

Why Counterpart Theory and Four-Dimensionalism are Incompatible

Suppose that God creates *ex nihilo* a bronze statue of a unicorn; later he annihilates it (call this 'scenario I').¹ The statue and the piece of bronze occupy the same space for their entire career. If God had recast the bronze as a mermaid, the piece of bronze, not the statue, would have survived. As nothing can have and lack the capacity to survive the same change, they are distinct. Yet many philosophers find it incredible that two material things coincide *ever*, not to mention for their entire career.

Four-dimensionalists hold that ordinary objects persist by having temporal parts at different times. This helps four-dimensionalists handle a number of cases of apparent coincidence. If God recasts the statue instead of annihilating it, for instance, the four-dimensionalist maintains that the space-time worm which is the unicorn statue is a proper part of a more temporally extended worm: the piece of bronze. As the bronze and the statue merely share a common part, coincidence is avoided. The same strategy avoids coincidence in cases where the bronze precedes the statue, which first exists when the piece of bronze

¹ This is a version of an example from Alan Gibbard (1975): we make a statue by joining two pieces of clay; then we smash the piece, destroying the statue too.

is cast into a shape.² However four-dimensionalism cannot by itself provide a general solution to coincidence puzzles. In scenario I, the statue and the bronze share all their temporal and spatial parts; hence two whole temporally-extended material things still coincide.

Counterpart Theory (CT) offers a solution (Lewis 1986, sect. 4.5; Sider 2001: 113), one that four-dimensionalists tend to embrace. Suppose that in I the statue and the piece of bronze are the same four-dimensional object. The statue cannot survive being recast as a mermaid, the bronze can. According to CT, the first claim is true because no statue-counterpart of the statue is mermaid shaped, and the second is true because the bronze has a mermaid-shaped bronze counterpart. Counterpart relations are similarity relations. As one thing can have resemblance relations to different sets of things, depending on which of its features we emphasize, the fact that the bronze can, but the statue cannot, survive the same change does *not* entail that they are distinct. There is just one space-time worm, A, lasting from t_1 to t_{10} (the moment of annihilation); the statue and the bronze are identical to A, which has different counterpart relations depending upon which of its features we emphasize. Four-

²Four dimensionalism also avoids distinct-coincidents in cases where a whole animal is reduced to a proper part of itself, as in the case of the unfortunate cat, Tibbles, and his amputated tail (Geach, 1980); non-coincident space-time worms, a fat one and a thin one, end in a common proper-part.

dimensionalism plus CT enable us to resolve all cases of putative coincidence, including I.

This strategy leads to an apparent difficulty, however. Suppose the counterpart theoretic account of the truth conditions of modal claims is correct; consequently it is true that the statue cannot survive radical shape-change, but the bronze can. God now (t_{10}) does *not* annihilate the piece of bronze; instead he recasts it in a mermaid shape (call this 'scenario II'). As the statue cannot survive this shape change, it has no more temporal parts; as the bronze can survive it, the bronze has more temporal parts. As the statue = A, and it has no more temporal parts, neither does A. As the piece of bronze = A, and it has more temporal parts, so does A. The conjunction of CT and four-dimensionalism entails that A does and does not have temporal parts after t_{10} . (If we insist that A thought-of-one-way survives but thought-of-another-way ceases to exist, we are denying the Indiscernibility of Identicals (which neither counterpart theorists nor four-dimensionalists wish to do), for the same thing, A, does and does not exist at t_{11} .) CT and four-dimensionalism cannot both be true.

The four-dimensionalist is likely to be an eternalist, however. Eternalists believe that the future and the past are as real as the present. Consequently it might be objected that the piece of bronze in scenario II is *not* identical to A; as God

recasts the statue, it is true even at t1 that the bronze (B) has more temporal parts than A does. In II only the statue is identical to A, which is just a four-dimensional proper part of B. In neither I nor II does A have and not have temporal parts after t10.

This response raises a question, however: in II, when God recasts the statue at t10, why isn't the bronze stage at t11 a stage of the statue? Because, CT answers, the statue has only unicorn-shaped statue counterparts; hence it cannot have temporal parts after the shape change. If, *per impossibile*, the statue did have mermaid-shaped statue counterparts, it *would* have more temporal parts. However A, which has the feature of being made of bronze, *does* have mermaid-shaped bronze counterparts. A consequence of CT, therefore, is that A, so considered, *can* have more parts after recasting. As A can persist through recasting, it persists. The bronze-stage at t11 is a stage of A. But the statue = A, so, given the Indiscernibility of Identicals, the statue exists at t11, too. (Saying the statue survives t10 but is no longer a statue is inconsistent with CT, according to which it has its shape essentially.) Therefore the conjunction of CT and four-dimensionalism entails that the statue does and does not exist at t11; as the statue = A, the same thing is true of A.

We can avoid these contradictions if we can find a good reason to deny that A survives t10 in II. Let's stipulate that

the statue is identical to the mereological sum of temporal parts that exists in I from t_1 to t_{10} . A mereological sum has its parts essentially, so it cannot have more parts. The statue in II is identical to that same mereological sum, namely, A. Now CT certainly agrees that A has no mereological-sum counterparts that last longer than A does. However A in I has longer lasting bronze-counterparts; so a consequence of CT is that A *can* have more temporal parts. Given CT, a mereological sum of temporal parts can and cannot have more parts, depending upon which of its features we emphasize (Sider, 2001). Given CT, therefore, A in II *can* survive recasting at t_{10} ; for A in II has longer-lasting bronze counterparts. As A, appropriately considered, can have parts after recasting, it does.

Friends of CT might respond that application of the term 'piece of bronze' has a maximality condition. B doesn't contain a vast population of pieces of bronze; only B itself, the whole deal, is a piece of bronze. A, though not a piece of bronze in II, *could* have been a piece of bronze. We might also maintain that only pieces of bronze have counterparts: A has counterparts in I but not in II. This position is incoherent, given CT. For A *could* have counterparts; therefore A in II has counterparts that have counterparts, so A has counterparts. If A has counterparts, proper parts of B are among them; these are real things and they resemble A more than B does. Indeed, A, that bronze proper-part

of B, has counterparts that have mermaid-shaped stages;³ so A can be a proper part of B that has mermaid-shaped stages.

But can A be a bigger proper part of B? In any world in which B exists and lasts to t10, arguably the stretch of B that exists between t1 and t10 will be A's counterpart. If so, A has its temporal span essentially (maybe it can be smaller but it can't be bigger). But consider: A is the biggest unicorn-shaped proper part of B (let's emphasize this feature). Consider the world where God recasts the unicorn statue at t11 instead of t10. Then the stretch of B from t1 to t11 is A's counterpart. Or suppose A is also the biggest red proper-part of B; in the world where God recasts the statue at t10, but the stage of B at t11 is red, the stretch from t1 to t11 is A's counterpart. As A has proper-part counterparts that outlast t10, A, so considered, can outlast t10.

Can A, considered as a bronze proper-part of B, have a stage at t11? I've argued that A, so considered, can be a proper-part of B that has mermaid-shaped stages. Doesn't this merely show that A could have been mermaid-shaped *between t1 and t10*? Indeed, one might argue: 'If A had some mermaid-shaped stages, then A would have had them between t1 and t10; as A doesn't have them then, it simply doesn't have them.' Counterpart theorists

³Note that a statue is something that has its shape because it was placed in it by a maker who acted with certain intentions. Relational features can help determine counterpart relations.

typically accept David Lewis's account of counterfactuals (Lewis 1986), according to which this counterfactual's truth condition is that A has at least one mermaid-shaped stage between t1 and t10 at the closest possible world where A has at least one mermaid-shaped stage. Closeness between worlds is determined by resemblance. As A is God-created *ex nihilo*, closeness is entirely a matter of how closely the product resembles A. Well, which resembles A more: something made entirely of mermaid stages between t1 and t10, something with unicorn and mermaid stages between t1 and t10, or something made entirely of unicorn-shaped stages until t10 and a mermaid-shaped stage at t11? The latter, I submit; it adds the mermaid stage while preserving the block of unicorn stages from t1 to t10. A has a mermaid stage at t11 at the closest world where it has a mermaid-shaped stage, so, given Lewis's account of counterfactuals, if A had any mermaid-stages, A would have them after t10. As A *can* have mermaid-shaped stages, therefore, it can be a bigger proper part of B.

But how does one get from the premiss that A, appropriately considered, *can* have a mermaid-shaped stage at t11 to the conclusion that A *does* have one at t11? As A can have a mermaid-shaped stage at t11, A's being unicorn-shaped is an accidental property; therefore keeping it isn't required for A's persistence. Consequently A can persist through this shape's loss; this isn't the sort of change that puts an end to A, appropriately considered. To persist is to have more stages,

we're supposing. As A can have more stages that are mermaid-shaped, and as there's one at t11 for A to have, A has it. Further, as there's a world where A has a mermaid-shaped stage at t11, why wouldn't it have the mermaid-shaped stage at t11 in actuality? It's hardly believable that this should be the *only* difference between the worlds.

Indeed, A won't hold still. As it has the mermaid-shaped stage at t11 in II, by the same reasoning it has the mermaid-shaped stage at t12, and so on. Is A identical to B? Not when A is considered as a bronze proper part of B (let's emphasize this feature). So considered, A's counterparts are bronze proper parts of B: given CT, therefore, A, so considered, can't be the whole deal. Suppose B's last stage is at t100 in II; it follows that A ends at t99. A is also a bronze *part* of B, however, where 'part' denotes any temporal expanse of B, including B itself--every proper part is a part, but not vice versa. A, so considered, *can* have B's last stage. As A can have B's last stage in II, A has it; so A exists at t100. As the bronze proper part of B that lasts only from t1 to t99 = A, given the Indiscernibility of Identicals, it does and does not exist at t100; the same thing is true of A, which is and isn't identical to B.

Here's a last-ditch attempt to reconcile CT and four-dimensionalism: deny that B has temporally extended proper parts. My argument proceeds on the assumption that B has such proper parts. If A doesn't exist in II, all the contradictions are

avoided. This denial is strongly counter-intuitive (but see Van Inwagen, 1981). Let's accept it anyway. Now the statue is floating free (as four-dimensionalism is motivated chiefly by the desire to explain ordinary material things' persistence, we won't deny the statue's existence). It isn't a proper part of the piece of bronze, as B has no proper part that lasts from t_1 to t_{10} ; nor is it identical to B, nor is it made of any proper part of B. Nor is the statue made of B itself. How can a worm that lasts from t_1 to t_{10} be made *simpliciter* of a worm that lasts from t_1 to t_{20} ? Coincidence is avoided, for no things coincide, but the relation between the statue and the piece of bronze of which it's made is utterly mysterious.

I argued in an earlier paper that CT and three-dimensionalism are incompatible. 'So much the worse for three-dimensionalism,' one might say. But if CT and four-dimensionalism are also incompatible, CT is finished. Modus ponens.

References

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