustrate, if Merricks is right and presentism is a necessary truth, ‘x exists at present’ is necessarily extensionally equivalent to ‘x is self-identical’. But ‘is self-identical’ clearly isn’t well-suited for the role played in our talk by ‘exists at present’. (We note parenthetically that, since we share Merricks’s commitment to presentism and two-term parthood, we’re inclined to think that the definiens of (WP$_M$) is necessarily extensionally equivalent to ‘x is wholly present at t’. But for reasons given below, we don’t think the definiens of (WP$_M$) is well-suited to play the role played in our philosophical talk by ‘is wholly present at’.) The crucial point: Merricks might well be up to something different than giving a definition, in our sense, of ‘is wholly present at’. That noted, we’ll press on as if he’d offered a definition in our sense.

(**R3**) It makes sense to say that an object with no parts *simpliciter* but with parts-at-a-region (or parts-at-a-time) is wholly present at a region or time, and it makes sense to say that such an object is wholly present at a temporally extended region without being wholly present at any one time

in terms of (WP_M) and get truth. But performing the translation yields a claim to the effect that it makes sense to say that an object with no parts *simpliciter* is such that, for some *y*, *y* is a part *simpliciter* of it. This claim is false, so (WP_M) fails to satisfy (R3).

(What if Merricks simply dropped 'for some *y*, *y* is a part *simpliciter* of x' from (WP_M)? Then, notice, it would still fail to satisfy (R3). Since any pair comprising an object with no parts *simpliciter* and a time would trivially satisfy the final clause of (WP_M), any object with no parts *simpliciter* would, by the amended (WP_M), be wholly present at any time it overlapped. But then talk of a thing without parts *simpliciter* being wholly present at a temporally extended region without being wholly present at any one time would turn to nonsense when translated in terms of the amended (WP_M), and (R3) still wouldn't be satisfied.)

2.2 Sider

Theodore Sider (1997, 2001) considers and rejects various formulations of three-dimensionalism. His proposed formulations suggest various strategies for defining 'is wholly present at' (none of which, we should note, are endorsed by Sider). We shall briefly consider four of these.

(**WP_{S1}**) *x* is wholly present at $t =_{df.}$ everything that is at any time part of *x* exists at and is part of *x* at *t*.[12]

(WP_{S1}) is no good for our purposes since it fails to satisfy (R4). According to (R4), it makes sense to say both that eternalism is true and that an object that is wholly present at every time at which it exists gains and loses parts over time. But translating the previous sentence in terms of (WP_{S1}) yields a claim to the effect that it makes sense to say both that eternalism is true and that an object *O* is such that, for every time t at which *O* exists, (i) everything that is at any time part of *O* exists at and is part of *O* at t, and (ii) *O* changes its parts over time. Since it makes no sense to say such a thing, (WP_{S1}) runs afoul of (R4).

Next,

(**WP_{S2}**) *x* is wholly present at $t =_{df.}$ *x* exists at *t* and has no temporal part at *t*,[13]

where the notion of *temporal part* is understood in terms of (TP) above.[14]

[12] This is Sider's (WP) (1997: 210).

[13] Cf. Sider's (WP3) version of three-dimensionalism (1997: 210).

[14] To remind:

But (WP_{S2}) fails to satisfy (R7): it makes no sense to say that on object is wholly present at one and only one time, where 'is wholly present at' is read à la (WP_{S2}). If this isn't immediately obvious, notice that, given the notion of temporal parthood as it's defined by (TP), an object that existed at one and only one time would have at least one temporal part: itself.[15]

Two final possibilities:

(**WP_{S3}**) x is wholly present at $t =_{df.}$ x exists at t and if x exists at times other than t, then x never has a temporal part.[16]

(**WP_{S4}**) x is wholly present at $t =_{df.}$ x exists at t and x has no proper parts at t.[17]

Briefly, (WP_{S4}) won't do for our purposes on account of its failing to satisfy (R8): it makes no sense to say that an object with proper parts at a time has no proper parts at that time.

(WP_{S3}) is no good because it fails to satisfy (R5) and (R6). (R5) says it makes sense to say that something is a Merricks Organism—i.e., a "MO". But something is a MO only if it exists at multiple times, never has a temporal part, and is wholly present at no one time. Translation in terms of (WP_{S3}): something x is a MO only if x exists at multiple times, x never has a temporal part, and there is no time t such that (i) x exists at t and (ii) if x exists at times other than t then x never has a temporal part. In brief: something is a MO only if a contradiction is true. The upshot is that (WP_{S3}) fails to satisfy (R5): translate (R5)'s talk of a MO in terms of (WP_{S3}) and (R5) turns false.

According to (R6), it makes sense to talk, as Sider does, about a lump of clay that is wholly present at multiple times and, for one brief moment, constitutes a numerically distinct statue. But let t be the brief moment of time at which the lump constitutes the statue. Then the statue is a temporal part of the lump at t:[18] By (TP), the statue is a temporal part of the lump at t iff (i) the statue exists at t and only at t, which it does; (ii) the statue is a part of the lump at t; and (iii) the statue shares a part at t with everything that is a part of the lump at t. Since the statue and the lump, we may suppose, are composed of the same fundamental particles at t, (iii) is satisfied. And (ii) follows from the following plausible principle of temporally relativized mereology:

(**TP**) x is a temporal part of y at t $=_{df.}$ (i) x exists at, but only at t, (ii) x is a part of y at t, and (iii) x shares a part at t with everything that is a part of y at t.

[15] The defender of (WP_{S2}) could avoid our complaint by rewriting its definiens as: 'x exists at t and x has no temporal part *other than itself* at t'. But so modified, it violates (R6) for the same reasons as does the soon to be discussed (WP_{S3}).

[16] Cf. Sider's (WP4) version of three-dimensionalism (1997: 210).

[17] Cf. his (WP6) version of three-dimensionalism (1997: 211).

[18] The argument to follow derives from Sider 1997: 211-212.

(**PO'**) If *x* and *y* exist at *t*, *x* exists only at *t*, and *x* is not a part of *y* at *t*, then some part of *x* at *t* is such that nothing is a part of it and *y* at *t*.[19]

Since the statue and the lump are composed of the same fundamental particles at *t*, every part of the statue at *t* shares a part with the lump at *t*. So by (PO'), the statue is a part of the lump at *t* and (ii) is satisfied.

So: the statue is a temporal part of the lump at *t*, the lump exists at multiple times, and both the statue and the lump are wholly present at *t*. Translation in terms of (WP_{S3}): the statue is a temporal part of the lump at *t*, the lump exists at multiple times, and the statue and lump are both such that they exist at *t* and if they exist at times other than *t*, they never have temporal parts. Simplifying: the statue is a temporal part of the lump at *t* but the lump never has a temporal part. Nonsense. So talk of Sider's instantaneous statue in terms of (WP_{S3}) makes no sense. Accordingly, (WP_{S3}) runs afoul of (R6).[20]

2.3 Rea

Michael Rea (1998, 2003) defines 'is wholly present at' in terms of a notion he calls *t-composition*:[21]

(**TC**) the *x*s *t*-compose $y =_{\text{df.}}$ (i) all of the *x*s are parts *simpliciter* of *y*, (ii) all of the *x*s exist at *t*, and (iii) every part *simpliciter* of *y* that exists at *t* shares a part in common with at least one of the *x*s.[22]

This notion in hand, he formulates his definition of whole presence as follows:

(**WP_R**) *y* is wholly present at $t =_{\text{df.}}$ there are *x*s such that (i) the *x*s *t*-compose *y*, and (ii) it is not the case that the *x*s *t*-compose a proper part of *y*. (1998: 234 and 2003)

But (WP_R)'s whole presence is no good for our purposes since it violates our third, fifth and sixth requirements. It violates (R3) on account of its being formulated in terms of parthood *simpliciter*. (R3) says that it makes sense to say that an object with no parts *simpliciter* but with parts-at-a-time is wholly present at a time. Since translation of

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[19] Note well: this principle is a slight variation on the principle (PO) employed by Sider in his version of this argument (1997: 212). This is because Sider's principle is false on our favored analysis of 'x is a part of *y* at t' ((P_t); see note 6).

[20] The complaints just raised against (WP_{S3}) apply with very little modification to the definitions of 'is wholly present at' suggested by Ned Markosian (1994) and Dean Zimmerman (1996).

[21] As with Merricks, it's not clear that Rea means to give a definition, in our sense, of 'is wholly present at'. This noted, we hasten on.

[22] See 1998: 233. Note well: this isn't quite Rea's notion of t-composition. He frames his definition in terms of reference frames to make his discussion sensitive to issues arising from relativity physics. We'll ignore this complication.

the previous sentence in terms of (WP_R)'s whole presence yields falsehood, (WP_R) runs afoul of (R3).

To see that it runs afoul of (R5), think again about a MO. By definition, something is a MO only if it exists at multiple times but is wholly present at no one time. But given whole presence à la (WP_R), a MO would be wholly present at every time it exists. This is because, for any time *t* at which a MO, *O*, exists, there are some objects that *t*-compose *O*: viz., the temporal parts of *O*'s 4D cells at *t*. But the temporal parts of *O*'s 4D cells at *t* don't *t*-compose a proper part of *O*; else *O*'s only proper parts *aren't* the cells and their parts and *O* doesn't count as a MO. So by (WP_R), *O* is wholly present at *t*. But since *O* is a MO, there is no time at which it is wholly present. Contradiction. The upshot: translate (R5)'s talk of a MO in terms of (WP_R) and you get nonsense. (WP_R) runs afoul of (R5).

(R6) says that it makes sense to talk as Sider does of a multiply located lump of clay that, for one brief moment, constitutes a numerically distinct statue. But let *t* be the time at which both the lump and the statue are wholly present, and let the *x*s be the fundamental particles that *t*-compose the lump. They'll also *t*-compose the statue, which, by an argument given earlier, is part of the lump. Since the statue is distinct from the lump, we get that the *x*s *t*-compose a proper part of the lump, and, by (WP_R), that the lump *isn't* wholly present at *t*. So the lump is and isn't wholly present at *t*, and, contrary to (R6), talk of such a thing (in terms of (WP_R)) makes no sense.

2.4 McKinnon

In a recent article (2002), Neil McKinnon offers an account of the endurance/perdurance distinction. Though he doesn't explicitly formulate a definition of 'is wholly present at', his account of endurance suggests the following:

(**WP_{McK}**) *x* is wholly present at *t* $=_{df.}$ *x* exists at *t*, has no proper temporal part at *t*,[23] and is such that there is a set whose members compose it at *t*.

What is it for the members of a set to compose something *at a time*? McKinnon doesn't say. He does say that talk of composition at a time is to be taken as neutral between what he calls composition *simpliciter* and irreducible composition at a time (2002: 20n). Unfortunately, he doesn't say what these notions come to. We suspect he had mind that composition *simpliciter* is to be defined in terms of parthood *simpliciter*, and that irreducible composition at a time is to be defined in terms of a primitive three-term parthood relation linking parts, wholes and times—i.e., primitive parthood-at-a-time.

[23] Proper temporal parthood is to be read here as:

x is a proper temporal part of *y* at t $=_{df.}$ (i) x is a proper part *simpliciter* of *y*, (ii) x exists at and only at t, and (iii) x shares a part *simpliciter* with everything that exists at t and is a part *simpliciter* of *y*.

Start with composition *simpliciter*. How can we define this notion in terms of parthood *simpliciter*? The most obvious approach, we think, is something like:

> (**Composition$_s$**) the xs compose *simpliciter* y at $t =_{df.}$ (i) each of the xs exists at t and is a part *simpliciter* of y, (ii) no two of the xs share a part *simpliciter*, (iii) everything that exists at t and shares a part *simpliciter* with y shares a part *simpliciter* with one of the xs.

But read in terms of (Composition$_s$), (WP$_{McK}$) fails to satisfy (R5): Again, let O be a MO. Let the cs be O's non-overlapping four-dimensional cells that persist by having proper temporal parts at every time they overlap and let the c_ts be the proper temporal parts of the cs at time t. By definition, something is a MO only if it is wholly present at no one instant of time. But each of the c_ts exists at t and is a part *simpliciter* of O; no two of the c_ts share a part *simpliciter*; and everything that exists at t and shares a part *simpliciter* with O shares a part *simpliciter* with one of the c_ts. So, the c_ts compose$_s$ O at t. So, there is a set—the set of all and only the c_ts—whose members compose$_s$ O at t. Since O exists at t and has no proper temporal part at t (else it's false that O's only proper parts *simpliciter* are the cs and their parts), we get that O is wholly present (à la (WP$_{McK}$)) at t. Contradiction. The upshot: talk of a MO in terms of (WP$_{McK}$) makes no sense and (WP$_{McK}$) runs afoul of (R5).

Perhaps this result could be avoided by stipulating that (WP$_{McK}$) is to be read in terms of irreducible composition at a time, where this is understood as:

> (**Composition$_t$**) the xs compose y at $t =_{df.}$ (i) each of the xs is a part of y at t, (ii) no two of the xs share a part at t, and (iii) everything that shares a part with y at t shares a part with one of the xs at t,

and 'x is a part of y at t' expresses irreducible parthood-at-a-time.

But so amended, the definition is formulated in terms of a primitive three-term parthood relation and so fails to satisfy (R2). Moreover, so amended, the definition still doesn't satisfy (R5). Recall: talk of parthood in the above description of a MO was supposed to be neutral between parthood *simpliciter*, parthood-at-a-region and parthood-at-a-time. But describe what it is to be a MO in terms of parthood-at-a-time and talk of a MO in terms of the (Composition$_t$)-version of (WP$_{McK}$) yields nonsense. So the (Composition$_t$)-version of (WP$_{McK}$) doesn't satisfy (R5).

2.5 HUDSON

Hud Hudson (2001: 63) endorses the following definition of 'is wholly present at':[24]

[24] Here again, it's not clear that Hudson is after a definition in our sense. Also, as was mentioned above, Hudson's terminology differs slightly from ours. We use 'is wholly present at' where he uses 'exactly occupies'.

($\mathbf{WP_H}$) x is wholly present at region R of spacetime $=_{\text{df.}}$ (i) x has a part at R, (ii) there is no region of spacetime R^* such that R^* has R as a proper subregion, while x has a part at R^*, and (iii) for every subregion R' of R, x has a part at R'.

But (WP_H) won't do for our purposes on account of Hudson's stipulation that 'x is a part of y at R' expresses irreducible parthood-at-a-region. (R2) says that it makes sense to say that something is wholly present at a region and is such that its only parts are parts *simpliciter*. But translation of this claim in terms of (WP_H) yields falsehood. So (WP_H) doesn't satisfy (R2).

Could we avoid this result by reading Hudson's 'x has a part at R' as expressing non-primitive parthood at a region analyzable in terms of parthood *simpliciter*? Not that we can see. The most natural interpretation of 'x has a part at R' in terms of parthood *simpliciter*, we think, is something like:

($\mathbf{P_R}$) x is a part of y at R $=_{\text{df.}}$ (i) x is a part *simpliciter* of y, and (ii) x overlaps R.

Unfortunately, there could be no whole presence à la (WP_H) at any region smaller than the whole of spacetime if this is what parthood at a region comes to.

> Proof. Suppose x is wholly present at region R_1. Let R_2 be some superregion of R_1 such that R_1 is a proper subregion of R_2. x overlaps R_2. (This follows from (a) the very natural assumption that if x is wholly present at a region R, then it overlaps R, and (b) the assumption noted earlier that if x overlaps R, x overlaps every superregion of R.) Since x is a part *simpliciter* of itself, (P_R) gives us that x is a part of x at R_2. If so, then by (WP_H), x isn't wholly present at R_1. Contradiction. So reading 'is wholly present at' à la (WP_H) and reading talk of parthood at a region in (WP_H) in terms of (P_R), it is a consequence of (WP_H) that nothing could be wholly present at a region R such that R is a proper subregion of some other region. So it follows that nothing could be wholly present at a region smaller than the whole of spacetime.

The upshot: read in terms of (P_R), (WP_H) fails to satisfy (R9). ((R9), again, says that it makes sense to say that something is wholly present at a region smaller than the whole of spacetime.) There are other ways of defining 'x is a part of R' in terms of parthood *simpliciter*, but every way we can think of yields the same result.

2.6 HAWLEY

Katherine Hawley (2001) thinks that an object endures iff (i) it exists at more than one moment and (ii) statements about what parts the object has must be made relative to some time or other. Though she doesn't explicitly formulate a definition of whole presence, her account of endurance and her exposition of that account suggest something in the neighborhood of:

(**WP$_{\mathbf{Ha}}$**) x is wholly present at $t =_{\text{df.}}$ (i) for some y, x has y as a part at t, and (ii) there is no z such that x has z as a part *simpliciter*.[25]

But (WP_{Ha}) doesn't satisfy (R2) and is therefore no good for our purposes.

This completes our survey of previous definitions of whole presence. We turn now to our own definition.

3. 'IS WHOLLY PRESENT AT' DEFINED

A few preliminaries. First. We shall offer a definition of whole presence at a *region*. (Our definition is easily convertible into a definition of whole presence at a *time*; we shall provide the conversion below.) Second. We shall frame our definition in terms of the undefined locution 'x is a part of y at R'. We'll make no assumption about whether the relation expressed by this locution is a primitive three-term parthood relation, or a non-primitive relation analyzable in terms of parthood *simpliciter*. We will, however, make a handful of assumptions about how this relation works. First assumption: we'll assume that if parthood at a region is analyzable in terms of parthood *simpliciter*, the analysis is given by (P_R), again:

(**P$_{\mathbf{R}}$**) x is part of y at $R =_{\text{df.}}$ (i) x is a part *simpliciter* of y, and (ii) x overlaps R.

Second assumption: given parthood at a region à la (P_R), we think it's natural to assume that (1) if x is wholly present at R and x is a part of y at R, then x is a part of y at every superregion and every subregion of R, and (2) if y is wholly present at R and x is a part of y at R, then x is wholly present at a subregion of R. Third assumption: we shall assume that if parthood at a region is a primitive three-term relation, then it works in such a way as to satisfy (1) and (2) of the previous sentence.

Third. We shall make use of the locution 'the xs are among the ys', where the definition of this locution is as follows:

the xs are among the ys $=_{\text{df.}}$ for every z, if z is one of the xs then z is one of the ys.

We know of no informative definition of 'z is one of the xs' but we assume that its meaning is sufficiently clear. We assume too that it makes no sense to say that z is one of the ys at some region R but not at some other region R'. (Just as it makes no sense to say that x is identical with y at some region R but not at some other region R'.)

Fourth. We shall make use of the undefined locution 'the xs are interrelated by relation r^* at region R'. Though undefined we can say a few things about the locution. If John and Mary overlap a region R of space and John and Mary are related by the two-term *spouse of* relation, then we shall say that John and Mary are interrelated by the *spouse of* relation at R. If you and your house overlap R and you bear the *inside of* relation to your house, then we shall say that you and your house are interrelated by the *inside of* relation at R. Reflection on the so-called problem of temporary intrinsics suggests that if three-dimensionalism and eternalism are both true, one doesn't bear the

[25] ...except maybe itself, but let that pass.

two-term *spouse of* relation to one's spouse. Rather, one either bears a *three*-term *spouse of* relation to one's spouse, on the one hand, and various regions of spacetime on the other, or one bears a *three*-term instantiation relation to the *spouse of* relation, one's spouse, and various regions of spacetime.[26] If John bears the three-term *spouse of* relation to Mary and region R, then, just as above, we shall say that John and Mary are interrelated by the *spouse of* relation at R. If John bears the three-term instantiation relation to the *spouse of* relation, Mary, and region R, then, just as above, we shall say that John and Mary are interrelated by the *spouse of* relation at R. We take it that these remarks are sufficient to make it at least reasonably clear what we shall mean by talk of interrelatedness at a region.

And finally, we shall make use of the locution 'the *x*s properly compose y at R'. We shall understand this locution as follows:

the *x*s properly compose y at $R =_{\text{df.}}$
(i) the *x*s are two or more and are all parts of y at R;
(ii) no two of the *x*s share a part at a sub-region of R;
(iii) everything that shares a part with y at R shares a part with one of the *x*s at R.

These points noted, we're ready for a try at a definition. As a first approximation, we offer this:

(**WP$_1$**) x is wholly present at $R =_{\text{df.}}$
(i) x overlaps R and every subregion of R;
(ii) no part of x at R (of which x isn't a part at R) shares a part at R with everything that is a part of x at R.[27]

To be wholly present at a region, something must "fill up" the whole of the region, not just a part of it. Clause (i) ensures that x fills up *all* of R. Clause (ii) ensures that x isn't "too big" to fit into R. Suppose Sam the cat fits exactly into a three-dimensional region R of space. Let R_{paw} be the paw-shaped region such that Sam's front right paw fits exactly into R_{paw}. Intuitively, Sam isn't wholly present at R_{paw}: he's "too big" to fit exactly into R_{paw}. The sense in which he's "too big" is given by clause (ii): a part of him at R_{paw} (of which he isn't a part at R_{paw})—viz., his front right paw—shares a part at R_{paw} with everything that is a part of him there.

Objection: What about Sider's instantaneous coincident statue? Your definition makes talk of such a thing contradictory and puts you in violation of your own (R6). Let Lump be a three-dimensional lump of clay wholly present at various disjoint, timelike separated regions of spacetime, and let Statue be Sider's instantaneous statue coincident with Lump at some one of those regions R. Statue and Lump, then, are each wholly

[26] For discussion, see, e.g., Lewis 2002.

[27] Why not 'no proper part of x at R shares a part at R with everything that is a part of x at R'? Doesn't this read more nicely? It does, but on the usual construal of proper parthood, put thus, (WP$_1$) is vulnerable to the objection involving Sider's instantaneous coincident statue considered below.

present at *R*. But, by an argument like that given earlier, there is a part of Lump at *R* of which Lump isn't a part at *R* (viz., Statue) that shares a part at *R* with everything that is a part of Lump at *R*. Accordingly, Lump doesn't satisfy clause (ii) of (WP_1) and, by (WP_1), *isn't* wholly present at *R*. Contradiction. (R6), read in terms of your (WP_1), makes no sense.

Reply: The objection presupposes that Statue is a part of Lump at *R* but that Lump isn't a part of Statue at *R*. Now, the only argument we can think of for thinking that Statue is a part of Lump at *R* goes something like this. The argument considered above that instantaneous statues are parts of the lumps that constitute them relied on this principle:

> (**PO'**) If *x* and *y* exist at *t*, *x* exists only at *t*, and *x* is not a part of *y* at *t*, then some part of *x* at *t* is such that nothing is a part of it and *y* at *t*.

A parallel principle built for parthood at a region is:

> (**PO_R**) If *x* and *y* overlap *R*, *x* does not overlap the complement of *R*, and *x* is not a part of *y* at *R*, then some part of *x* at *R* is such that nothing is a part of it and *y* at *R*.

It is plausible that this principle governs parthood at a region.[28] Since Statue and Lump, we may assume, are composed of the same fundamental particles at *R*, everything that has a part in common with Statue at *R* shares a part with Lump at *R*; thus, by (PO_R), Statue is a part of Lump at *R*.

This is the only argument we can think of for the proposition that Statue is a part of Lump at *R*. It will be noted, though, that this argument, *mutatis mutandis*, is an equally good argument that Lump is a part of Statue at *R*. Accordingly, if the argument is any good, it shows that Statue isn't a counterinstance to clause (ii). If it *isn't* any good, then we have no idea why we should think that Statue is a part of Lump at *R*.

Could one rejoin that Statue *isn't* a part of Lump at *R*, but that Lump is nevertheless a part of Statue at *R*? One could. But we'd wonder this: what reason is there for thinking that Lump is a part of Statue at *R*? The only reason *we* can think of is given in the argument of the paragraph before last. But, since that argument is an equally good argument that Statue is a part of Lump at *R*, we've this point again: if the above argument is any good, it shows that Statue isn't a counterinstance to clause (ii); if it *isn't* any good, then we have no idea why we should think that Lump is a part of Statue at *R*.

As best we can tell, then, Sider's instantaneous coincident statue makes no trouble for (WP_1). But (WP_1) is plainly inadequate as it stands. Think once again about a MO—Merricks's temporal-partless four-dimensional organism. We rejected previous definitions on the ground that, read in terms of these definitions, talk of such an organism makes no sense. But *tu quoque*! Read in terms of (WP_1), talk of a MO is contradictory:

[28] Or so it seems to us. We suggest that reflection on the assumptions made about parthood at a region in the opening sentences of this section will make it seem that way to the reader as well.

> Let t be some "timeslice" of spacetime—some three-dimensional spacelike hypersurface of spacetime—overlapped by some MO, O. We assumed when describing the idea of a MO that a MO exists at a multitude of times but is wholly present at no one time, and that this is because a MO is wholly present at a four-dimensional region of spacetime but no n-dimensional region (n<4).[29] Suppose so. Then O is wholly present at no three-dimensional subregion of t. But given (WP_1), O *is* wholly present at a three-dimensional subregion of t: Let R_t be the subregion of t that is collectively exactly overlapped[30] by the temporal parts of O at t. O satisfies clause (i) of (WP_1) with respect to R_t: it overlaps R_t and every subregion of R_t. But it also satisfies clause (ii): no part of O at R_t (of which it isn't a part at R_t) shares a part at R_t with everything that is a part of O at R_t (else it's false that O's only proper parts are the cs and their parts and thus false that O is a MO). So O is wholly present at R_t. Contradiction.

Conclusion: (WP_1)—like many of the other definitions considered above—doesn't satisfy (R5).

(WP_1), sadly enough, is inadequate. But there's a reasonably straightforward repair in the offing. To motivate it, we need a brief excursus. Van Inwagen (1990a) famously answers his Special Composition Question (SCQ), the question under what conditions many things add up to or compose some one thing, as follows:

(**LIFE**) ($\exists y$ the xs properly compose y) iff the xs are interrelated by *Life*,

where *Life* is that highly natural, multigrade relation born by the xs to one another iff, as van Inwagen would put it, their activity "constitutes a life."

A closely related question—henceforth, the Modified Special Composition Question (MSCQ)—is the question under what conditions some things compose some one thing *at a region* (of space or spacetime). Note well: Answering the MSCQ isn't as simple as just adding a region-index to the obvious places in one's answer to the SCQ. Take (LIFE) for instance. Adding a region-index to the obvious places in it yields:

(**LIFE'**) ($\exists y$ the xs properly compose y at R) iff the xs are interrelated at R by *Life*.

But friends of (LIFE) should reject (LIFE'). To see this, consider Sam the cat, a very short-lived cat occupying just one three-dimensional sub-region, R_{Sam}, of some timeslice of spacetime. Let the ss be the simples that compose Sam at R_{Sam}, and suppose that among the ss are some rs arranged Sam's-right-paw-wise. Let R_{paw} be the subregion of

[29] See note 9 above.

[30] The xs collectively exactly overlap R, let us say, iff (i) each of the xs overlaps a subregion of R, (ii) every subregion of R is overlapped by one of the xs, and (iii) no one of the xs overlaps the complement of R.

R_{Sam} collectively exactly overlapped by the *r*s. The *r*s, we may suppose, properly compose Sam at R_{paw}: they are all parts of Sam at R_{paw}; no two of them share a part at any sub-region of R_{paw} (they're simples); and, we may suppose, everything that shares a part with Sam at R_{paw} shares a part with one of the *r*s at R_{paw}. But since the *r*s aren't interrelated by *Life* at R_{paw}—i.e., the activity of the simples in Sam's right paw does not constitute a life—(LIFE') won't do.

How should friends of (LIFE) answer the MSCQ? We suggest the following approach:

> (**LIFE''**) ($\exists y$ the *x*s properly compose *y* at *R*) iff each of the *x*s overlaps *R* and the *x*s are among some *z*s such that the *z*s are interrelated at a superregion of *R* by *Life*.

Though the *r*s arranged Sam's-right-paw-wise aren't interrelated by *Life* at R_{paw}, they do overlap R_{paw} and are among some *z*s such that the *z*s are interrelated at a superregion of R_{paw} by *Life*. So, by (LIFE''), they properly compose something—viz., Sam—at R_{paw}.

Now, note this interesting fact. If (LIFE'') is right, though the *r*s and the *s*s properly compose Sam at R_{paw} and R_{Sam} respectively, they do it in different ways. The *s*s properly compose Sam at R_{Sam} by virtue of the fact that they are interrelated at R_{Sam} by *Life*. The *r*s properly compose Sam at R_{paw} by virtue of the fact that they overlap R_{paw} and are among some things that are interrelated at a superregion of R_{paw} by *Life* (though the *r*s themselves aren't interrelated at R_{paw} or anywhere else by *Life*). The difference between these two ways of composing something at a region is important. As we'll put it, the first way of composing something at a region is to *wholly compose* something at a region. The notion of whole composition we have in mind may be explained as follows.

It will be noted that (LIFE'') is shorthand for the following rather prolix thesis:

> (**LIFE'''**) Necessarily, for any *x*s and region *R*, ($\exists y$ the *x*s properly compose *y* at *R*) iff each of the *x*s overlaps *R* and the *x*s are among some *z*s such that the *z*s are interrelated at a superregion of *R* by *Life*.

(We've simply added the implicit necessity operator and relevant quantifiers.) "Ramsification" of (LIFE''') with respect to the term '*Life*' yields:

> (**LIFE$_r$'''**) $\exists r^*$ (necessarily, for any *x*s and region *R*, ($\exists y$ the *x*s properly compose *y* at *R*) iff each of the *x*s overlaps *R* and the *x*s are among some *z*s such that the *z*s are interrelated at a superregion of *R* by r^*).

Now, friends of (LIFE'') will likely think that, among the fundamental[31] relations, *Life* alone satisfies the open sentence following (LIFE$_r$''')'s initial quantifier:

[31] That is, the highly natural relations, the ones that "carve at the joints."

(**Open**) necessarily, for any *x*s and region R, ($\exists y$ the *x*s properly compose y at R) iff each of the *x*s overlaps R and the *x*s are among some *z*s such that the *z*s are interrelated at a superregion of R by r^*

We don't know whether they're right (we doubt it), but this much seems plausible: *some* fundamental relation satisfies (Open).[32] Call any such relation a *compositional* relation.

The notion of a compositional relation in hand, we may define whole composition, as follows:

the *x*s *wholly* compose y at a region $R =_{\text{df.}}$
(i) the *x*s properly compose y at R, and
(ii) the *x*s are interrelated at R by a *compositional* relation.[33]

To return to Sam the cat, the *s*s and the *r*s properly compose Sam at the regions they respectively collectively exactly overlap. If friends of (LIFE") are right and *Life* is a *compositional* relation, the *s*s *wholly* compose Sam at R_{Sam}. If friends of (LIFE") are right and *Life* is the *only* compositional relation, the *r*s properly compose Sam at R_{paw} but don't *wholly* compose him at R_{paw} (because they aren't interrelated by *Life* at R_{paw}).

A well-known consequence of van Inwagen's ontology is that the simples arranged my-right-hand-wise don't compose a hand. In the case of Sam, van Inwagen's view implies that the *r*s arranged Sam's-right-paw-wise don't compose a paw at R_{paw}.

[32] A possible hitch: What if, like Ned Markosian, you think that when composition occurs, it's a brute fact that it occurs? (See Markosian 1998a.) Are you committed, then, to rejecting the claim that there is some fundamental, multigrade relation that satisfies (Open)? No. For wouldn't you still think that the *x*s properly compose something at R iff they overlap R and are among some *y*s interrelated at a superregion of R by *composition*, that primitive, fundamental, multigrade relation that satisfies (Open) and does not hold in virtue of any non-mereological facts?

[33] One reader worried that perhaps we'd built the concept of whole presence, exact fit or whatnot into this definition of whole composition, or perhaps that we'd built it into the definition of proper composition. One way of understanding this worry is as follows. If it turns out that whenever some *x*s wholly compose something y at R, y is wholly present at R, then there's a sense in which the concept of whole presence is "built into" our definition of whole composition. It's easily seen, though, that the concept of whole presence is not, in this sense, built into either whole composition or proper composition. Suppose for the nonce that mereological universalism is true and that parthood is parthood *simpliciter*. Then it follows from our definition of a compositional relation that the two-term relation x bears to y iff x and y each exist is a compositional relation. Call this relation *coexistence*. Let us suppose, now, that John and Mary overlap a spherical region R of space such that R has a volume of one cubic mile. Intuitively, neither John, Mary nor their mereological fusion fit exactly into R: R is much too big. But given our definition of whole composition, John and Mary wholly compose something—viz., their fusion—at R: they properly compose their fusion at R (they're each part of the fusion; they each overlap R; they don't share parts, we may assume; and everything that shares a part with their fusion shares a part with one of them); and they are interrelated at R by the *coexistence* relation. (We said above, recall, that if John and Mary overlap a region R of space and John bears the two-term *spouse of* relation to Mary, then John and Mary are interrelated by the *spouse of* relation at R. Analogously then, John and Mary are interrelated by the relation of *coexistence* at R.) So John and Mary wholly compose their fusion at R but, intuitively, they aren't wholly present at R. (Nor are they wholly present at R on the definition of 'is wholly present at' settled on below.) So whole presence isn't built into our definition of whole composition. For similar reasons, neither is it built into our definition of proper composition.

One might well wonder, Why *don't* the *r*s compose something that fits exactly into—is wholly present at—R_{paw}? Friends of (LIFE"), notice, have a simple answer. The *r*s don't compose something that is wholly present at R_{paw} because they aren't interrelated at R_{paw} by *Life*. More generally: the *r*s don't compose something that is wholly present at R_{paw} because they don't *wholly* compose anything at R_{paw}.

We find this to be an intuitively attractive answer to the question why the *r*s don't compose something that is wholly present at R_{paw}. It suggests a principle:

> (**Principle**) The *x*s properly compose something at *R* that is wholly present at *R* only if the *x*s wholly compose something at *R*.

We part ways with friends of (LIFE") on the question whether whole composition occurs when and only when there is interrelatedness by *Life*—they think so; we suspect not. But we find intuitive their suggestion—expressed by (Principle)—that the *x*s properly compose something *y* at *R* that is wholly present at *R* only if the *x*s wholly compose something at *R*.

If (Principle) is right, notice, we've a nice story to tell about why a MO, were there such a thing, would have no temporal parts. Let the c_ts be the temporal parts of the cells of some MO that overlap timeslice *t*, and R_t the subregion of *t* such that the c_ts collectively exactly overlap R_t. Why don't the c_ts compose something at R_t that fits exactly into R_t? Because, the c_ts don't *wholly* compose anything at R_t. Since the c_ts don't wholly compose anything at R_t, by (Principle), there is nothing composed of the c_ts at R_t that fits exactly into R_t.

So: (Principle) is intuitive (we think so anyway) and it suggests a nice explanation of why our van Inwagenian cat lacks a front paw and why our Merricksonian organism lacks temporal parts. It also suggests the needed repair to (WP_1). If it's right, then something is wholly present at a region *R*—something fits exactly into a region *R*—only if the things that properly compose it at *R* *wholly* compose it at *R*. Accordingly:

> (**WP_2**) *x* is wholly present at $R =_{df.}$
> (i) *x* overlaps *R* and every subregion of *R*;
> (ii) no part of *x* at *R* (of which *x* isn't a part at *R*) shares a part at *R* with everything that is a part of *x* at *R*; and
> (iii) for any *y*s, if the *y*s properly compose *x* at *R* then the *y*s wholly compose *x* at *R*.

We have our definition of whole presence. Talk of Merricks's organism, couched in terms of it, is neither contradictory nor paradoxical; likewise with talk of Sider's instantaneous statue. Hence, (WP_2) satisfies (R5) and (R6) respectively. And it is easy to verify that (WP_2) satisfies our other seven requirements, as well.

Given (WP_2), it makes sense to say that an object is wholly present at more than one region of space or spacetime. Hence, it satisfies (R1). It also satisfies (R2) and (R3). According to (R2), it makes sense to say that an object is wholly present at a time or region and is such that its only parts are parts *simpliciter*. Now, recall that (WP_2) leaves it an open question whether '*x* is part of *y* at *R*' expresses a primitive three-term parthood relation or a relation analyzable in terms of parthood *simpliciter*. Suppose it expresses primitive, three-term parthood-at-a-region. Then given whole presence à la (WP_2), to say that an object is wholly present at a time or region and is such that its only parts are parts *simpliciter* is to say that an object *O* whose only parts are parts *simpliciter* is such that (i) *O* overlaps some region *R* and every subregion thereof, (ii) no part-at-R of *O*[34] (of which *O* isn't a part-at-*R*) shares a part-at-*R* with every part-at-*R* of *O*, and (iii) for any *y*s, if the *y*s properly compose *O* at *R*,[35] then the *y*s wholly compose *O* at *R*. Clearly enough, it makes sense to say this. If '*x* is a part of *y* at *R*' expresses primitive, three-term parthood-at-a-region, (R2) is satisfied.

(R3) is similarly satisfied. According to it, it makes sense to say that an object with no parts *simpliciter* but with parts-at-a-region (or parts-at-a-time) is wholly present at a region or time.[36] Translated in terms of (WP_2) and assuming still that '*x* is a part of *y* at *R*' expresses primitive parthood-at-a-region, we get: it makes sense to say that an object *O* with no parts *simpliciter* but with parts-at-a-region is such that (i) *O* overlaps some region *R* and every subregion thereof, (ii) no part-at-R of *O* (of which *O* isn't a part-at-*R*) shares a part-at-*R* with every part-at-*R* of *O*, and (iii) for any *y*s, if the *y*s properly compose *O* at *R*,[37] then the *y*s wholly compose *O* at *R*. Since, clearly enough, it makes sense to say this, if '*x* is a part of *y* at *R*' expresses primitive, three-term parthood, (R3) is satisfied. (We leave it to the reader to verify that the same arguments apply if '*x* is a part of *y* at *R*' expresses a relation analyzable in terms of parthood *simpliciter*.)

Given our definition, it also makes sense to say that three-dimensional objects gain and lose parts over time. Thus, (WP_2) satisfies (R4). And finally, given (WP_2) it makes sense to say each of the following things: (a) an object is wholly present at exactly one time, (b) an object with proper parts is wholly present at a time, and (c) an object is wholly present at a region smaller than the whole of space-time. So, (WP_2) satisfies (R7)-(R9).

We conclude that our final definition, (WP_2), offers a substitute expression for 'is wholly present at' that is clear and well-suited for the theoretical role played by talk of whole presence in recent literature—at least the version of that role characterized by (R1) through (R9). Since we take it that we're not alone in having wondered whether talk of whole presence in the literature could be paraphrased in such a way as to make it come out both intelligible *and* univocal, we think our definition will be of interest to others.

(We said above that our definition is easily convertible into a definition of whole presence *at a time*. A few comments about how to make this conversion. If times are regions of spacetime—e.g. three-dimensional hyperplanes of relative (or absolute) simultaneity—then the conversion is straightforward. For if times are regions of spacetime, then—as we have been assuming thus far—talk of something being wholly present at a time is reducible to talk of something being wholly present at a region. If,

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[34] Where something is a "part-at-*R* of *O*" iff it bears the three-term *x is a part of y at z* relation to *O* and *R*.

[35] Where 'the *y*s properly compose *O* at *R*' is read as above, except that all talk of parthood in the definition is understood to express primitive, three-term parthood-at-a-region.

[36] There's a bit more to (R3), but including it here would needlessly complicate the discussion.

[37] See note 35.

however, times are not regions of spacetime—if, for instance, substantivalism is false—then the conversion is equally straightforward. We need only modify our definition of whole composition as follows:

the xs *wholly* compose y at a time $t =_{\text{df.}}$
(i) the xs properly compose y at t,[38] and
(ii) the xs are interrelated at t by a *compositional* relation.

This modification in hand, we may define whole presence at a time as:

(**WP$_{2\text{-}@t}$**) x is wholly present at $t =_{\text{df.}}$
(i) x exists at t;
(ii) no part of x at t (of which x isn't a part at t) shares a part at t with everything that is a part of x at t; and
(iii) for any ys, if the ys properly compose x at t then the ys wholly compose x at t.

Note well that this definition does not presuppose that times are regions of spacetime. Spacetime relationalists who eschew reified spacetime regions but nevertheless believe in times (construed as sets of simultaneous events, abstract proposition-like entities, sets of tropes, or whatnot), can accept the definition. We said above that we'd show how to translate our results into language compatible with relationalism about spacetime. We've now done so.)

4. An Objection

We close by noting an interesting though, we think, unobjectionable consequence of our definition. If you join Ned Markosian (1998b) in believing in the possibility of spatially extended mereological simples and accept our definition, then you're committed

[38] We define 'the xs properly compose y at t' analogously to 'the xs properly compose y at R':

the xs properly compose y at $t =_{\text{df.}}$
(i) the xs are two or more and are all parts of y at t;
(ii) no two of the xs share a part at t; and
(iii) everything that shares a part with y at t shares a part with one of the xs at t.

As in the case of 'x is a part of y at R', we make no assumption about whether 'x is a part of y at t' expresses a primitive three-term parthood relation, or a non-primitive relation analyzable in terms of parthood *simpliciter*. Analogously to our discussion of parthood at a region, we do, however, make a few assumptions about how parthood at a time works. First, we assume that if parthood at a time is analyzable in terms of parthood *simpliciter*, the analysis is given by (P_t), again:

(**P_t**) x is a part of y at t $=_{\text{df.}}$ (i) x is a part *simpliciter* of y, and (ii) x exists at t.

Second, we take it that, given parthood at a time à la (P_t), it's natural to assume that if x is wholly present at t and y is a part of x at t, then y is wholly present at t. And third, we assume that if parthood at a time is a primitive three-term relation, it works in such a way that if x is wholly present at t and y is a part of x at t, then y is wholly present at t.

to the possibility of the following. Let *S* be an extended simple that is wholly present at an extended spatial region *R*. Then by (WP_2), *S* is wholly present at every subregion of *R*: Let *R** be some subregion of *R*. Then *S* overlaps *R** and every subregion of *R**, no part of *S* (of which *S* isn't a part) shares a part with every part of *S*, and because *S* is simple, it is trivially true that for any *y*s, if the *y*s properly compose *S* at *R** then the *y*s wholly compose *S* at *R**. So by (WP_2), *S* is wholly present at *R**. Since *R** was chosen arbitrarily, it follows that *S* is wholly present at every subregion of *R*. Our reasoning leads to this conclusion: it is a consequence of (WP_2) that extended simples are wholly present at every subregion of the largest region they are wholly present at.

(A closely related consequence:[39] Let *S* be a square composed of four spatially extended, two-dimensional, square simples. Suppose each side of *S* is six meters long. Now consider a circular region *R* centered on the center of *S* and such that its radius is two meters. It is a consequence of (WP_2) that *S* is wholly present at *R*.)

Interesting, we say, but unobjectionable. Extended simples are strange; one of their strange features is that they fit exactly into every subregion of the largest region they fit exactly into. Perhaps some will have the intuition that extended simples could do no such thing. We do not share that intuition. Thus we're unfazed that, given our definition, extended simples display this odd behavior. We're likewise unfazed that, given our definition, objects composed of extended simples behave like the square of the previous paragraph. For the behavior of this square is a simple consequence of the fact that its parts are extended simples. This is easily seen. Since each of *S*'s four parts is an extended simple, each fits exactly into the largest subregion of *R* it overlaps. So each of *S*'s four parts fits exactly into a quarter of *R*. So *S* fits exactly into *R*.

Perhaps you'll respond that these consequences of our definition are both interesting *and* objectionable. For if extended simples fit exactly into every subregion of the largest region they fit exactly into, then extended simples—things that fit exactly into extended regions of space—are also unextended simples—things that fit exactly into point-sized regions of space. And isn't this contradictory? How could an extended thing also be an unextended thing?[40] Likewise, how could a square made up of square, spatially extended simples fit exactly into a circular region of space? Isn't this contradictory?

By way of reply, suppose you're a three-dimensionalist and think of yourself as a three-dimensional, spatially extended object that fits exactly into many disjoint regions of spacetime, one region for every timeslice you overlap. Then you'll think that you fit exactly into an infant-shaped region and that you fit exactly into an adult-shaped region. *Objection*: how could something fit exactly into an infant-shaped region *and* into an adult-shaped region? Isn't this contradictory? How could an infant-shaped thing also be an adult-shaped thing?

There are various well-known replies available to the three-dimensionalist-cum-eternalist: perhaps being infant-shaped is a relation we bear to regions rather than a monadic property; perhaps the instantiation relation is three-term, linking things, their

[39] We thank an anonymous referee for pointing this out to us.

[40] Thanks to Mike Rea for helpful discussion of this objection.

properties, and regions; perhaps being infant-shaped is a region-indexed property; and so forth.

If forced to admit the possibility of extended simples and confronted with the above objection, we'd help ourselves to a similar reply.[41]

[41] Thanks to Neil McKinnon, Trenton Merricks, Alvin Plantinga, Mike Rea, Ryan Wasserman, Dean Zimmerman, and several anonymous referees for helpful comments and/or conversation.

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