Contingent identity and counterpart theory

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ABSTRACT: This paper argues that counterpart-theoretic accounts of modality that allow for many-one counterpart relations, and thereby make room for contingent identities, are not able to preserve the transitivity of identity. It will be shown that the translation scheme of counterpart theorists breaks down and that they have to abandon the claim that objects can be contingently identical in virtue of sharing a counterpart. Moreover, modifications of counterpart theory that preserve the transitivity of identity are shown to require jettisoning the idea that the counterpart relation is a similarity relation and greatly reduce the explanatory power of counterpart theory.

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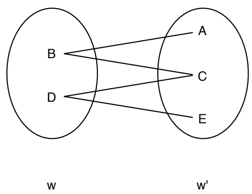
1 Contingent identity in counterpart theory

According to counterpart theory (CT), individuals are world-bound and the truth-conditions for modal discourse are specified in terms of counterparts. An object x is possibly F iff there exists a counterpart of x that is F, while x is necessarily F iff all counterparts of x are F. By countenancing many-one counterpart relations, counterpart theory can make sense of contingent identity. Distinct objects x and y are possibly identical if there exists a counterpart of x that is identical to a counterpart of y.[1] Contingent identity is thus understood in terms of sharing counterparts.[2]

This paper argues that this construal of contingent identity is incompatible with the transitivity of identity and that this undermines the semantic component of counterpart theory, independently of whether this is understood as a translation scheme from quantified modal logic (QML) to the language of counterpart theory or whether counterpart-theoretic truth-conditions are directly provided for ordinary modal claims without bringing in a translation scheme.

Consider a case in which A and C share a counterpart at w, C and E share a counterpart at w, but in which A and E do not share a counterpart at w, whereby the same counterpart relation is at issue (i.e. no context shifts).



If sharing counterparts at a world amounts to being identical at that world, then this is a case in which at w: A = C and at w: C = E, yet at w: A $\neq$ C. We consequently have a failure of transitivity.

Although counterpart relations are non-transitive across worlds, the intransitivity in this case concerns identities that hold in a particular world (from the perspective of another world).[3] Accordingly, this case shows that counterpart theorists who accept contingent identities will have to reject the following claim:

TRANS $\quad \Box\forall x\forall y\forall z\Box[x = y \land y = z \rightarrow x = z]$

While counterpart theorists are willing to give up cross-world transitivity, they do want to retain intra-world transitivity.[4]

[1] Lewis gives the example of twins having a common counterpart in one world in virtue of resembling someone in that world to an equal extent, stating that "an identity pair has the *de re* possibility of being a non-identity pair" (Lewis: 1986, p. 263).

[2] Similarly, temporal counterpart theory makes room for occasional identity. Objects can be identical at t if they share a counterpart at t. This paper focuses on modal counterpart theory, but the arguments also apply to temporal counterpart theory.

[3] Since we are concerned with contingent identities, the identities in question are modalised.

[4] Cf. "If the counterpart relation is nontransitive, then there will be identities true in one possi-

2 Multiple counterparts in CT translation schemes

Counterpart theory consists of two components: (i) a metaphysical component that provides an account of the nature of counterparts and the relations holding between them, and (ii) a semantic component that is concerned with the way in which counterparts are connected to modality. The language of counterpart theory is a technical meta-language in which one states the truth-conditions for claims made in the object-language, namely the language of ordinary modal discourse. The metaphysical component is concerned with the meta-language. The semantic component connects meta-language to object-language. Generally, this connection is conceived of as a translation scheme that translates sentences of quantified modal logic into the language of counterpart theory.

The metaphysical component of counterpart theory is unproblematic. The understanding of the nature of and relations between counterparts is perfectly consistent with the transitivity of identity. In the envisaged scenario A and C share a counterpart and likewise for C and E. Since the counterpart shared by C with A is not the same counterpart as that shared with E, no transitivity worries arise.

Problems, however, emerge when the semantic component enters the picture, i.e. when this metaphysical story is taken to underwrite modal claims. When interpreting the sharing of a counterpart as underwriting contingent identities, then we end up with the problematic modal claim that it is possible for A and C as well as C and E to be contingently identical without A and E being contingently identical. Claiming that objects that share counterparts are contingently identical commits the counterpart theorist to a denial of the transitivity of the contingent identity relation. The envisaged scenario, in this way, establishes that the translation scheme of counterpart theory fails to preserve the transitivity of identity.

2.1 Translation schemes

TRANS will fail if the following claim comes out true when translated into counterpart theory:

(1) $\Diamond\exists x\exists y\exists z\Diamond[x = y \wedge y = z \wedge x \neq z]$

OPTION 1

The described scenario implies this troublesome commitment if (1) translates as:

(1′) $\exists w\exists x\exists y\exists z[Ixw \wedge Iyw \wedge Izw \wedge \exists w'(\exists a\exists b(Iaw' \wedge Ibw' \wedge Cax \wedge Cby \wedge a = b) \wedge \exists c\exists d(Icw' \wedge Idw' \wedge Ccy \wedge Cdz \wedge c = d) \wedge \exists e\exists f(Iew' \wedge Ifw' \wedge Cex \wedge Cfz \wedge e \neq f))]$

ble world that conflict with those true in another, but within any world, the identity relation will be perfectly well-behaved" (Stalnaker: 1986, p. 133). Also cf. Lewis: 1983, p. 45 who is adamant that he wants to preserve the classical logic of identity.

This sentence is satisfied by the envisaged scenario since there is a world where A and C, as well as C and E, have a common counterpart, but where A and E do not share a counterpart. This is a correct translation when working with translation schemes, such as that of Forbes's Canonical Counterpart Theory, which introduce a new counterpart relation for each occurrence of a variable.[5]

OPTION 2

Transitivity will fail in a more interesting way when (1) is translated as:

$$(1'') \quad \exists w \exists x \exists y \exists z[Ixw \wedge Iyw \wedge Izw \wedge \exists w'(\forall a \forall b(Iaw' \wedge Ibw' \wedge Cax \wedge Cby \rightarrow a = b) \wedge \forall c \forall d(Icw' \wedge Idw' \wedge Ccy \wedge Cdz \rightarrow c = d) \wedge \forall e \forall f(Iew' \wedge Ifw' \wedge Cex \wedge Cfz \rightarrow e \neq f))]^{6}$$

This sentence is not satisfied by our scenario. This is because it is not the case that all counterparts of A are identical to all counterparts of C, since there is a counterpart that C only shares with E. However, whilst (1″) is not satisfied, the scenario in question is nevertheless in conflict with TRANS. Given that all counterparts of A are distinct from all counterparts of E in the world being considered, we have $A \neq E$ and hence need $A \neq C$ and/or $C \neq E$ to avoid a violation of TRANS. However, it is neither the case that all counterparts of A nor all counterparts of E are distinct from all counterparts of C. Transitivity, accordingly, does not determinately fail but does not determinately hold either. This means that, even though this approach ensures that there are no determinate intransitivities of identity, it does commit the counterpart theorist to cases where the transitivity of identity is indeterminate.

This kind of translation involving universal quantification over counterparts is relevant when working with Stalnaker's supervaluational treatment of cases involving multiple counterparts, which requires all counterparts of x at w to be F in order for at w: x is F to be true (cf. Stalnaker: 1986, pp. 135-137). Similarly, Ramachandran's version of counterpart theory (CT*) requires all counterparts of x to be identical to all counterparts of y if $x = y$ is to be possible (cf. Ramachandran: 1989, p. 134; also cf. Forbes: 1990, p. 170).

OPTION 3

Lewis's translation scheme translates (1) so as to give us the following sentence in the language of counterpart theory:

$$(1^*) \quad \exists w \exists x \exists y \exists z[Ixw \wedge Iyw \wedge Izw \wedge \exists w' \exists a \exists b \exists c(Iaw' \wedge Ibw' \wedge Icw' \wedge Cax \wedge Cby \wedge Ccz \wedge a = b \wedge b = c \wedge a \neq c]$$

[5] Ramachandran already showed that Forbes's 'canonical counterpart theory' is committed to a denial of the transitivity of identity within worlds (Ramachandran: 1990, p. 176; also cf. Fara and Williamson: 2005, p. 18).

[6] A more cumbersome translation would rule out the possibility of (1″) being vacuously true by requiring x, y, and z to have counterparts in world w′.

This sentence is not satisfied by the scenario involving A, C, and E since there is no counterpart of C that is identical both to the counterpart of A as well as to the counterpart of E. Instead, there is one counterpart of C that is identical to the counterpart of A and a different counterpart of C that is identical to the counterpart of E. This, however, is insufficient on Lewis's translation scheme for the truth of (1). Since for each variable within the scope of a modal operator there has to be a counterpart that satisfies the translated formulae, it would seem that Lewis's translation scheme is unaffected.

However, it will be argued that this translation scheme is problematic and cannot adequately deal with cases involving multiple counterparts. The very feature that allows it to avoid the transitivity worries, namely that only one counterpart is taken to correspond to each variable, also ensures that it cannot adequately deal with cases in which objects have multiple counterparts.

2.2 Troubles with actuality

The translation scheme proposed by Lewis only manages to avoid the transitivity worries by means of a dubious view regarding variable binding. The artificial restriction on which counterparts can satisfy claims regarding a particular variable can be circumvented by bringing in actuality operators.

$$(2) \quad \Diamond\exists x\exists y\exists z[\textsc{act}(x = y) \land \textsc{act}(y = z) \land \textsc{act}(x \neq z)]$$

OPTION 1@

If we treat the ACT-operator as an existential quantifier over actual world counterparts, then (2) translates as follows:

$$(2') \quad \exists w\exists x\exists y\exists z[Ixw \land Iyw \land Izw \land \exists a\exists b(Ia@ \land Ib@ \land Cax \land Cby \land a = b) \land \exists c\exists d(Ic@ \land Id@ \land Ccy \land Cdz \land c = d) \land \exists e\exists f(Ie@ \land If@ \land Cex \land Cfz \land e \neq f)]$$

This claim does come out true since there is some possible world in which there are three objects, namely A, C and E, such that A and C share an actual world counterpart, C and E share an actual world counterpart, but A and E do not have a common actual world counterpart (whereby all these counterparts fall under the same counterpart relation).

Treating the ACT-operator as an existential quantifier over actual world counterparts, accordingly, yields results analogous to those in the case of OPTION 1. The actuality operator construed in this way invokes a new counterpart relation, thereby allowing A to be identical to one counterpart of C and E to be identical to the other counterpart of C.[7] However, it does this in such a way that it takes

[7] Appealing to ACT-operators allows us to mirror some features of Forbes's translation scheme insofar as claims about one variable in QML can, when translated into CT, be satisfied by multiple counterparts of the object assigned to that variable. Unlike Forbes's scheme, though, there is not one counterpart relation for each occurrence of the variable, but only one for each occurrence of the ACT-operator.

us to the same world, namely the actual world, thereby ensuring that the different counterparts still fall within the scope of the same modal operator. In particular, the ACT-operator ensures that the counterparts are commensurable in that they are all parts of the same world. This explains why ACT commutes with conjunction, allowing us to conjoin the various possibilities under one modal operator.[8]

OPTION 2@

When treating the ACT-operator as a universal quantifier over actual world counterparts we get similar results to those in the case of OPTION 2, since (2) translates into:

(2″) $\exists w \exists x \exists y \exists z[Ixw \wedge Iyw \wedge Izw \wedge \forall a \forall b(Ia@ \wedge Ib@ \wedge Cax \wedge Cby \rightarrow a = b) \wedge \forall c \forall d(Ic@ \wedge Id@ \wedge Ccy \wedge Cdz \rightarrow c = d) \wedge \forall e \forall f(Ie@ \wedge If@ \wedge Cex \wedge Cfz \rightarrow e \neq f)]$

This sentence is not satisfied. However, there is still a transitivity worry. This is because we have a situation in which ACT$(A \neq E)$, yet in which it is also the case that $\neg$ACT$(A \neq C)$ and $\neg$ACT$(C \neq E)$. If A and E are distinct in the actual world, then it is not possible to have both A and C as well as C and E being identical in the actual world, without a failure of transitivity. Accordingly, in order to avoid intransitivity A and C and/or C and E have to be distinct in the actual world, i.e. we have to have ACT$(A \neq C)$ and/or ACT$(C \neq E)$. Yet neither of these non-identities obtains. The translation scheme ensures that neither A and C nor C and E are distinct in the actual world (though they are not identical either).

While this approach does avoid determinate intransitivity, it does not give us determinate transitivity either. Defenders of counterpart theory who treat actuality operators as universal quantifiers over actual world counterparts are thus committed to cases where the transitivity of identity is indeterminate, which is not much of an improvement over an outright failure of transitivity.[9]

2.3 Is ACT to blame?

Appealing to actuality operators appears to weaken the criticism of Lewisian counterpart theory. The problem then no longer seems to be a general problem about the transitivity of identity due to many-one counterpart relations, but a specific problem deriving from difficulties with actuality operators.

However, the criticism involving the actuality operators can be generalised to pose a problem for counterpart theory more generally. This is because the issue is not really about actuality operators but about multiple counterparts. It is multiple

[8]In order to avoid this problem, the counterpart theorist would have to not only carve possibilities more finely than possible worlds (cf. Lewis: 1986, pp. 230-231), but also deny that every possible world is a possibility (cf. Graff Fara: 2009, p. 296).

[9]For further criticisms of the view that actuality operators should be understood as universal quantifiers over actual world counterparts cf. Fara and Williamson: 2005.

counterparts that pose the problem and appealing to actuality operators just helps to highlight the source of the real difficulty. This can be seen in that defenders of counterpart theory have replied to Fara and Williamson's objections involving multiple counterparts in the actual world (cf. Fara and Williamson: 2005, pp. 13-17) that the problem stems from "the fact that an object may have *multiple* counterparts at a world. ... Importantly, however, *actuality* raises no special difficulties" (Ramachandran: manuscript, p. 2). Similarly, Sider's response to these problems does not depend on modifying the understanding of ACT-operators, but on arbitrarily selecting a unique counterpart.[10]

If many-one counterpart relations cause problems for translation schemes augmented by an actuality operator and if the problems do not derive from the actuality operator, then they should equally cause problems for translation schemes without this operator. This indicates that there is something wrong with Lewis's translation scheme insofar as it makes a difference, namely translating (1) such that it comes out false while (2) comes out true, even though there is no basis for this difference.

3 Identity and non-identity pairs

These considerations indicate that there is a general problem with Lewis's translation scheme that derives from issues regarding variable binding when multiple counterparts are involved (cf. Stalnaker: 1986, pp. 135-137). If one uses Lewis's translation scheme, which requires that some counterpart satisfies the translated formulae pertaining to a particular variable, then one blurs the distinction between a case where an object has two counterparts in one world and a case where there are two worlds in each of which it has one counterpart.[11] Consider a world in which there is a counterpart that is F and a counterpart that is not-F as well as a world with a single counterpart that is F and another world with a single counterpart that is not-F. For Lewis, these quite dissimilar scenarios underwrite the same modal claims involving only one variable, namely that the object is possibly F and that the object is possibly not-F. Multiple counterparts are irrelevant if we only pick out one counterpart.

[10]In providing a logic of counterpart theory with actuality Rigoni and Thomason set aside multiple counterparts and only address cases "when the counterpart relation produces one and only one counterpart of each individual in each world" (Rigoni and Thomason: 2014, p. 3). Russell likewise provides a logic of actuality for counterpart theory that presupposes one-to-one relations and thus presupposes the necessity of identity and distinctness (cf. Russell: 2013, p. 99). He, however, suggests that his account can be extended to many-one cases but, unfortunately, only provides a promissory note to that effect.

[11]There will only be a difference regarding the possibilities for the worlds, but no differences in possibilities for the individuals that are parts of the worlds. In both cases we have two distinct possibilities for the individual, but while in the former case there is only one possibility for the world, there are two distinct possibilities for the world in the latter case.

3.1 Multiple variables

These scenarios can be distinguished by introducing a second variable, thereby allowing the two counterparts that exist in the same world to be taken into consideration at the same time. Both of them can be considered because different counterparts can satisfy the translated formulae pertaining to the different variables. We thereby allow that the world with two counterparts underwrites the modal claim $\exists x \exists y[x = y \wedge \Diamond(Fx \wedge \neg Fy)]$ while the two worlds with only one counterpart only satisfy the claim $\exists x[\Diamond Fx \wedge \Diamond \neg Fx]$.

By invoking two variables, one can hold that whilst x and y are identical in one world, it is possible for them to fail to be identical in another world. This makes room for the claim that it is possible for x to be F and for y to be not-F, without ending up with the objectionable claim that it is possible for x to be F and not-F. The Lewisian counterpart theorist, in this way, claims to make sense of contingent identity, without incurring any failure of the reflexivity or transitivity of identity.

This claim, however, is problematic. Whatever holds of x also holds of y, given that x *is* y. If the counterpart of x in w is F whilst that of y is not-F, then x has a counterpart in w that is F and a counterpart in w that is not-F. Obviously there is no counterpart that is both F and not-F, but this does not undermine the fact that at w: x is F and that at w: x is not-F. Since we are talking about the same possible world, we should be able to conjoin these claims and end up with at w: x is F and x is not-F,[12] which would underwrite the claim that x is possibly F and not-F.[13]

Sure, we want to distinguish between one thing having a counterpart that fails to be self-identical and one thing having two counterparts, between (i) $\exists w \exists x[Ixw \wedge \exists w' \exists a(Iaw' \wedge Cax \wedge a \neq a)]$ and (ii) $\exists w \exists x[Ixw \wedge \exists w' \exists a \exists b(Iaw' \wedge Ibw' \wedge Cax \wedge Cbx \wedge a \neq b)]$. However, it is important to note that this is a distinction that is stated in the technical language of counterpart theory. Unless this distinction is mirrored in ordinary modal discourse and not just restricted to the technical language, then all that this response can show is that counterpart theory is not committed to an inconsistent or absurd metaphysics, but this does not succeed in saving counterpart theory when considered as a theory of modality. Being able to distinguish between (i) and (ii) in counterpart theory is not sufficient. One must also link counterpart theory to ordinary modal discourse and show that no objectionable modal claims are made true by (ii). The question then is what different modal truths are underwritten by these distinct scenarios.

If (i) were the case, then the metaphysics of counterpart theory would be incoherent. However, counterpart theorists have a coherent metaphysics. They are not committed to (i) but only allow the possibility of (ii). Nonetheless, there is still the

[12] The operator 'at w:' commutes with conjunction in the same way as ACT.

[13] We cannot conjoin the possibilities when different contexts are involved, for example when at w: x qua lump is F and at w: x qua statue is not-F. However, when the context is transparent and when the same counterpart relation connects x to both of its counterparts existing in w, it should be possible to conjoin them under one modal operator.

question whether (ii) underwrites coherent modal claims and it appears that this is not the case. While the situation described by (ii) is not incoherent, it would seem to underwrite the same incoherent modal claims as (i). There appears to be no difference between the modal claims that are made true by (i) and those made true by (ii).[14] While counterpart theory can make sense of a claim, namely (ii), that is neither trivial nor absurd in the technical language of counterpart theory, there is a danger that this CT-claim underwrites the same ordinary modal claims as (i) and thereby does underwrite the "absurd notion that one thing has an individual possibility of not being self-identical" (Lewis: 1986, p. 259). Accordingly, we seem to have not only a failure of the transitivity of identity but also a failure of reflexivity.[15]

3.2 Identity pairs

It might be suggested that these worries can be avoided by appealing to identity and non-identity pairs. Lewis claims that "an identity pair has the *de re* possibility of being a non-identity pair" (Lewis: 1986, p. 263). One can then say that a world with two counterparts underwrites different claims than two worlds with one counterpart, insofar as different claims for identity pairs and non-identity pairs are made true by these distinct scenarios. While the possibilities for the individual are the same in both scenarios, there are differences in the possibilities for pairs of individuals.

But this clearly is a distinction without a difference. Lewis's talk of an 'identity pair having a non-identity pair as a counterpart' is highly problematic. As Stalnaker notes: "A thing might, according to the more radical counterpart theorist, have more than one counterpart in some possible world, and so might have counterparts that are distinct from each other. But if (in the actual world) $x = y$, then there are not two things in the actual world, the x and the y, one with one counterpart and the other with the other" (Stalnaker: 2003, p. 155 footnote 14). We do not have an 'identity pair' to begin with. All there is is one object.

An identity pair only exists in the trivial sense that there is a multiset (or suchlike) in which the same individual features twice as a member. But this ontologically innocent understanding of an identity pair cannot ground any differences

[14] One could try to distinguish them in terms of whether they imply distinctness with or without duplication, such that (ii) implies the former and (i) the latter (cf. Lewis: 1971, p. 206). However, I submit that this notion of duplication only makes sense within counterpart theory. The only metaphysically unproblematic understanding of duplication in this context consists in an object having two counterparts. This would mean that, contrary to what we set out to do, we ended up with a counterpart-theoretic difference and not one regarding ordinary modal claims.

[15] Woollaston and Cresswell also argue that counterpart theory runs into difficulties when dealing with multiple counterparts. Both suggest that counterpart theorists should either (i) place constraints on how counterparts are chosen, such that $x = y \rightarrow \Box(x = y)$ comes out true, or (ii) accept Forbes's view that counterparts are assigned to occurrences of a variable, such that $\Box(x = x)$ is not a logical truth (cf. Cresswell: 2004, pp. 36-37 and cf. Woollaston: 1994).

when the individual is considered both times in the same context.

Moreover, it is not clear how identity pairs are supposed to feature in counterpart theory. We do not have possibilities for pairs but only possibilities for the members of pairs. Counterpart theory, as usually stated, concerns individuals and not pairs. Talking about pairs simply helps us to identify counterpart relations that take the relations between the members of the pairs into account.

In Postscript D to *Counterpart Theory and Quantified Modal Logic* Lewis suggests that one should take a "pair simply as a mereological sum; then it is a possible individual, not a set, so counterpart theory applies to it without need for any modification" (Lewis: 1983, p. 44). While this may be a good way of dealing with non-identity pairs, this strategy is not applicable to the case of identity pairs. An object cannot be taken twice to give us a mereological sum (at any rate not a sum that is distinct from the object with which we started). This means that a case of contingent identity, according to the mereological approach, is one where one single individual has a mereological sum of two individuals as a counterpart. This would imply that I have the possibility of being the mereological sum of both of my counterparts, which is very strange and clearly does not capture the claim that I could have been twins.

When appealing to Hazen's approach using 'representative functions' (Hazen: 1979, p. 334) we get the same problems. This is because B and D will both be single-counterparts of C since the ordered pair <B,D> is a pair-counterpart of the pair <C,C>. The pair-counterpart relation only allows us to exclude single-counterparts when we have at least two non-identity pairs.[16] Once a plurality of non-identity pairs is involved, then what Lewis says is correct, namely that we should not "accept any neat principle to the effect that a pair of counterparts is a counterpart of the pair" (Lewis: 1983, p. 45). This, however, does not affect the case where an identity pair is at issue since any pair of counterparts of an object is indeed a counterpart of the identity pair which consists of that object taken twice.

These considerations point towards a general worry, namely that identity and non-identity pairs are more or less irrelevant to the issues with which we are concerned. Even if we can arrive at an unproblematic construal of such pairs, it is far from clear that they can do the work they are supposed to do. When attempting to deal with metaphysical puzzle cases involving contingent identities, we are concerned with two distinct individuals that seemingly could have been identical. We are not concerned with a non-identity pair that could have been an identity pair.

As Lewis acknowledges, we do not get "a sense in which one thing might have been two (or *vice versa*)" but only "a sense in which an identity pair might have been a non-identity pair (or *vice versa*)" (Lewis: 1986, p. 259). It is not at all obvious that this sense is sufficient to solve metaphysical puzzle cases and capture intuitions about twins and other such scenarios. It seems rather strange that the

[16] A non-identity pair can consist of two distinct temporal parts or stages of the same individual as can be seen from Hazen's case regarding Caesar, Seezer and Kizer. All we need for a non-identity pair is for the members of that pair to have different counterparts.

truth-maker of the claim that I could have been twins consists in there being a pair in which I feature twice as a member that has a pair-counterpart that has two distinct members.

Whether considered as mereological sums or as multisets, it does not appear that identity and non-identity pairs have any relevance when it comes to the metaphysical puzzles involving contingent identities. We are not concerned with possibilities for multisets, or with possibilities for strange mereological sums of individuals, or with possibilities for pairs construed in some other way. Instead, we want to know what is possible for the individual in question.

4 Modifying counterpart theory

Counterpart theory thus runs into problems when an object has multiple counterparts in a world (falling under the same counterpart relation). In order to avoid these difficulties one can either modify the metaphysical component or the semantic component of counterpart theory.

On the one hand, one can modify the understanding of counterpart relations such as to rule out many-one relations. This is a rather revisionist option that requires rejecting the idea that counterpart relations are similarity relations. As Hazen notes, "no plausible way of defining counterparthood in terms of some kind of similarity will guarantee that an object will have at most one counterpart in any given world" (Hazen: 1979, p. 333).

Ramachandran, for instance, has suggested that counterparts are stipulated in a Kripkean way rather than determined by similarity. This 'Kripkean counterpart theory' prohibits objects from having more than one counterpart at a world, though many objects at a world can have a common counterpart. This allows for contingent distinctness, without giving contingent self-identity (cf. Ramachandran: 2003, pp. 209-213 & Ramachandran: manuscript, pp. 4-10).

On the other hand, one can modify the semantic component. Sider has argued that one should invoke a sub-relation of the counterpart relation, called a 'thinning', that "results from arbitrarily choosing, with respect to each x that has multiple counterparts $y_1 \dots y_n$ in some world, a single one of $y_1 \dots y_n$ to count as x's counterpart" (Sider: manuscript, p. 25). By arbitrarily picking out only one counterpart of an object in determining which modal statements about that object are true, one does not change the traditional understanding of what counterparts are but alters the way in which these counterparts are relevant to modality.

Apart from it being ad hoc to arbitrarily pick one counterpart-candidate as classifying as the object's counterpart, this proposal also seems to conflict with construing the counterpart relation as a similarity relation. If several objects in one world are equally and sufficiently similar to an object in another world, then these objects should classify as that object's counterparts and there is no reason to suppose that only one of these counterparts (that has been selected arbitrarily) is relevant to determining which modal claims about that object are true.

Either way, one will lose some of the theoretical benefits and explanatory power of counterpart theory. The modified accounts can no longer address all the puzzle cases that counterpart theory was meant to resolve. For instance, on Sider's proposal, one cannot make sense of same-sortal contingent identity but only of sortal-relative contingent identity (cf. Sider: manuscript, p. 28). Since prohibiting multiple counterparts within an index does not threaten "benefits that turn on multiple counterpart *relations*" (Sider: manuscript, p. 27), one can still use counterpart theory to address some puzzle cases, such as that regarding the statue and the lump. Problems arise, however, when we are concerned with puzzle cases where we need to invoke multiple counterparts that fall under the same counterpart relation. For example, the temporal counterpart theorist wants to make sense of fission and fusion cases where the same sortal is involved and where there is no difference in counterpart relation.[17]

5 Truth-conditions without translation?

CT translation schemes run into difficulties when faced with many-one counterpart relations and need to be modified or abandoned. It might be suggested that the translation scheme is not essential to counterpart theory and that an alternative semantic component can be identified to link the meta-language of counterpart theory to ordinary modal discourse. In particular, it might be thought that one does not have to translate sentences of quantified modal logic into the language of counterpart theory but can directly specify truth-conditions for modal claims independently of a translation scheme.[18]

Abandoning the translation scheme, however, is problematic. It makes counterpart theory less attractive by undermining the most promising connection between the theoretical language of counterpart theory and our ordinary modal discourse. As a result, it makes the Humphrey objection more pressing (cf. Fara and Williamson: 2005, pp. 27-28). A translation scheme provides a neat and systematic way to link up claims about counterparts with ordinary modal claims, which suggests that there is a substantial connection between counterparts and modality.

[17]It might be suggested that we do not have to stick to the sortal 'person', but can use more fine-grained counterpart relations that uniquely identify an Ed-counterpart and a Fred-counterpart (cf. Sider: 2001, p. 201). However, it is not clear that there will always be a salient difference between the two counterparts. Moreover, there is a danger of undermining what is special and distinctive about fission cases by invoking different counterpart relations, namely that it is the same relation connecting the object existing before the fission to the two objects existing after the fission. Finally, even if it is possible to invoke these fine-grained counterpart relations, the question arises as to what happens in cases where these fine-grained relations are not invoked, where the context identifies the sortal-based counterpart-relation, or where a coarse-grained and transparent context is simply stipulated or otherwise introduced.

[18]Cf. Williamson: 2006, p. 135 footnote 8.

Once this approach is relinquished, however, there is much less reason to believe in the existence of such a connection.

Moreover, transitivity worries apply independently of considerations regarding the translation scheme from QML to CT. We need to get from the theoretical and technical language of counterpart theory to our ordinary language, from claims about counterparts to ordinary modal claims. Otherwise, counterparts will be irrelevant to modal discourse. This must be achieved in such a way as to meet the Humphrey objection and in such a way that truth-conditions are provided by counterparts so that ordinary modal claims that violate the transitivity of identity are unsatisfiable.

When abandoning the project of providing a translation scheme, the counterpart theorist has to provide truth-conditions for modal claims directly. If truth-conditions are provided without employing a translation from QML to counterpart theory, then the assignment of truth-conditions must still satisfy the transitivity requirement. Given that objects can have multiple counterparts, the question arises as to which modal claims can be satisfied by objects with multiple counterparts. One plausible way of assigning truth-conditions involves asserting that the sharing of counterparts amounts to a contingent identity. This is an intuitively plausible view of the role of counterparts. Moreover, it is in this way that many people have employed counterpart theory in their attempts to deal with various metaphysical puzzles.

The problem now is that if counterpart theorists want to say that objects are contingently identical in a world in which they share a counterpart, then the original transitivity worries apply. Counterpart theory is in trouble if a scenario in which A and C, as well as C and E, share a counterpart, without A and E sharing a counterpart, is taken to underwrite the modal claim that it is possible that A and C are identical as well as that C and E are identical without A and E being identical. This means that (1′) is not only the translation of (1) according to certain translation schemes, but also represents a natural way of directly assigning truth-conditions in terms of counterparts to the ordinary modal claim that is formalised in QML as (1).

6 Conclusion

It has been shown that accounts of modal counterpart theory that make room for contingent identities by countenancing many-one counterpart relations are not able to preserve the transitivity of identity. Contingent identity thus cannot be gotten on the cheap. Since many-one counterpart relations are an integral part of standard approaches to counterpart theory, we can see that counterpart theory needs to be modified. All the available options, however, are unpalatable since they require giving up the idea that the counterpart relation is a similarity relation and greatly reduce the explanatory power of counterpart theory.

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