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Neutral Relations

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There is a standard view of relations, held by philosophers and logicians alike, according to which we may meaningfully talk of a relation holding of several objects in a given order. Thus it is supposed that we may meaningfully—indeed, correctly—talk of the relation *loves* holding of Anthony and Cleopatra or of the relation *between* holding of New York, Washington, and Boston. But innocuous as this view might appear to be, it cannot be accepted as applying to all relations whatever. For there is an important class of metaphysical and linguistic contexts which call for an alternative conception of relation, one for which the order of the relata plays no role and in which the application of the relation to its relata is achieved by other means.

My argument for this conclusion will be roughly Hegelian in form (though not at all in content). I begin with a thesis, the standard view on relations, and consider various problems to which it gives rise (§1). After considering what is required of a solution to these problems (§2), I propose an antithesis, the positionalist view, according to which each relation is taken to be endowed with

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This paper had its origin in some unpublished lectures on logical atomism, given in the early 1970s. A similar conception of relations has been proposed by Ingarden (1893) and by Williamson (1985), where the principal focus is on the expression rather than the metaphysics of relations. The following further differences between Williamson's paper and my own should be noted. First, because of a difference in our understanding of converse, he takes a neutral relation to be one that is identical to its converse, whereas I take it to be one for which there is no meaningful notion of converse. Second, he thinks that all relations are neutral, whereas I think that relations come in two kinds, one neutral and the other biased. Third, he argues for the impossibility of biased relations on the grounds that no predicate of any language could be taken to signify a given biased relation rather than its converse, whereas I make, and have, no objection to the claim that the predicates of ordinary language signify biased relations. Finally, he appears to hold a positionalist view of neutral relations (257–58), which I consider in §3 but reject in favor of the antipositionalist view in §4. After writing the paper, I came across an unpublished paper, "Non-Symmetric Relations," by Cian Dorr. He raises some related considerations, though his conclusions are very different.

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a given number of argument-places, or positions, in no specified order (§3). But this view is beset with certain ontological and substantive problems; and I conclude with a synthesis, the antipositionalist view, which combines the virtues of the two previous accounts (§4) and is seen to lead to a distinctive conception of relations (§5).

I have largely confined my attention to metaphysical issues; and as a consequence, two important topics have not been pursued. One is the logic of complex neutral relations; and the other is the role of neutral relations in the interpretation of language (and in our mental representation of reality). However, I hope enough has been said on the metaphysics of the issue to make clear why these topics are of interest and how they might be developed.

1. The Problem

In this section, I shall argue for the inadequacy of the standard view on relations. There are two routes by which this inadequacy may be revealed, one metaphysical and the other linguistic. I shall concentrate on the former, which is the more significant, and then conclude with some remarks on the latter.

According to the standard view, there is a certain notion of "holding" or exemplification that holds between a given relation and its various relata. Thus we may say that the relation *loves* holds of the objects *a* and *b* in this sense just in case *a* loves *b*. It should be noted that the order of the relata is relevant to whether the relation holds. Thus whereas *loves* holds of Don José and Carmen, it does not hold of Carmen and Don José.

I have no quarrel with the standard view as such and am prepared to concede that there is an important class of relations to which it correctly applies. However, it seems to me that there are contexts that call for relations of an altogether different sort. These relations cannot meaningfully be said to hold of their arguments in a specified order, and an entirely different account of their nature and exemplification is required.

The shortcomings of the standard view in this regard can be traced to a simple, seemingly innocuous, consequence of the view, namely, that each binary relation has a converse. To see how this *is* a consequence, let us first note how it is possible to provide a definition of *converse* in terms of the standard notion of exemplification; for, given any binary relation, we may define a converse relation to be one that holds between the objects *a* and *b* just in case the given relation holds between *b* and *a*.[1] But once given an intelligible notion of converse, it is very plausible to suppose that each relation *has* a converse. For it would be completely arbitrary to suppose that a given relation might exist and yet not a converse—that the relation of *loving* might exist, for example, and yet not the relation of *being loved*. We should also note that a relation will in general be distinct from its converse. For suppose that the given relation is nonsymmetric, that is, for some objects *a* and *b*, it holds between *a* and *b* but not between *b* and *a*. Then any converse of the relation will not hold between *a* and *b* and hence will be distinct from the relation.

This consequence concerning converse is, of course, a special case of a more general result. For given a relation of arbitrary degree or "arity,"[2] we may distinguish between the relation itself and its various "permutations." In the case of a ternary relation *R*, for example, we may distinguish between *R* and a permutation *S* that holds of the objects *a*, *b*, and *c* just in case *R* holds of *b*, *c*, and *a*. And just as it would be arbitrary to include a given binary relation into one's ontology and yet exclude a converse, so it would be arbitrary to include a given n-ary relation and yet exclude any of its permutations.

What makes this consequence so objectionable, from a metaphysical standpoint, is a certain view of how relations are implicated in states or facts. Suppose that a given block *a* is on top of another block *b*. Then there is a certain state of affairs s_1 that we may describe as the state of *a*'s being on top of *b*. There is also a certain state of affairs s_2 that may be described as the state of *b*'s being beneath *a*. Yet surely the states s_1 and s_2 are the same. There is a single state of affairs *s* "out there" in reality, consisting of the blocks *a* and *b* having the relative positions that they do; and the different descriptions associated with s_1 and s_2 would merely appear to provide two different ways at getting at this single state of affairs.

[1] There is a stricter notion of converse to which we shall also appeal. A converse, in this stricter sense, is one that differs from the given relation merely in the order of its arguments.

[2] I have assumed throughout the paper that all relations are of finite degree. However, there is no difficulty in extending the discussion to relations of arbitrary infinite degree.

So far, no problem. But we are also inclined to think that a state of affairs such as *s* is some sort of relational complex, consisting of a relation in appropriate combination with its relata. However, if this is so, then it is hard to see how the state *s* might consist *both* of the relation *on top of* in combination with the given relata and of the relation *beneath* in combination with those relata. Surely if the state is a genuine relational complex, there must be a *single* relation that can be correctly said to figure in the complex in combination with the given relata.

But what might this relation be? It cannot be *on top of,* since, by parity of reason, it should also be *beneath.* Nor can it be *beneath,* since, by parity of reason, it should also be *on top of.* Thus it cannot be either. Indeed, whatever we take the relation directly involved in the state of affairs to be, it cannot have a converse. For we would then face the very same problem vis-à- vis that relation and *its* converse that we faced vis-à-vis *on top of* and *beneath,* namely, that whatever reason there was to take it to be the one is an equally good reason to take it to be the other. We must therefore conclude that the relation is not of a standard sort; it does not have a converse and so, for the reasons given above, cannot meaningfully be said to hold of its arguments in a specified order.

It is not only states and facts that lead to difficulties for the standard view. I believe that, in addition to the blocks and the state of one block being on top of the other, there is a new *thing*—the blocks in the arrangement of one being on top of the other—that exists only when the blocks *are* so arranged.[3] This thing is surely the same as the blocks in the arrangement of the other being beneath the one; and, granted that this single thing is a relational complex, we have the same general reason, as in the case of states, for supposing that the relation directly implicated in the complex is not of a standard sort.

It will be helpful, for later purposes, to give a somewhat more careful formulation of the above argument; and to this end, we need to introduce the idea of *completion.* The completion of a relation R by the objects a_1, a_2, . . . is the state of the objects a_1, a_2, . . . standing in the relation R. Since I am not too concerned with the exact identity of the completion—with whether it be a state,

[3]A theory of such objects, which I call *rigid embodiments,* has been outlined in Fine 1999.

fact, proposition, or something else of this kind—I shall often refer to it simply as a "complex."

We should distinguish exemplification from completion. Exemplification is an extensional notion; it concerns the "extension" of a relation, *what* it relates. Completion, on the other hand, is an intensional notion; it concerns the "content" of a relation, *how* it relates. Exemplification, moreover, is expressed by a predicate ('is exemplified by'), while completion is signified by an operation ('the completion of').

Let us say that *s* is a *completion of* a relation if it is the completion of that relation by some objects or other. Our argument against the adequacy of the standard view can now be seen to rest upon a reductio from the following two assumptions:

Identity. Any completion of a relation is identical to a completion of its converse.

Uniqueness. No complex is the completion of two distinct relations.

For suppose that there exists a completion of the nonsymmetric relation *R*. By Identity, it is also a completion of a converse *S* of *R*. By Uniqueness, *S* and *R* are the same. But by the nonsymmetry of *R*, they are distinct.

We wish to adopt a conception of relations and their completions for which Uniqueness will hold and for which Identity will also hold *as long as* there is a meaningful notion of converse. Since these two assumptions lead to contradiction, we deny that this conception of relations is one for which there is a meaningful notion of converse.

Although I have stated the argument in terms of states or relational complexes of some other kind, it is possible to see the difficulty as arising from a more general view about the worldly role that relations may assume. For we may think of relations as being "out there" in the world and as belonging to reality itself rather than to our representation of reality. But if this is our conception of relations, it becomes hard to see how there could be a multiplicity of relations connecting the very same things in essentially the very same way, and differing only in the order in which they are connected. We are much more inclined to suppose that there is a single underlying relation connecting the things together and that any difference in the order of connection is to be attributed to the way we represent the relation as holding rather than to the relation itself.

A comparison with roads may help to make the point. There is a road from Princeton to Trenton and a road (with the same tarmac) from Trenton to Princeton. Are they the same or different? There is perhaps a directional sense of "road" in which they are different. But even if we concede that there is such a sense, we should surely acknowledge that there is a more basic adirectional sense of "road" in which they are the same. Roads in the directional sense are merely roads in the adirectional sense upon which a direction has been imposed. And similarly for the relational "routes" between objects.

From this point of view, the bias that we perceive in the application of relations is merely an artifact of our language or means of representation. For in expressing or representing a relational thought, we think of one relatum coming first and another second; and this leads us to suppose that the relations themselves must apply to the objects in a given order. However, in the reality that we are attempting to depict, there is no corresponding form of bias and the relations should therefore be taken to apply to their objects without regard to the order in which they might be given.

This brings us to the linguistic reasons against the standard view. It is natural to suppose that the predicates of an ordinary language, that is written or spoken in sequence, will signify biased relations. The predicate 'loves', for example, will signify a relation that holds of a and b just in case a loves b. But let us imagine a graphic language of the following unusual sort. The predicates are taken to be bodies, of no particular orientation, that contain designated areas upon which the terms for the arguments are to be inscribed.[4] So, for example, the amatory predicate of the language might be a heart-shaped body that is red on one side and black on the other. To say that one person loves another, we then inscribe the name of the lover on the red side and of the beloved on the black side. It is clear, in such a case, that there is no basis for taking the heart

[4]The language is reminiscent of Wittgenstein's picture theory of meaning; for insofar as the sentences of the language are like the facts, they will share in the same absence of bias. I should note that the representational features of *ordinary* pictures will give rise to similar problems.

to signify either one of the relations *loves* or *is loved by* as opposed to the other, since there is no relevant sense in which one side of the heart takes precedence over the other.

Hence insofar as each predicate of the language is taken to signify a single relation, the relations so signified cannot be taken to be in conformity with the standard view. It should also be noted that the present linguistic considerations, in contrast to the previous metaphysical ones, need only draw upon an extensional conception of relation (one under which relations with the same extension are the same). For the question of interest can be posed in the form: does the heart signify a relation-in-extension that holds of *a* and *b* when *a* loves *b* or when *b* loves *a*? Thus the present argument should even have force for someone who is unwilling to entertain an intensional conception of relations.

2. General Requirements on a Solution

There are two broad kinds of response that might be made to the previous arguments. The first, more conservative, response is to refuse to countenance any alternative to the standard conception of relations. After all, relations must relate; and it is hard to see how they can meaningfully be said to relate unless they hold of their arguments in a given order. The conservative responder therefore faces a choice. He must either give up Identity and allow that where there appears to be only one state of affairs, there are in fact several—both the state of *a* being on top of *b*, for example, and the state of *b* being beneath *a*. Or he must give up Uniqueness and allow that several different relations might be directly implicated in the very same state of affairs. Similarly, in the linguistic case, he must either take a heart to constitute two different predicates or to constitute a single predicate that indeterminately signifies two different relations.

The second, more radical, response is to propose an alternative to the standard conception of relations. Thus it will be allowed that there is a conception of relations for which Uniqueness holds but denied that it is one for which there is a meaningful notion of converse (and similarly in the linguistic case). The embarrassing diversity of states or complexes to which the denial of Identity would otherwise give rise is thereby averted. The radical response has the huge advantage of allowing us to respect the intuitions that gave the arguments their force and it is, in any case, of interest to see what alternatives there might be to the standard view.

Before considering any particular responses of this kind, it will be helpful to consider what, in general, might reasonably be required of such a response. There are two related aspects to this question—one concerning exemplification and the other completion. Let us deal with each in turn.

It is of the very essence of relations to relate; and it is through the notion of exemplification that we understand in what way they relate. Thus any theory of the nature of relations worthy of the name should provide us with an account of exemplification and, in particular, should provide us with an account of its *logical form,* that is, of the number and types of its arguments.

Now not every notion of exemplification will serve our purpose in this regard. We may talk, for example, of a relation holding of certain objects when it holds of them in some manner or another—so that *loves* will hold of Jack and Jill regardless of whether Jack loves Jill or Jill loves Jack. However, such a notion will not fully reveal how the relation is exemplified, since it will not distinguish between the exemplification of a relation and of its converse. Thus what we require is a notion of exemplification that is *canonical* or fully adequate in the sense that *its* exemplification should reveal the exemplification, broadly and properly conceived, of each individual relation.

The main demand imposed on relations by the requirement of adequacy is that they should have the capacity for *differential application.* There are, in general, two ways in which a binary relation might hold between any two objects, six ways in which a ternary relation might hold between any three objects, and so on for relations of arbitrarily high degree. For any given relation, it is in principle possible for it to hold of an appropriate number of given objects in some of these ways and not in others; and any adequate notion of exemplification must be such as to make clear how this might be so.

The standard view of relations accounts for differential application in the most straightforward way imaginable. For each relation is taken to apply to its arguments *in a given order,* and it is to differences in order that the different ways in which the relation can apply to its arguments will correspond. A nonstandard notion of exemplification, by contrast, cannot be sensitive to order—or, at least, not in the same way—since it would then be possible to reinstate the notion of converse. Thus some means must be found, on the nonstandard view, of accounting for differential application without appealing to order.

There is a further characteristic of the standard notion of exemplification that must also be abandoned under a nonstandard view. Any notion of exemplification, standard or not, must relate an n-ary relation to n objects, one for each "argument" of the relation. But will there be any other relata? Will there be any auxiliary relata or "props" by which the application of the relation to the principal relata is mediated?

For the standard notion of exemplification, the answer is no; its relata are simply the relata of the given relation and the relation itself. However, for any nonstandard notion of exemplification, there *must* be other relata. For if there were not and if the notion were indeed order-insensitive, then we would be left with something like the attenuated form of exemplification described above and there would be no way to account for differential application. Thus we reach the important conclusion that any nonstandard notion of exemplification must be of a different logical form from the standard notion; it must hold of some supplementary, nonstandard type of relata; and it is by reference to them, rather than to order, that differential application is to be explained.

Similar conclusions may be drawn in regard to completion. Again, the standard view provides us with the most straightforward account of the notion: a relation "combines" with its relata, in a given order, to form a relational complex. The resulting complex is sensitive to the order of the arguments, with differences in order corresponding to the different ways in which a complex can be formed from the arguments. And there will be no further arguments to consider besides the given relation and its various relata.

An adequate nonstandard notion of completion can possess neither of these characteristics. It cannot be sensitive to the order of the arguments—or, at least, not in the same way. For we may define exemplification in terms of completion along the following lines: a relation holds in such and such a way just in case a corresponding completion obtains.[5] But then, given an order-sensitive notion of

[5]If the resulting complexes are propositions, then "obtains" must mean "is true"; if they are facts or the like, then it must mean something like "exists."

completion, we could define an order-sensitive notion of exemplification and hence reinstate the notion of converse.

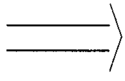
Nor can nonstandard completion be regarded as an operation that takes a given relation and its relata as its arguments and delivers a single complex as its value (should it have any value). For if the notion is not order-sensitive, it will not then be capable of accounting for "differential completion," that is, for the multiplicity of ways in which a complex may be formed from a given relation and given relata. Thus, again, we reach the conclusion that the logical form of this basic notion will stand in need of revision.

3. Positionalism

A radical solution to the previous problems calls for a conception of relations as neutral or unbiased; and I here lay out the most natural and straightforward view of this kind. I show that it does, indeed, solve the problems and also argue that relations, so conceived, are more plausibly regarded as basic than are their biased counterparts. It is only in the next section that we shall consider the reasons for rejecting the view.

Under this alternative conception, each neutral relation is taken to be endowed with a fixed number of argument-places or positions. But by this, I do not merely mean that the relation is of fixed degree—binary, ternary, or what have you. I mean that there are *specific entities* that are the argument-places of the relation. Thus, in the case of the neutral amatory relation, there will be two such entities, the argument-places *Lover* and *Beloved,* that in some primitive sense *belong* to the relation.

We might picture a relation, under the standard conception, as an arrow:



whose head corresponds to the first argument-place of the relation and whose tip corresponds to the second. By contrast, a relation under the present conception is more appropriately pictured as a solid body into which holes of various shapes have been formed:

the different holes corresponding to the different argument-places of the relation. So, for example, the neutral amatory relation, might be depicted as a heart with a cubical hole for the lover and a conical hole for the beloved.

It is essential to the present conception that there be no intrinsic order to the argument- places. There is no "first" or "second" hole, nothing that might correspond to the arrow of the standard conception. *We* might impose an order on them from the "outside," but there is nothing in the relation itself that dictates one order as opposed to another.

Indeed, one might think of each biased relation as the result of imposing an order on the argument-places of an unbiased relation. Thus, each biased relation may be identified with an ordered pair $\langle R, O \rangle$ consisting of an unbiased relation R and an ordering O of its argument- places. *Loves,* for example, might be identified with the ordered pair of the neutral amatory relation and the ordering of its argument-places in which *Lover* comes first and *Beloved* second; and similarly for *is loved by,* though with the argument-places reversed. In this way, any biased relation may be decomposed into a part that is pure content without order and a part that is pure order without content.

How should we understand exemplification under such a conception of relations? If we simply ask, "Does this relation hold of these objects in such and such an order?" then no definite answer can be given, for we do not know in what manner the relation is to be applied to the objects. We might, of course, construe the question to mean: does the relation hold of the objects in some manner, or in all manners? The ambiguity is then resolved, but the possibility of accounting for differential application is lost.

Thus, exemplification, properly understood, cannot simply be taken to hold between a relation and its various relata. To indicate the manner in which the relation is to apply to its relata, we must make clear how the relata are to be assigned to the respective argument-places. Exemplification must be understood to be relative to an assignment of objects to argument- places. Thus, in the case of the exemplification of the neutral amatory relation to the individuals Don José and Carmen, we must specify whether Don José is to be assigned to *Lover* and Carmen to *Beloved* or Don José to *Beloved* and Carmen to *Lover.*

Given our previous picture of relations as perforated bodies, we might picture the exemplification of a relation in terms of "fit." For a relation to hold of various objects is for the objects to fit into the holes of the corresponding body; and, of course, whether they do so fit will depend upon which objects are to go into which holes. Thus, the cubical hole in the heart will be suitable only for lovers and the conical hole only for loved ones (and we might imagine that the two holes are so connected that if a lover goes into the one hole then only his loved ones will fit into the other).

We therefore see how a different view of the logical form of exemplification is required. Under the standard conception of relations, exemplification holds of a given n-ary relation R and n objects $a_1, a_2, \ldots, a_n$ (in that order); the biased relation *loves,* for example, will hold of Don José and Carmen. Under the present conception, by contrast, exemplification will hold of the relation R, the objects $a_1, a_2, \ldots, a_n$ and, in addition, the argument-places $\alpha_1, \alpha_2, \ldots, \alpha_n$; the neutral amatory relation, for example, will hold of Don José and Carmen under their assignment to the respective argument-places, *Lover* and *Beloved.* Thus, whereas manner of exemplification is indicated, in the one case, by the order of the arguments, it is indicated, in the other, by the assignment of the arguments to argument-places.

The present notion of exemplification is not sensitive to the order of the relata of the given relation—or, at least, not in the same way as the standard notion. For all that matters to whether a given neutral relation R holds with respect to the objects $a_1, a_2, \ldots, a_n$ and the argument-places $\alpha_1, \alpha_2, \ldots, \alpha_n$ is their order relative to one another, and not the absolute order of the objects or argument-places themselves.

Nor does the present notion of exemplification permit a meaningful notion of converse. We may indeed ask whether, for given argument-places α, β, α' and β', the relation R' holds under the assignment of a to α' and b to β' just whenever R holds under the assigment of a to α and b to β. But this merely tells us whether the relations are coextensive under the given alignment of argument-places. To obtain the notion of converse, we also need to assume that $\alpha' = \beta$ and $\beta' = \alpha$. But I doubt that there is any reasonable basis, under positionalism, for identifying an argument-place of one relation with an argument-place of another.[6]

[6]Exception should be made for the degenerate version of the positionalist view in which each biased n-ary relation is taken to correspond to a

We can give a related positionalist account of completion. Under the standard view, the completion of a relation is the state (or what have you) of that relation holding between certain objects in a given order; the completion of *loves* by Don José and Carmen, for example, is the state of Don José's loving Carmen. On the present conception, by contrast, the completion of a relation is the state that results from assigning certain objects to the argument-places of the relation; the completion of the neutral amatory relation under the assignment of Don José to *Lover* and Carmen to *Beloved,* for example, is the state of Don José and Carmen standing in the relation of lover to beloved. Thus, in the first case, completion is an operation that takes a given n-ary relation R and n relata a_1, a_2, . . ., a_n as its arguments, while, in the second case, the argument-places α_1, α_2, . . ., α_n of the relation also serve as arguments. Completion, like exemplification, is relative to an assignment of objects to argument-places.

It might again be helpful to think in terms of our previous picture of a relation as a perforated body. For its completion can then be taken to be the result of filling in its holes with the actual or putative relata.[7] Thus, completion, so conceived, is a kind of real-life counterpart to predication in the language of hearts. Whereas a predication is obtained by inscribing names in the designated areas of a body, qua predicate, a completion is obtained by inserting the actual objects into the holes of a body, qua relation.

With completion so understood, there is no difficulty in defining exemplification: for a relation R will hold under an assignment of objects to argument-places just in case the completion of R with respect to that same assignment obtains. Nor is there any difficulty in seeing how the truth of Uniqueness might be maintained; for each relation may be taken to contribute its own distinctive character to the completions to which it gives rise. Indeed, this should already be clear from the model in terms of perforated bodies; for

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neutral relation whose argument-places are the numerical positions 1, 2, ..., n. We should note that if no two neutral relations can have the same argument-places then reference to the relation in a claim of exemplification is redundant, though of course the relation may still play a role in making the statement true.

[7]If the completion is fact-like, then the objects must fit into the holes into which they are inserted; if the completion is proposition-like, then the objects may be inserted into the holes regardless of fit.

underlying any given filled-in body will be a single perforated body.[8]

It will be instructive to reexamine our earlier example of the two blocks *a* and *b* in the light of the present view. We wished to say that the relative position of *a* and *b* corresponded to a single state *s*. We now wish to claim that this state involves a single unbiased relation, *Vertical Placement,* neutral between *on top of* and *beneath.* This relation is endowed with two argument- places, '*Top*' and '*Bottom*', and the state *s* is the completion of the relation under the assignment of *a* to *Top* and *b* to *Bottom.*

Now in our discussion of this example, we also wished to say that the single state *s* could be described both as "the state of *a*'s being on top of *b*" and as "the state of *b*'s being beneath *a*." This therefore suggests that there must be a sense of completion in which the state is the completion of the biased relation *on top of* by *a* and *b* and also the completion of the biased relation *beneath* by *b* and *a*. If this is so, then the explanation of this sense of completion would appear to be indirect, since the relation that appears to figure directly in the completion is not the relation that is explicitly completed. Rather, the completion, in this sense, of the biased relation *R* by the objects a_1, a_2, . . . is the nonstandard completion of the corresponding unbiased relation R' under the assignment of a_1, a_2, . . . to α_1, α_2, . . ., where α_1, α_2, . . . are the argument-places of R' in the order "imposed" by the biased relation *R*.

This point is of relevance to the more general question of which of the two kinds of relation should be taken to be more basic. Should we understand biased relations—their identity, exemplification, and completion—in terms of unbiased relations? Or the unbiased in terms of the biased? It seems possible in principle for the explanation to go either way. For suppose we start with unbiased relations. Then, as we have seen, a biased relation can be taken to be the result of imposing an ordering on the argument-places of an unbiased relation, and exemplification and completion can be understood accordingly. Suppose, on the other hand, that we start with biased relations. Then we can take each unbiased

[8]We might also add that an incidental advantage of the positionalist view is that it unequivocally and straightforwardly extends to infinitary relations. This is not true of the standard view, since there are questions as to how the arguments should be ordered and since some form of the axiom of choice must be assumed.

relation to be, or to be what is common to, a "permutation class" of biased relations and, similarly, each argument-place of the unbiased relation might be identified with a function that takes each biased relation of the permutation class into a corresponding numerical position. In the case of the amatory relation, for example, the argument-place *Lover* will be identified with the function that takes *loves* into position 1 and *is loved by* into position 2.[9]

We therefore face a familiar metaphysical predicament. We are presented with two broad classes of items. It seems that either *could* be explained in terms of the other; and since we do not wish to leave unexplained what might be explained, we also believe that one *should* be explained in terms of the other. But it is not clear which it should be.

However, it seems to me that, in the present case, the predicament can be resolved in favor of unbiased relations. For suppose we ask: how might we explain the identity of the single state s above in terms of biased relations? There seem to be only two possibilities. The first is that each of the biased relations *on top of* and *beneath* results, via an appropriate form of completion, in distinct "biased" states—the state s_1 of a being on top of b and the state s_2 of b being beneath a—and that we explain the unbiased state s in terms of what is common to s_1 and s_2. But this is implausible; for why, on such a view, are we inclined to say that there is the single state s "out there" in reality, rather than the two more basic states s_1 and s_2? The other possibility is that the relations result, via another form of completion, in the same state s, which can therefore be explained either as the completion of *on top of* by a and b or as the completion of *beneath* by b and a. But then surely we need to explain how it is that these two completions result in the same state; and the only plausible explanation is that they are completions (in our favored sense) of a single underlying unbiased relation. Thus, despite appearances, the better explanation is ultimately in terms of unbiased relations.

But if the identity of states is to be explained in terms of unbiased relations, then this suggests, more generally, that it is unbiased, rather than biased, relations that should be taken to be more basic. And this, of course, is consonant with metaphysical good

[9]There are certain complications and details in these explanatory reductions that may, for present purposes, be ignored.

sense. For biased relations appear to possess a genuine complexity, which only becomes disentangled once we distinguish between their "content" and their "bias."

4. Antipositionalism

The positionalist view is very natural and plausible. But it is subject to two serious objections: first, it requires us to accept argument-places or positions as entities in their own right; and, second, it leads to an erroneous account of symmetric relations. I here develop a view of neutral relations that is subject to neither of these difficulties and that has other advantages besides. In the next section, I show how certain difficulties with the account can be met; and in the last section, I show how it leads to a distinctive conception of relations and their argument-places.

We begin with the objections to the positionalist account. The first of these is ontological. As we have seen, the positionalist is obliged to reify argument-places or positions. It is not just that each relation must be taken to be endowed with certain specific argument-places, but these argument-places must themselves be taken to figure as relata in the application of a relation.

Now there is nothing objectionable about reference to argument-places as such. Even the standard theorist may grant that *loves* holds with Don José in the first argument-place and Carmen in the second argument-place of the relation, for this is merely to say that *loves* holds of Don José and Carmen (in that order). But we are strongly inclined to think that there should be an account of the identity of argument-places in other terms and that there should be an account of the relational facts, of the pattern of exemplification, in which all reference to argument-places is eschewed.

If there were no such position-free account of the relational facts, then we could find ourselves having to include argument-places among the fundamental furniture of the universe. For suppose we were to attempt to describe the world in the most fundamental terms. Then we might well wish to refer to certain basic relations and to certain basic individuals that they relate; and yet surely we would not thereby wish to be committed to the existence of argument-places as the intermediaries through which the exemplification of the relations was effected. There must therefore be some way of explaining how relations are exemplified in the world that does not involve any appeal to argument-places. The difficulty with positionalism is that it makes it impossible to see what this more basic account might be.

In addition to its ontological excesses, the positionalist view suffers from certain substantive difficulties over the behavior of symmetric relations. I use the term 'symmetric' here in a stricter sense than is customary. An unbiased binary relation R is said to be *strictly symmetric* if its completion by the objects a and b is always the same regardless of the argument- places to which they are assigned; and, more generally, an unbiased n-ary relation is said to be *strictly symmetric* in its distinct argument-places α_1 and α_2 if its completion under the assignment of $a_1, a_2, a_3, \ldots, a_n$ to $\alpha_1, \alpha_2, \alpha_3, \ldots, \alpha_n$ is always identical to its completion under the assignment of $a_2, a_1, a_3, \ldots, a_n$ to $\alpha_1, \alpha_2, \alpha_3, \ldots, \alpha_n$. Thus, strict symmetry requires identity of content and not merely identity of extension.

It seems clear that there are neutral relations that are strictly symmetric. For example, the state of a's being adjacent to b is surely the same as the state of b's being adjacent to a; and so the neutral relation of adjacency is strictly symmetric. Or again, the state of b's being between a and c is surely the same as the state of b's being between c and a; and so the neutral relation of betweenness is strictly symmetric in its last two positions.

The difficulty of the positionalist view here is in seeing how it is possible for there to be such relations. The neutral relation of adjacency, for example, should be endowed with two positions or argument-places according to the view. Call them *Next* and *Nixt*. Given that block a is adjacent to block b, there will be a state of adjacency obtained by assigning a to *Next* and b to *Nixt* and also a state of adjacency obtained by assigning a to *Nixt* and b to *Next*. Intuitively, these states are the same. Yet surely, under the positionalist view, they must be distinct, since the positions occupied by a and b in the respective states are distinct.[10]

[10]Two ways out have been proposed to me on the positionalist's behalf. The first is to treat a symmetric relation as a property of pluralities. But this proposal gives up on a uniform treatment of relations and is unable to deal with symmetric relations, such as *overlap*, that themselves hold between pluralities. The other proposal is that the relata in a symmetric relation should be taken to occupy the same position. But consider the relation R that holds of a, b, c, d when a, b, c, d are arranged in a circle (in that very order). Then the following represent the very same state s: (i)

Indeed, from the metaphysical standpoint of positionalism, it seems inevitable, whenever R is any binary relation and s is the completion of that relation under the assignment of an object a to one of its positions α and of a distinct object b to its other position β, that a should occupy the position α in s, though not the position β, and that b should occupy the position β, though not the position α. Indeed, unless this were so, unless a and b were the exclusive occupants of their respective positions, then it would be hard to know how the notion of completion for the positionalist was to be understood. Consider now the state s' that is the completion of R under the reverse assignment of a to β and b to α. Then a will *not* occupy the position α in this other state s'; and so s' cannot be the same as s. Thus, no relation R, under the positionalist view, can be symmetric.

Is there an alternative account of neutral relations for which these difficulties do not arise? Even if we attend to only the first of the two difficulties, it is hard to see how such an account might go. For, as we have seen, any satisfactory nonstandard notion of exemplification must involve other relata besides the relata of the relation at hand; and these other relata must somehow serve to indicate the manner in which the relation is to apply to the given relata. Yet what could possibly fit the bill other than the argument-places of the given relation? Neutrality can be earned at the expense of ontology. But how is it be acquired free of charge?

In considering this question, it will be helpful to work with the notion of completion rather than exemplification (the topic of exemplification will be taken up in the next section). We are after a notion of completion that (i) takes only the given relation and its relata as arguments, (ii) is order-insensitive, and (iii) yields all relational complexes as values. When corresponding requirements

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Rabcd; (ii) *Rbcda*; (iii) *Rcdab*; (iv) *Rdabc*. Let α, β, γ, δ be positions corresponding to the first, second, third, and fourth argument-places of R (which may be the same). Then by (i), a, b, c, d will occupy the respective positions α, β, γ, δ; by (ii), b, c, d, a will occupy the respective positions α, β, γ, δ; and similarly for (iii) and (iv). Therefore, a, b, c, d will each occupy all four positions α, β, γ, δ. By the same token, a, b, c, d will each occupy all four positions α, β, γ, δ in the state represented by *Racbd*; and so it will be impossible, on this view, to distinguish between the states represented by *Rabcd* and *Racbd.*

were imposed on the notion of exemplification, we saw that they could not be met. But, in the present case, there is a way out.

We naturally take completion to be a single-valued operation, one that yields a single complex in any given application to its arguments. But what is to prevent us from taking it to be a *multi-valued* operation, one that is capable of yielding several different complexes in any given application? We may then take "the" completion of a neutral relation R by the objects a_1, a_2, . . . to be a *plurality* of complexes, one for each way in which the relation might be completed by the objects.[11] So, for example, the state of Don José's loving Carmen will be a completion of the amatory relation by Don José and Carmen, as will the state of Carmen's loving Don José, though neither can now be said to be *the* completion of the relation and its relata.

Of course, even the positionalist or the standard theorist can grant that a given relation will give rise to a diversity of completions in its application to given relata. However, they suppose that there is an explanation of what each of those completions is in terms of how it is formed from the given relation and its relata. Thus, the standard theorist will say that the different completions are formed from the relation by applying it to its relata in one order rather than another, while the positionalist will say that the different completions are formed from the relation by assigning the relata to different argument-places.

The antipositionalist, on the other hand, will deny that there is any further differentiation of this sort to be made. It is a fundamental fact for him that relations are capable of giving rise to a diversity of completions in application to any given relata and there is no explanation of this diversity in terms of a difference in the way the completions are formed from the relation and its relata.

Our previous pictures of relations must therefore be abandoned since there are now no argument-places or orientations by which the different completions might be distinguished. A relation should now be taken to be a simple unadorned body or "magnet,"

[11] There are two ways to construe the notion; for we may require that all of the objects be used in completing a relation or we may allow that only some of them are used. The difference is not too important, but in what follows we shall usually abide by the first construal.

to which the relata of the relation are taken to be attached by some sort of invisible bond. Different configurations may then be formed from a given body and the relata, according to how they are attached. But there will be nothing in the body itself that can be identified as the parts or areas to which the different relata are meant to attach.

With completion so conceived, each of the requirements (i)–(iii) is clearly met. However, the account, as it stands, suffers from an enormous lacuna. For it provides us with no way of distinguishing between the different completions of a given relation and its relata. Yet clearly the state of Anthony's loving Cleopatra and the state of Cleopatra's loving Anthony are distinguishable; they are not merely two indiscernible "atoms" within the space of states. But if these states are not to be distinguished by how they derive from the given relation and its relata, then how are they to be distinguished?

It is a symptom of the same shortcoming that we are still unable to provide an adequate account of exemplification. We can say that a given relation R holds of the objects $a_1, a_2, \ldots$ if *some* completion of R by $a_1, a_2, \ldots$ holds or if *all* such completions hold. But we have no way of saying that R holds in one way as opposed to another. The capacity for differential application is lost.

I would like to suggest that this further problem can be solved by making use of the idea that one state is the completion of a relation *in the same manner* as another. Intuitively, this is a relation that holds between a state s and its m constituents $a_1, a_2 \ldots, a_m$, on the one side, and a state t and its m constituents $b_1, b_2, \ldots, b_m$, on the other, just in case s is formed from a given relation R and the relata $a_1, a_2 \ldots, a_m$ in the same way in which t is formed from R and the relata $b_1, b_2, \ldots, b_m$.[12] Thus, each of $a_1, a_2 \ldots, a_m$ will, from an intuitive point of view, occupy the same positions in s as $b_1, b_2, \ldots, b_m$ occupy in t; the constituents on each side will be similarly "configured" in their respective states. So, for example,

[12]There are somewhat different ways in which this comparative notion of completion might be understood. Must all of the b_i's be distinct? And can the a_i's be the same when the corresponding b_i's are distinct? I suggest that the answers to both questions be taken to be no.

if s_0 is the state of Anthony's loving Cleopatra, and t_0 is the state of Abelard's loving Eloise, then s_0 will be a completion (of the amatory relation) by Anthony and Cleopatra in the same manner in which t_0 is a completion by Abelard and Eloise, since Anthony and Abelard will both occupy the position of lover in their respective states while Cleopatra and Eloise will both occupy the position of beloved.

We are now able to distinguish between the different completions of a given relation and its relata. For they will differ in the relative manner in which they are configured. Suppose, for example, that s_0' is the state of Cleopatra's loving Anthony. Then we may distinguish between s_0 and s_0' on the grounds that s_0 is the completion by Anthony and Cleopatra in the same manner in which t_0 is the completion by Abelard and Eloise, while s'_0 is not. Thus, the different states will be distinguished, not by how they derive from the given relation and its relata, but by how they are interconnected.

We are also able to distinguish between the different ways a relation can hold; for we may use a given state and its constituents as an exemplar of the manner in question. Suppose, for example, that we wish to say that the amatory relation holds of Anthony and Cleopatra in the manner characteristic of *loving* rather than *being loved.* Then using t_0 above as an exemplar, we may say instead that there is an (actual) state s that is a completion by Anthony and Cleopatra in the same manner in which t_0 is a completion of Abelard and Eloise.

Now that the account is fleshed out, we see that it is able to avoid the difficulties in the positionalist view. There is, in the first place, no ontological problem. For the account makes no appeal to argument-places or the like. It is true that the antipositionalist must appeal to states or to some other form of relational complex. But this is relatively benign, since it is not so clear that exemplification should be understood independently of completion and since the states are not themselves involved as relata in the exemplification of any given relation.

In the second place, there are none of the previous difficulties over strictly symmetric relations. For it is not as if the relations came preequipped with fixed positions through which any completion must be mediated. So since there is no choice as to where the relata should go when they are combined with the relation, there is no possibility of different choices leading to different outcomes.

But still it might be wondered: how come, in certain cases of a binary relation combining with two relata, there is only one outcome and not two? Our previous picture of a relation as a solid body may be somewhat misleading in this regard since each of the relata will have its own location in the configuration that results from attaching them to the body, and hence the result of interchanging two relata would always appear to yield a different configuration. However, the parallel with other forms of composition may help to make clear how the outcome might be unique. Consider, for example, the operation for forming a doubleton $\{a, b\}$ from its members a and b. This operation will "combine" with its arguments to form a single set (there being no difference between $\{a, b\}$ and $\{b, a\}$). It is in much the same way, then, that we may conceive of a symmetric relation combining with its relata to form a single complex.

The antipositionalist view has another, related, advantage over the positionalist view. For it is able to account for the possiblity of variable polyadicity. It is plausible to suppose that certain relations are variably polyadic in the sense that they can relate different numbers of objects (and not merely through some of those objects occurring several times as a relatum). There should, for example, be a relation of suporting that holds between any positive number of supporting objects a_1, a_2, . . . and a single supported object b just when a_1, a_2, . . . are collectively supporting b.

Under the positional view, it is hard to see how any relation could be variably polyadic; for the number of argument-places belonging to a relation will fix the number of relata that may occupy them. Under the antipositionalist view, however, there is no impediment to a relation being variably polyadic, since there are no preordained positions by which the number of arguments might be constrained. Again, the comparison with the formation of sets is instructive. For just as the set-builder is capable of uniting any number of objects into a set, so a variably polyadic relation will be capable of uniting different numbers of arguments into a relational complex.

5. Antipositionalism Defended

I now wish to consider three difficulties with the antipositionalist view. The first is that the view cannot properly account for how we ordinarily express biased relationships; the second is that it does not provide a canonical account of exemplification; and the third is that it makes illegitimate use of the notion of co-mannered completion. Seeing how these difficulties can be met will help deepen our understanding of the view.

The first difficulty arises from our account of what it is for a relation to hold in a particular manner. For this was taken to be relative to some particular state and its constituents as an exemplar of the manner in question. Yet surely in saying that one person loves another we are not making reference to any other amatory state or to any other lover or his love. How then, under the anti-positionalist view, is this possible?

This problem may, I believe, be solved by seeing our ordinary reference to relations as the product of a two stage process, one ontological in character and the other linguistic. Let us describe each in turn.

Since *co-mannered completion* is an equivalence relation, it will give rise to corresponding abstracts, the manners of completion. A manner of completion will be what is common to all those cases of a state and its constituents that are co-mannered just as a length is (or is often supposed to be) what is common to all those bodies that are equally long. Thus, manners of completion will emerge as the results of abstraction.

Consider now the reference state t_0 of Abelard's loving Eloise. We may identify the manner of completion characteristic of *love* by means of the description "the manner in which t_0 is the completion of the amatory relation by Abelard and Eloise." Once we have identified the manner in this way, we may use the description to "fix the reference" of a term 'L' for the manner in much the same way that it has been supposed that we may fix the reference of a metre by reference to the standard metre. But 'L' will now refer directly to the manner, without the mediation of any descriptive content; and in order to say that Anthony loves Cleopatra, we may say that the amatory relation holds of Anthony and Cleopatra in the manner L—and all allusion to the reference state and its participants will be lost. Thus, predicates, as ordinarily understood, may be regarded as the results of rigidification.

Of course, if we are to evaluate the ensuing claim that Anthony loves Cleopatra in counterfactual circumstances, then this requires that we understand what the manner of completion L is to be in those circumstances; we must be able to identify the manner of completion from one world to another. But this would appear to give rise to no special difficulty in the present case, for the relation of co-mannered completion is not subject to variation across possible worlds and so we can always take L to be the manner of completion of t_0 and its constituents, or whatever other exemplar might take its place, regardless of what the circumstances might be.

The resulting antipositionalist view is, of course, committed to manners of completion. But the ontology is not objectionable in the way that the ontology of the positionalist was. For *he* was obliged to treat positions as basic objects, of which no explanation in other terms could be given and to which appeal must be made in accounting for the relational facts. But the antipositionalist can treat manners of completion as derivative objects, as the products of abstraction rather than as part of the apparatus of completion. *His* commitment to them need require no more than a general commitment to abstraction.

The second problem is to provide a canonical (or fully adequate) account of exemplification. If differential application can be understood by comparing one completion with another, then this suggests that the notion of exemplification might be understood by comparing one exemplification with another. Accordingly, we might take the canonical notion of exemplification to be one that holds between a neutral n-ary relation R and *two* n-tples of objects $a_1, a_2, \ldots, a_n$ and $b_1, b_2, \ldots, b_n$, and that holds of these items just in case R holds of $a_1, a_2, \ldots, a_n$ in the same manner in which it holds of $b_1, b_2, \ldots, b_n$ (we might say, for example, that the relation of Vertical Adjacency holds of the cat and the mat in the same manner in which it holds of the cup and the saucer).[13] Thus, the application of a relation to its relata is relativized, not to the argument-places of the relation, as under the positionalist view, but to other relata of the relation, which go proxy, as it were, for the argument-places themselves.

[13]There are ambiguities in what it is for exemplification to be co-mannered that do not arise for the notion of completion. Suppose, for example, that *a* and *b* love one another but *c* bears unreciprocated love towards *d*. Then do we say that the amatory relation applies to *a* and *b* in the same manner in which it applies to *c* and *d*? If co-mannered exemplification is to be an equivalence relation, then we had better say no; and similarly for other cases of this sort.

However, this conception of exemplification is not really adequate. For suppose that all amatory relationships were reversed (so instead of *a*'s loving *b*, *b* would love *a*). Then the relative exemplicatory facts would remain the same and yet, intuitively, the exemplification of the various relations would be different.[14] This therefore suggests that we should take the notion of exemplification to be one that holds of certain objects in a given manner L. But the notion of a manner must then be explained in terms of abstraction, since it does not itself have a formulation in terms of the most basic notions of the theory.

We see that, in the case of antipositionalism, there is no clear choice as to what we should take the canonical notion of exemplification to be: we can either adopt a notion of exemplification that is basic but not comprehensive or one that is comprehensive but not basic. However, I do not take this to be an objection to the view but merely an interesting aspect of it; and, indeed, it suggests that the notion of exemplification cannot be properly explained without making reference to manners and hence to the completions from which they are abstracted. Thus, the theory of exemplification will not have the same degree of autonomy under antipositionalism as it has under other approaches.

The third, and most significant objection, is that we are not entitled to take the notion of co-mannered completion for granted but should explain it in other terms. But this would appear to require that it be explained in terms of manners, completions being co-mannered when their respective manners of completion are the same; and consequently, the distinctive aspect of antipositionalism will be lost.

I agree that *co-mannered completion* is not the sort of notion that should be taken as a primitive. But rather than define it "horizontally" in terms of manners of completion, I suggest that we should define it "vertically" in terms of the notion of substitution. For to say that s is a completion of a relation R by $a_1, a_2 \ldots, a_m$, in the same manner that t is a completion of R by $b_1, b_2, \ldots, b_m$ is simply to say that s is a completion of R by $a_1, a_2 \ldots, a_m$ that results from

[14]There are perhaps relations for which reversal would not result in different circumstances. Thus, someone who did not believe in time's arrow might maintain that the reversal of all temporal relationships would leave us with the very same temporal reality. However, it would be bizarre in the extreme to hold such a view for all relations whatever.

simultaneously substituting $a_1, a_2 \ldots, a_m$ for $b_1, b_2, \ldots, b_m$ in t (and vice versa).[15] Thus, we should see the antipositionalist's notion of co-mannered completion as a special case of the more general notion of substitution.

It is important, in this connection, to appreciate that we have a general understanding of substitution, one that is not tied to any particular domain of application. Thus, we can understand what it is to substitute one expression for another, or one element of a set for another, or one constituent of a material object for another, and so on. And it is upon this general notion of substitution, which we may already take to be understood, that the antipositionalist may base his account.[16]

But the previous objection may then be restated as follows. Let us grant that there is a general notion of substitution. Still, for any particular domain of application, there should be an account of what it is to substitute one thing for another in terms of the structure of the entities upon which the substitution is being performed. Consider, for example, the case of expressions (sequences of letters). I may substitute 'o' for 'i' in 'dig' to get 'dog'. But there is an underlying structural account of how the substitution works. For 'dig' is the concatenation of the three letters 'd', 'i', and 'g', while 'dog' is the corresponding concatenation of the letters 'd', 'o', and 'g'. Thus, instead of concatenating with 'i', one concatenates with 'o'; and it is in terms of the structure of the expression as a concatenation of letters that one explains what the result of the substitution will be.

Now the standard and positionalist theorist can certainly give an account of substitution into relational complexes in structural terms. Suppose, for example, that we wish to explain the result of substituting Abelard and Eloise for Anthony and Cleopatra in the state of Anthony's loving Cleopatra. Then, on the standard view,

[15]Under certain conditions, the simultaneous substitution of many objects may itself be defined in terms of the single substitution of one object, and so the relatively complex notion of substitution can be reduced to a much simpler notion. It should be noted that, given the notion of substitution, we can take as our primitive notion of completion the notion of a state being the completion of a relation by *some or other* objects. That a state is the completion of a relation by certain *particular* objects can then be determined through which substitutions make a difference to what it is.

[16]The matter is further discussed in Fine 1989, though within a very different context.

the initial state will be the completion of the relation *loving* by Anthony and Cleopatra while the resultant state will be the corresponding completion of *loving* by Abelard and Eloise. And, under the positional view, the initial state will be the completion of the amatory relation under the assignment of Anthony to *Lover* and Cleopatra to *Beloved* while the resultant state will be the corresponding completion of the amatory relation under the assignment of Abelard for *Lover* and Eloise for *Beloved*.

However, so the objection goes, the antipositionalist cannot provide a structural account of substitution of this sort. For the relevant structure of the initial state is given by a manner of completion; and this itself must be understood, via abstraction, in terms of substitution. Thus, it must for him be a brute fact that the one state results from the other by substitution; and there can be no explanation of this fact in terms of the underlying structure of the states in question.

The antipositionalist may concede that the general notion of substitution must be some sort of primitive; and he may also concede that, for many domains, there is a structural explanation of the substitutive facts. But the question we need to press on the objector is why he thinks that there should always be an explanation of this sort.

Now the only plausible answer to this question that I can think of is that the general notion of substitution is not primitive after all but is to be understood in terms of the general notion of a structural operation. Thus, it must be supposed that we have a general conception of the kind of structure that is conducive to substitution and that is in terms of this general notion that we understand what substitution is. So, for example, we might say that t is the result of substituting b for a in s if there is a structural operation S that in application to a gives s and in application to b gives t. Given such an account of substitution, it would then not be unnatural to suppose that, in the case of any given substitutive fact, there should be an independent account of the structural operation that rendered it possible.

However, it is not at all clear to me that we should understand the general notion of substitution in terms of the general notion of a structural operation. For we can equally well define the notion of a structural operation in terms of substitution. For we can say that S is a structural operation if it respects the facts of substitution, that is, if its application to *b* is always the result of substituting *b* for *a* in its application to *a* (as long as the application to *b* does not already contain *a*). Indeed, the definition of structural operation in terms of substitution strikes me as more intuitive; and it is to be preferred on the general grounds that the notion of substitution (which applies only to the "ground-level" objects) is of lower logical type than the notion of a structural operation.

We should not be misled, in this connection, by the fact that a structural account of substitution is, in some sense, always possible. The antipositionalist, for example, may concede that there is a structural operation, a manner of completion, that takes the amatory relation and the objects *a* and *b* in that order into the state of *a*'s loving *b*. However, he will insist that we explain what the structural operation is in terms of substitution rather than the other way round; and something similar might be said in any other case. Thus, the mere fact that there cannot be substitution without structure does not mean that it is by reference to the structure that the possibility of substitution should be explained.[17]

6. Antipositionalism Developed

I shall now try to bring out some of the ways in which antipositionalism leads to a distinctive view on the nature and behavior of manners of application or completion and of positions.

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[17]David Lewis and Cian Dorr have raised another objection against the antipositionalist. For even if he can eliminate the bias from all other relations, will he not need to accept a biased relation of co-mannered completion? It is not clear to me that he is under the same obligation to eliminate the bias in this case. But even if he is, it can be done. Let M be a (biased) relation that holds of R, t, b, s, and a when R is a neutral relation, a and b are distinct objects and, for some object c distinct from both a and b, t is the completion of R by b and c in the same manner in which s is the completion of R by a and c. Let C be a (biased) relation that holds of s and a when a is a (possible) state that contains a as a nonrelational constituent; and let S be a property had by s when s is a state. Given any biased relation T, let T^* be its symmetric closure, that is, the relation that holds of $a_1, a_2, \ldots, a_n$ when T holds of $a_{i_1}, a_{i_2}, \ldots, a_{i_n}$ for some permutation $i_1, i_2, \ldots, i_n$ of $1, 2, \ldots, n$. Then $M(R, t, b, s, a)$ may be defined by:

$$M^*(R, t, b, s, a) \ \& \ C^*(t, b) \ \& \ C^*(s, a) \ \& \ S(t) \ \& \ S(s).$$

Since the relations appearing in the definiens are all "symmetric," we may dispense with M in favor of the corresponding neutral relations. An extension of the argument can then be made to accommodate the more general case.

Although the antipositionalist does not appeal to the notions of a position or of a manner of completion in his account of relations, he is still able to reconstruct these notions within the confines of his theory. For, as we have seen, he may treat manners of exemplification or completion as abstracts with respect to the equivalence relation *same manner of completion*. And a similar treatment may be given of *position*. For we may define a in s is *co-positional* with b in t by: s results from t by a substitution in which b goes into a (and vice versa). Positions can then be taken to be the abstracts of constituents in relational complexes with respect to the relation *co-positionality*.

But under any such reconstruction, it would appear that positions and manners of exemplification must ultimately be individuated in terms of the states and constituents by which they are made manifest. Suppose, for example, that we ask: what is the manner in which the amatory relation holds of Don José and Carmen? Then we may push the question back a bit, for we may say that it is the same manner in which the amatory relation holds of two other individuals. But in the last analysis we must simply identify the manner as that which is exemplified by a particular amatory state and its constituents. And similarly for positions.

The point may again be made vivid by reference to our earlier picture of relations as solid bodies that get bound to their relata. For in the resulting configurations, we may distinguish the roles played by the different relata and the manner in which they are bound to the relation. But there is nothing in the body itself—such as a hole or orientation—to indicate what that role or manner might be.

The standard view also treats positions and manners as derivative entities, but it does not identify them in terms of states. For the manner in which a given relation applies to certain arguments is given by their order; and the argument-places of a relation are given by their numerical position (as first, second, third, etc). Reference to states can also be avoided under the positionalist view, since the manner in which a relation holds of certain arguments will be given by an assignment of the arguments to the positions of the relation, while the positions themselves are simply taken as given.

Related remarks pertain to the individuation of the relational complexes. Suppose the antipositionalist is asked to identify the state of Anthony's loving Cleopatra. Then he may say that it is a completion of the amatory relation by Anthony and Cleopatra and even that it is *the* completion of the relation by Anthony and Cleopatra in the same manner as another amatory state is the completion of *its* respective constituents. He can also, in a fashion, distinguish the state from its converse, the state of Cleopatra's loving Anthony, since each is obtainable from the other through the interchange of constituents. But if he is asked to identify the state absolutely, independently of any other state, then he will be stumped—for there is nothing he can say to distinguish the given state from its converse. It must somehow be manifest from the state itself that it is the state that it is and not the converse.[18]

Under the standard or positionalist views, by contrast, each state can be identified as the appropriate kind of completion. Thus, the state of Anthony's loving Cleopatra will be taken, under the standard view, to be the completion of the relation *loving* by Anthony and Cleopatra, and will be taken, under the positionalist view, to be the completion of the amatory relation under the assignment of Anthony to *Lover* and Cleopatra to *Beloved.* Thus, states can be straightforwardly identified in terms of their relations and relata.

Positionalism and antipositionalism do not merely differ on the status of positions but also on their behavior. Consider again the state s of block a being adjacent to block b. Let s' be the state that results from substituting b for a and a for b in s. For the antipositionalist the states s and s' will be the same, whereas for the positionalist they will be distinct. This difference in the facts of substitution now leads to a difference in the behavior of positions.

To see why this is so, we need to consider two principles concerning the identity and difference of position. Say that an object a is a *constituent of* a complex if it is open to substitution, that is, if one can substitute another object for a within the complex.[19] The

[18] An even more radical view than the one I am inclined to adopt would take states or propositions as basic and treat relations as some kind of abstraction from them. A view of this sort is proposed and developed by van Fraassen (1982).

[19] It should not be thought that every part of a whole is a constituent. In particular, the neutral relation in a relational complex cannot sensibly be regarded as a constituent, since we can give no well-defined meaning to what it would be to substitute one neutral relation for another. Given the state of a's loving b, for example, we cannot say whether the result of substituting the relation of vertical placement for the amatory relation would be the state of a's being on b or b's being on a.

first principle then states a criterion for difference of position within a complex:

(1) If a and b are distinct (nonoverlapping) constituents of the complex s, then they occupy different positions within the complex, that is, the position of a in s is not the same as the position of b in s.[20]

The principle is plausible; for where a and b are two constituents of s, both may be removed from s to yield an abstract whose two "open" positions are the respective positions of a and b in s.

The second principle is a criterion for the sameness of position across complexes:[21]

(2) If $a_1, a_2, \ldots, a_n$ are the distinct (nonoverlapping) constituents of s and t is the result of substituting b_1 for a_1, b_2 for a_2, $\ldots$, and b_n for a_n, then each b_i in t occupies the same position in t as a_i occupies in s.

In other words, position is preserved under substitution. Again, the principle is plausible; for the result of substituting $b_1, b_2, \ldots, b_n$ for $a_1, a_2, \ldots, a_n$ in s may equally well be regarded as the result of removing each of $a_1, a_2, \ldots, a_n$ from their respective positions and inserting each of $b_1, b_2, \ldots, b_n$ into the positions formerly occupied by $a_1, a_2, \ldots, a_n$.

Plausible as each of these principles may be, they cannot both be maintained given the existence of symmetric complexes, that is, the existence of complexes whose identity is preserved under an interchange of constituents. For since the constituents of such a complex are distinct, they must occupy different positions within the complex by (1). If now we interchange the two constituents, the position of each constituent in the original complex will be the same as the position of the other consituent in the resulting complex by (2). But the original and the resulting complexes are

[20]It is worth noting that this and the following principle may be formulated using the relative notion of position, namely, "a in s has the same position as b in t," rather than the absolute notion, "the position of a in s.". However, the informal justifications of the principles appeal to the absolute notion.

[21]This principle may itself be derived from more basic principles. But the more refined analysis of the case need not concern us here.

the same, by symmetry; and hence each each constituent will have the same position as the other in that complex. A contradiction.

Thus, we must either reject the existence of symmetric relations or deny that principles (1) and (2) have universal application to relational complexes. The positionalist view, with its full-blooded commitment to an ontology of positions, would appear to require the acceptance of the principles and hence the rejection of symmetric relations. But under the antipositionalist view, we can, with much greater plausibility, accept the existence of symmetric relations and deny the principles.[22]

We might think of the present account of the application of relations as the outcome of adopting a successively stricter relativistic stance. We began with the standard conception of application, under which a relation applied to its relata in an absolute manner. This was replaced by the positional conception, under which application was relative to an assignment of the relata to the positions of the relation. But this conception operated with an absolute notion of position; and this has now been replaced with the relative notion of co-positionality or sameness of manner.

Under these transitions, the concept of relation has become successively simpler and the concept of application successively more complex. Thus, initially relations had a built-in bias, but were capable of applying directly to their relata; they then lost their bias in favour of argument-places, but applied only indirectly to their relata; and finally, they lost all internal complexity and only applied to their relata via a network of connections. The complexity has been transferred, as it were, from the internal structure of the relations to the outward apparatus of application and the concept of a relation has thereby been stripped to its core, without any of the trappings of bias or position by which it was previously encumbered.

The antipositionalist can therefore claim, with some justification, to have gotten hold of the very essence of our idea of a relation.

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[22]This means, of course, that the antipositionalist cannot satisfactorily reconstruct the positionalist's account of position. But since the account is in error, this is no great loss.

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