PREDICATE WORMISM
A QUINEAN ACCOUNT OF *DE RE* MODALITY

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Abstract
In 'Worlds away' W.V. Quine attempts to shew that possible worlds, unlike times, cannot provide robust continuity conditions for the sort of ordinary objects that we want to talk about. Quine thinks of individuals as 'worms' constructed as strings of events over times and worlds. Quine appeared to reject *de re* modality because he thought that no robust *de re/de dicto* distinction could be made without giving up the claim that all modality is a conceptual matter. I have tried to shew that the 'worm' theory of individuals enables a *de re/de dicto* distinction to be defended without having to give up this claim.

I was once approached by the Dean of Arts at my university with the suggestion that I become his successor. I suppose therefore that there is a sense in which I am a possible dean. There is undoubtedly controversy about what the *analysis* of such a statement should be, but it seems to me unquestionable that it is true. It is true that *I might have been a dean.* Indeed it is the sort of truth that can make a man lie awake at night, and no doubt a woman too. Are there limits to this? Might I have been an Englishman? Might I have had different parents? Might I have been a jar of marmalade? Suppose I cannot. Why is this? Well one might first say that I am a person, and a person is not a jar of marmalade. Just as a bachelor cannot be married and remain a bachelor, so I could not be a jar of marmalade and remain a person. The explanation of the necessity is simply the connection between the meanings of *person* and *jar of marmalade*. But a bachelor *could* become married. Of course if he does he's no longer a bachelor, but the individual thing which is now a bachelor could certainly become married. One can say that the bachelor goes out of existence, or one can say that the bachelor goes out of existence *qua bachelor*, but that is surely just a way of saying that the bachelor ceases to be a bachelor. Of course once he marries he can never again become a bachelor — but even if he does in fact marry he might not have married, and so might still have been a bachelor. In the same way, if I

had become a dean I could not fail to be a dean, being a dean is necessary to me *qua dean*. In fact you can take *any* feature of me, however ephemeral or accidental, and say that *qua having that feature* it is necessary for me to have that feature. So if there is a sense in which I might have been a dean but not a jar of marmalade it is not a sense which can be made clear merely by taking something about me, and pointing out that being a jar of marmalade is incompatible with it. The best example I know to bring out the importance of the difference between being a dean and being a jar of marmalade is one used many years ago by W.V. Quine, one of the first, and perhaps most persistent, critics of the coherence of quantification into modal contexts. In Quine 1960, p. 199, Quine asks us to suppose that rationality is necessary to mathematicians but not to cyclists, while two-leggedness is necessary to cyclists but not to mathematicians. The problem comes when we consider my friend Rod who is a cycling mathematician. It seems that Rod is necessarily rational and not necessarily rational; and that Rod is necessarily two legged and not necessarily two legged. And this of course is contradictory. Understood as what are called *de dicto* claims there is no problem. There is simply a necessary connection between mathematics and rationality, or between cycling and two-leggedness. The problem is how to understand the situation if necessary properties are directly attributed to things themselves in what are called *de re* claims; i.e. if they attribute necessary rationality and necessary two leggedness to Rod himself. So if we are to make sense at all of *de re* statements it seems that we cannot do it by looking at the connections between the meanings of words. For Quine 1960 this was a reductio argument against *de re* modality, and that was the end of the matter. Yet with the advent of possible-worlds semantics Quine felt obliged to reconsider the problem, which he did in a paper called 'Worlds Away' (Quine 1976). It is this later paper which I propose to discuss.

In a possible worlds framework one might question whether we have a problem in the first place. For in a possible worlds framework the meaning of a predicate is simply a function which associates with each world the set of things which satisfy the predicate in that world. This set is sometimes called the *extension* of the predicate in each world. So we look at the extension of *mathematician* and we look at the extension of *rational*. We note that in every world the extension of *mathematician* is a subset of the extension of *rational*, and this justifies a necessary connection between rationality and mathematics. But to justify the attribution of necessary rationality to a mathematician in a world w we would first have to obtain the extension of *mathematician* in w, call this set A. Then we would need to take each member a of A and determine whether a is in the extension of *rational* in every world, *even in those worlds in which a is not a mathematician*. And this might give a quite different result from what happens in the former case.

This is all very well, but without a clear notion of an individual, it may seem unhelpful, if for no other reason than that it appears to presuppose the coherence of speaking of the same individual as appearing in more than one world. In Quine 1976, Quine isn't objecting to worlds as such. He is attempting to shew that, even if you have them, worlds, unlike times, cannot provide robust continuity conditions for the sort of ordinary objects that we want to talk about. Quine begins his paper by explicitly invoking the analogy between worlds and times:

> Identifying an object from world to possible world is analogous, it has been suggested, to identifying an object from moment to moment in our world. I agree, and I want now to develop the analogy. (1976, p. 859)

Like Quine I will restrict my discussion to physical objects. Quine's conception of a physical object is given in the second paragraph of his paper:

> Consider my broad conception of a physical object: the material content of any portion of spacetime, however scattered and discontinuous. Equivalently, any sum or aggregate of point-events. The world's water is for me a physical object, comprising all the molecules of H_2O anywhere ever. There is a physical object part of which is a momentary stage of the silver dollar in my pocket and the rest of which is a temporal segment of the Eiffel Tower through its third decade.

I am not at all sure whether this is a viable metaphysics, and indeed I am not at all sure precisely how it is to be understood. For my limited purpose however this may not matter much, since I am not in the business of defending this or any other metaphysical framework, but only in considering whether what Quine says in his 1976 article can be used to lead to an account of *de re* modality which is compatible with the metaphysical framework that he appears there to be endorsing. Quine, as I present him, thinks of individuals as 'worms' construed as strings of events over times. In this modelling of Quine's framework I am taking the 'point-events' as primitive. A good way to think of a point-event is as a 'pixel' on a television or computer screen. Of course, as when a television set is malfunctioning, not all successions of pixel patterns will be structured in a way which makes sense to human viewers, but they will all be possible successions nonetheless. In order to structure my discussion I shall distinguish six views by the following labels:

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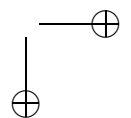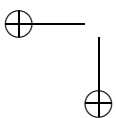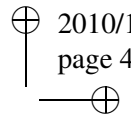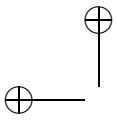
    Four-dimensional stageism
    Four-dimensional counterpart wormism
    Four-dimensional predicate wormism

    Five-dimensional stageism
    Five-dimensional counterpart wormism
    Five-dimensional predicate wormism

Although I will be distinguishing stageism from wormism, all these 'isms' presuppose a metaphysics in which individuals are worms made up out of 'stages', which are themselves collections of point events. I am tempted to call this basic metaphysics 'pixel reality'. Perhaps it is a version of what has been called 'mereological universalism' (van Cleve 2008) but I do not want to commit myself to identifying it with anyone but Quine. By 'four-dimensionalism' I mean a view within this metaphysics according to which things have *temporal* parts — things like 'me at time t_1' or 'Mt Cook at time t_2, and so on.[1] Five-dimensionalism is the view that things also have *modal* parts. So that you can have 'Mt Cook at time t_2 in world w_3', and so on. By a *strong* four-dimensionalist I will understand a four-dimensionalist who holds that although things have temporal parts they do not have modal parts. A weak four-dimensionalist holds that they have temporal parts and also might have modal parts. For the purpose of this paper I will take Sider 1996, 2000 and 2001 to be a strong four-dimensionalist. (If I haven't understood him correctly it will not affect any of my claims.) I take Lewis 1986 to be a five-dimensionalist, and therefore a weak four-dimensionalist.

    In 'Worlds Away' Quine is therefore a four-dimensionalist. It may well be that *in propria persona* he is a strong four-dimensionalist, but the burden of his paper is to play along with assuming five-dimensionalism for the purposes of argument, since he is trying to shew that the problem with worlds arises even if you grant a mereological metaphysics which admits them. On p. 860 Quine describes the extension of his ontology to worlds by saying that trans-world individuals are "sums of physical objects of the various worlds, combining denizens of different worlds indiscriminately." The difference between four and five-dimensionalism arises in the context of the correct explanation of modality. A criticism of strong four-dimensionalism is that, while it may allow for an explanation of temporal properties in terms of temporal parts, it does not allow for an analogous explanation of modal properties.

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[1] I have some sympathy with A.N. Prior's dismissal of "pseudo-entities like 'me at t' and 'me at t''". (Prior 1967, p. 169) The problem with these momentary things is that their identification appears to require 'ordinary' continuing things in the first place, though Sider 2001, p. 210, argues that even if so that does not entail that continuants are *metaphysically* basic. (Also *op. cit.* p. 60.)

By allowing modal parts a five-dimensionalist is able to explain modal properties in a way exactly analogous to the way a four-dimensionalist explains temporal properties.

Assume that there are metaphysically simple 'point-events' which exist at just one time. A four-dimensional *worm* is a collection of these. Some of them might exist at the same time, as say the many parts of Mt Cook at t_2. The collection of all of Mt Cook's parts at t_2 would be called a *stage* (or *manifestation*) of Mt Cook. Mt Cook would have manifestations which exist at different times. The difference between stageism and wormism (though not always discussed under those names) is acknowledged by both Sider (2001, p. 209f) and Lewis (1986, p. 217) to be a matter of semantics not of metaphysics — that is to say it is not a difference about what there is. While both stageists and wormists agree about what there is, stageism, whether four-dimensional or five-dimensional, holds that the predicates of our language apply to stages. Wormism, whether four or five-dimensional, holds that the predicates apply to the worms themselves.[2] Quine is a wormist, while both Lewis and Sider are stageists. Sider is unsure whether or not the distinction is important. Lewis is more sympathetic to temporal (four-dimensional) wormism than to modal (five-dimensional) wormism.

For a four-dimensional stageist the problem is what to say about temporal predicates. To say that Mt Cook at t_2 has been climbed many times seems odd, because it is not *that* stage which has been climbed many times. Stageists solve this problem by the method of counterparts. The t_2 stage of Mt Cook has been climbed many times because there are many previous stages — many of its previous temporal counterparts — which are (in some absolute sense) climbed. On the worm theory, the theory that Quine advocates, the predicate applies to the worm. It is the whole Mt Cook worm which, at t_2, has been climbed many times.[3] Counterpart theory and the

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[2] Linguists have sometimes distinguished between 'stage-level predicates' and 'object-level predicates'. See Carlson 1978, Dowty 1979 p. 177 and Kratzer 1995. Some philosophers have followed these linguists. Thus Parsons 2005 argues that sortals apply to worms while non-sortals apply to stages. As I read Quine he is claiming that *all* predicates apply to worms. I am not myself convinced by the linguistic arguments, but they need not affect the present paper, since any stage predicate can be construed as applying to a worm at a time in a world solely in virtue of features of the manifestation of that world at that time — predicates like 'is in Wellington'.

[3] In set-theoretical terms 'having been climbed many times' can be modelled by the function which assigns to any time t the class of worms which have been climbed many times before t. Note that this is different from 'having been climbed many times before t_2'. *That* would be modelled by the function which assigns to any t the class of worms which have been climbed many times before t_2. Of course any worm will *at* t_2 satisfy the one function iff it satisfies the other.

worm theory are different in the case of stages which are stages of many
worms. What we say about modal and temporal properties of such stages
depends on the counterpart relation, where a stage may have more than one
counterpart at another time or in another world. On the worm view there are
different worms which *coincide* in the sense that they share the same stage.

An important distinction for this paper is the distinction between predi-
cate wormism and counterpart wormism. Counterpart wormism says that
the only worms that are eligible for predicates to apply to are worms whose
stages are linked by a counterpart relation.[4] Counterpart wormism, as I am
using the phrase, does not deny that there are worms which are not linked
by any counterpart relation, and admits such worms into its ontology. But
it does deny that predicates can apply to them, or at least that our ordinary
predicates can. For counterpart wormists, as for stageists, the counterpart re-
lations are somehow 'there' antecedently to the application of the predicates.
It might be supposed that four or five-dimensionalism requires counterpart
theory. Certainly stageism requires counterpart theory, and so does coun-
terpart wormism, by definition. But predicate wormism does not require
counterparts. In the passage quoted above, Quine is explicit that any tem-
poral worm, however discontinuous, counts as an object, and on p. 860 he
extends this to worlds:

> Thus quantification over objects across possible worlds does not re-
> quire us to make any sense of 'counterpart'.

He then insists that all these objects are in the range of the quantifiers. The
real work is done by the predicates. On p. 861 Quine writes

> We saw that in our own world the identification of a physical object
> from moment to moment makes sense only relative to the principle
> of individuation of one or another particular predicate — usually,
> though not necessarily, the predicate 'body' or one of its subor-
> dinates. Such cross-moment groupings are indifferent to the ac-
> tual quantification over physical objects, since the quantification
> respects all cross-moment groupings, however random. But they
> matter to the predicates. ... Since all sentences contain predicates,

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[4] Sider 2001, p. 225, suggests that for a wormist this is a relation of 'genidentity'. 'Sortal
wormism', of the kind espoused by Parsons (see footnote 2) is a compromise in which the
sortals provide the genidentity relation. But it shares with stageism the claim that since some
predicates — the non-sortals — apply to stages, *these* predicates need something — in fact a
sortal — to specify which stage the predicate applies to at another time or in another world.
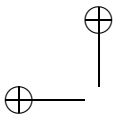
cross-moment identification of one sort or another is a crucial matter in its proper place.

Similarly, if one quantifies over objects across possible worlds, one needs cross-world identification relative to whatever predicate one uses in such sentences. Typically these predicates, again, will be subordinates of 'body'.

It is the role of predicates in Quine's account that I wish to concentrate on, since its importance still seems to me underappreciated in the literature. For instance, Markosian, 2008 (p. 343), speaking of the combination of the 'quark on your nose' and a 'quark near Alpha Centauri' says "But such an object, if it exists, is certainly not recognized by common sense." So not only do we have the predicate 'object' but also the predicate 'recognized by common sense'. From the Quinean perspective of this paper such items are undeniably in your ontology, provided that ontology satisfies the principles of mereology. But from that *nothing* follows about which worms are recognised by the predicates of common sense.[5] Here is a simple illustration. I will assume that there are two worlds, w_1 and w_2. I have said 'worlds' but it could be times, or whatever other indices are being used. Think of ♥ and ♣ as two different pixel patterns in w_1; and think of ■ and ❖ as two different pixel patterns in w_2. So there are four worms:
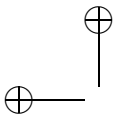
Domain Items

	w_1	w_2
a	♥	■
b	♣	❖
c	♥	❖
d	♣	■

Now imagine that a and b are both people, and suppose that *wins* is a predicate of people, and suppose that a wins in w_1, while b wins in w_2.

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[5] So, while such disputes as that between van Cleve 2008 and Markosian 2008 may have *semantical* significance they need not involve any disagreement about what exists.
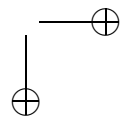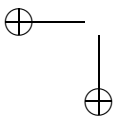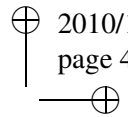
wins

w_1 w_2

a b

The predicate *wins* is true of a (and only a) in w_1, and of b (and only b) in w_2. a and b are themselves worms, and have a manifestation in each world. One might be tempted to refer to c as 'the winner', since at each world its stage is the stage of a person who wins in that world. One might then say that by necessity c satisfies the predicate *wins*. However this would be a mistake. For $c \neq a$, and $c \neq b$, and only a and b satisfy *wins* at any world. The predicate *wins* does not apply to the *stages* but only to whole worms, and c is not a worm which wins in *any* world, and so *a fortiori* it is not true that c wins by necessity. Contrast *wins* with what is sometimes called an 'essential' predicate like *human*.

human

w_1 w_2

a a

b b

It is often supposed that the use of predicates like *human* involves a metaphysical claim about an individual rather than merely claiming a logical relation between predicates. That at least seems part of what was driving Quine's early criticisms of quantified modal logic. (See for instance his dissatisfaction with 'Aristotelian essentialism', expressed on p. 154f of Quine 1953.) So it is important to recognise that, on the 'Worlds Away' model, the difference is also a fact about the meaning of the predicates. Neither c nor d are human in any world, but both a and b are human in both worlds. Note that this difference between humans and winners is solely determined by the particular meanings of *wins* and *human*, and has nothing to do with the domain of quantification. All that the *metaphysics* can tell you is that a and b and c and d (and many other worms) are equally good examples of 'what there is'. Note also that in each world the manifestation of both c and d is the manifestation of a human, for all that neither c nor d is itself human. This is parallel to what Quine tells us on p. 859 — that a time slice can be part of many time-extended physical objects.

In the example so far a and b exist in both w_1 and w_2, and essential predicates are usually held to entail only that they apply to things in all worlds
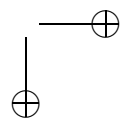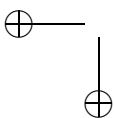
in which those things exist. From the worm perspective one may say that a
worm exists in a world or at a time iff it has a non-empty manifestation in
that world or at that time. So we could have the following model:

	w_1	w_2	w_3
a	♥	■	–
b	♣	–	♠

In this model there are three worlds (or times) w_1, w_2 and w_3. a exists in w_1
and w_2, while b exists in w_1 and w_3. The addition of w_3 obviously increases
the number of worms and a, b, c and d as previously defined in the two-
world model no longer exhaust the possibilities. In the three-world model,
in respect of these particular worms *human* would have to look like:

human

w_1	w_2	w_3
a	a	–
b	–	b

Both a and b satisfy *human* in every world in which they exist. Of course, on
the worm view nothing prohibits a predicate from applying at a time or in a
world where the worm has an empty manifestation. It is solely the meaning
of *human* which imposes this constraint. The following would be an equally
legitimate predicate:

human*

w_1	w_2	w_3
a	a	a
b	b	b

Note that *human** applies to a in w_3 *even though* a has an empty manifesta-
tion in w_3 and applies to b in w_2 even though that b has an empty manifes-
tation in w_2, and so does not entail the necessary existence of any human*.
All it does entail is that you can be a human* when you don't exist, though
you can't be a human when you don't exist. Or to put the point in another

way, the issue about whether you have to exist to be human is no more than whether 'human' means *human* or *human**.

The Quinean view has an easy way of shewing that the problem of 'transworld identity'[6] is a pseudo problem. Consider an individual (i.e. a worm) which is manifested by ♥ in w_1, and an individual which is manifested by ■ in w_2. Are these the same individual? From the 'worm' point of view there are at least three distinct worms:

	w_1	w_2
a	♥	■
a'	♥	–
a''	–	■

There is no *metaphysical* problem about a or a' or a''. They are all equally good worms. If the predicates we use apply to a in w_1 then we are talking about an individual which exists also in w_2. If they apply only to a' or to a'' we are talking about individuals which do not exist in both worlds. A debate about *de re* statements turns therefore into a debate about which of the infinitely many available worms we take our predicates to be applying to. The adequacy criteria will then turn on the truth values of statements of the kind I began with:

(1) I might have been a dean

(2) I might have been a jar of marmalade

If we are unsure what to say about the truth or falsity of (1) and (2) that may, on the Quinean account, betray no more than the indeterminacy of reference — that our speech habits are not precise enough to isolate just which worm we intend to be talking about. One might describe this as 'naturalised metaphysics' in the manner of Quine's 'naturalized epistemology' (Quine 1969). What it means is that there is no *philosophical* obligation to advance any theory of just which worms are well-behaved relative to any particular predicate, and in the present paper I advance no such theory.[7]

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[6] See for instance the discussion on p. 93 of Kaplan 1978, or p. 27 of Mackie 2006.

[7] Montague 1960 (p. 152, of Montague 1974) makes the point clearly that the metaphysical project of specifying the ontological status of entities of a certain sort must not be confused with the project of *defining* those entities.

We can at last consider the purported way in which the difference be-
tween times and worlds bears on individuation. Lewis prefers stageism to
wormism for both times and worlds.[8] But he seems more sympathetic to
temporal worms than to modal worms, on the ground that there are fewer
natural counterpart relations for temporal continuity than for modal continu-
ity. This is because temporal counterparts are related to what does happen,
whereas modal counterparts are only constrained by what logically *could*
happen. Change over time, at least in our world, seems constrained in ways
in which change from world to world is not. Both Lewis 1986 (pp. 214–220)
and Sider 1996 argue that while temporal worms need not cause trouble
(because there are natural counterpart relations which determine 'identity
through time') there are too many modal counterpart relations to provide
analogously robust restrictions on the available five-dimensional worms. On
p. 217f of Lewis 1986 Lewis refers to Quine's article, but appears to treat
Quine as a stageist, so that a predicate like *human* takes the *stage* to be a
person. Lewis does not seem to consider the possibility that according to
Quine it is only the whole worm which could be a person.

Nevertheless Quine, like Lewis, also mounts an argument against worlds
on the basis of continuity. In his case it is part of an argument that the
parallel between times and worlds makes clear why worlds will not do for
continuants what time will do. On p. 861 Quine points out that most ordinary
temporal reidentification depends on individuals being 'bodies', and that the
individuation of bodies turns on "continuity of displacement, distortion, and
chemical change." He then goes on

> These considerations cannot be extended across worlds, because
> you can change anything to anything by easy stages through some
> connecting series of possible worlds. The devastating difference
> is that the series of momentary cross-sections of our real world is
> uniquely imposed on us, for better or for worse, whereas all manner
> of paths of continuous gradation from one possible world to another
> are free for the thinking up.

The passage is curious because earlier in the paper Quine has made it clear
that, as far as ontology is concerned, temporal 'objects' are also 'free for the
thinking up'. The thrust of Quine's paper is not the ontological difference

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[8] My concern in this paper is not to adjudicate between these two approaches, but merely
describe how Quine's worm approach handles *de re* modality. Nor have I any comments to
make on how the two approaches affect questions about the relation between individuals (like
statues) and the material of which they are made. (On such issues see works like Baker 1997,
Rea 1997, and others.)

between world-bound and trans-world worms — for all that his ulterior motive may be to exclude worms whose manifestations are not all taken from the actual world. The issue concerns which of these worms count as bodies, because their manifestations are linked in a well-behaved way — by "continuity of displacement, distortion and chemical change." And it is here that Quine sees a difference between times and worlds. His reason, given in the passage from p. 861 quoted above, is that "you can change anything to anything by easy stages through some connecting series of possible worlds."[9] Certainly you can define such a worm, but 'easy stages' has to assume more. The problem is not that you can make up a worm in any arbitrary way which connects the manifestation of an object in one world with a manifestation of the same object in another world. Quine has already admitted the possibility of arbitrary discontinuous worms in the case of times, and has no problem with an ontology which includes such peculiar things. He is correct in his observation on p. 862 that it is 'discouragingly easy' to define a predicate which applies to any worm of manifestations. What rules out most worms in the present context is that they do not satisfy the predicate *body*. Quine's reference to 'easy stages' in the quoted passage has to mean that the move from one world to another for this worm satisfies the constraints of good behaviour imposed by *body*. But that implies that Quine must accept that there *are* such constraints. And such constraints seem plausible. Learning to apply a predicate seems to involve learning whether that predicate *would* apply to thus and such an individual whether or not it ever has or ever will. I know what it would be like for me to walk out of the room in the next five minutes whether or not I in fact do so. What is missing in Quine's paper is an argument that *predicates* cannot constrain modal 'change' in the way in which they constrain temporal change. If the things which satisfy the predicate only do so in a wellbehaved way in a well-behaved world there is no guarantee that any 'individual' — however free it may be for the thinking up — will be sufficiently well-behaved to satisfy the predicate in question.

Here is one way in which you might link the temporal constraints, which Quine is so fond of, with the modal constraints that he eschews. Suppose one takes seriously the 'necessity of origin' account of essentialism,[10] and

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[9] Quine presumably has in mind examples like Chisholm's Adam/Noah case (Chisholm 1967), though Chisholm is concerned with the re-identification of a *person* from world to world, and the manifestation, in any given world, of a worm which is a person need not, for a wormist, be itself a person in the world in which it is a manifestation.

[10] See Kripke 1972, and the subsequent discussions of his proposal. It should not need stating that I am using this only as an illustration. It will almost certainly only cover some cases of *de re* claims. Chihara 1998 pp. 39–58 looks at Quine's argument in some detail and examines responses by Forbes 1985 and others.

suppose that one limits well-behaved individuals to those whose manifestations share a common initial segment in worlds which share a common time scale, and which perhaps have similar physical laws. What this means is that there was a time t^* such that a's manifestations in w_1 up to that time were the same as in w_2, and that a's world-restricted segments are temporally well-behaved. I am not claiming that this is the correct constraint, but I am claiming that Quine's talk of 'easy stages' assumes *some* constraints, and the example uses only resources that are available to him. More important of course is that the possibility of essentialism on this view is not a metaphysical matter, given to us by the world independently of how we categorise it, but is a consequence of the meaning of predicates like *body*. By which I do not mean to exclude the obvious fact that it is the nature of the world which makes the existence of a predicate like *body* possible, and indeed necessary. That we categorise the world in this way is because it is apt for such a categorisation. But still the immediate reason for *de re* modality on this view is a conceptual one dictated by the meanings of our predicates.

I have been taking it that Quine is a predicate wormist in the case of both times and worlds. That is why he has no need of a counterpart relation. Of course there is a sense in which each predicate *defines* a counterpart relation in that where a is a worm which satisfies a predicate F then all of a's manifestations might count as F-counterparts; though even here that can be misleading if a predicate F can apply to two distinct worms a and b which have a common stage. In such a case the future stage of a can be different from the future stage of b even though the present stage of a is the very same as the present stage of b. It is therefore unfortunate that on p. 862 Quine uses language which suggests stageism, or at least modal stageism on top of temporal wormism — that is to say his language might suggest that predicates apply to modal stages which are temporal worms:

> The quantification '$(\exists x)$ nec Fx' says that among the objects fulfilling 'F' in our world there is some one (among perhaps many) all of whose counterparts in other possible worlds fulfill 'F'. (p. 862)

If this is Quine's position then perhaps it does open the way for an argument of the kind used by Lewis and Sider based on the difference between temporal and modal counterpart relations. However, if this is Quine's position he has already built in a disanalogy between times and worlds. Yet it is precisely this analogy that Quine claims to be exploiting. Quine suggests that we might get help on the problem of isolating which worms the predicates apply to if we could find predicates which apply to just one thing, and always to the same thing.

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> The limit of this strategy, if it can be managed, is a uniquely fulfilled
> predicate, true of just a single object whose counterparts are all sup-
> posed to fulfill 'F'; for then there is just the one object demanding
> definition of cross-world identity. (*loc. cit.*)

This suggests that Quine has in mind the possibility that, for every predicate
F and every a that is F, there is in our language a predicate G which is
always true of a and a alone, and that such predicates define the acceptable
F-worms. The requirement that there be such a G for every a which is F
seems to me both implausible and unnecessary, and it is clear that Quine uses
it only by way of *reductio*.

Quine's final observation concerns the possibility of limiting the possible
worlds, after the fashion of Jaakko Hintikka — he cites Hintikka 1967 — to
those involved in propositional attitudes, where paths between belief worlds
are not 'free for the thinking up'. But given that, as we have seen, for Quine
temporal worms, even in the actual world, *are* 'free for the thinking up', it
is difficult to see how such a restriction could come to the rescue, and Quine
seems justified in declining this assistance.

I have not in this paper made any claims about whether a worm meta-
physics is the *correct* way of accounting for *de re* modality, or indeed about
whether *de re* modality should be accounted for at all. All I have tried to
shew is that Quine's argument in 'Worlds Away', far from shewing that
worlds are worse off than times because of the problems of continuing iden-
tity, might actually indicate why he need not be so worried about *de re*
modality. Quine himself appeared to reject *de re* modality because he thought
that no robust *de re/de dicto* distinction could be made without giving up the
claim that all modality is a conceptual matter. I have tried to shew that the
'worm' theory of individuals enables a *de re/de dicto* distinction to be de-
fended without having to give up this claim.[11]

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