Grazer Philosophische Studien
67 (2004), xx–yy.

TYPES OF NEGATION IN LOGICAL RECONSTRUCTIONS OF MEINONG

Andrew Kenneth JORGENSEN
University of

Summary

Russell's criticisms force Meinong to adopt a distinction between two types of negation. Logical expositions of Meinong's theory show the distinction is easily drawn in formal terms, but that alone does not justify the distinction intuitively. I criticise Routley's treatment of the distinction and argue that only Terrence Parsons' theory retains and preserves the tight network of conceptual connections between the notions of negation, contradiction and impossibility. Hence, Parsons' approach best expresses the Meinongian perspective.

Russell's Criticisms of Object-Theory

Bertrand Russell attacks Meinong's position in two reviews published in Mind in 1905 and 1907, as well as in his celebrated article "On Denoting." Russell claims in his 1905 review that Meinong's beingless objects can be resisted in either of two ways: It may be denied that there are such objects, or it may be denied that such objects have no being (p. 532). In these reviews Russell chooses the former way having earlier abandoned the latter one (the position adopted in *The Principles of Mathematics*.). The chief objection to Meinong's theory is, according to Russell, that it involves denying the law of contradiction when impossible objects are constituents (p. 533). This objection is also pressed in "On Denoting." Meinong's round square, for example, is held to be both round and not round. Russell thinks this is intolerable.

It is worth considering just how the round square is supposed to jeopardise the principle of contradiction. The principle has traditionally been espoused to two distinct forms: one material,[1] one semantic. It has

1. The material version is not, strictly speaking, a logical principle at all, at least in so

been said that an object cannot both possess a property and the opposite of that property. George W. Bush cannot both be wise, and unwise in the same sense at the same time. Having the one property is thought to preclude the other. In the other (semantic) version of the principle, it is held that one and the same proposition cannot be true and false in the same sense, at the same time (alternatively, that a proposition and its negation cannot both be true at the same time). Meinong holds that 'the round square is round' and 'the round square is not round (because it is square)' are both true. If these statements are indeed both true, it appears that both versions of the principle of contradiction have been violated.

In response to this argument, Meinong argued that the principle of contradiction has only been applied to actual and possible objects, not impossible ones (1907, p. 14). It is because the round square violates this principle that it is impossible (i.e. that it could not be possible). Indeed it may be necessary to ascribe both the property of being round, and the property of not being round (because square), to the round square in order to think of *it*. Clearly, Meinong's response is only apposite to the material version of the principle. According to Russell, he (still) needs to meet the challenge of the semantic version of the principle.[2] I will,

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far as logic is treated as a theory of deductive consequence. This point was made by an anonymous referee for this journal.

2. Russell: "This reply seems to overlook the fact that it is of *propositions* (i.e. of „Objectives" in Meinong's terminology), not of subjects, that the law of contradiction is asserted. To suppose that two contradictory propositions can both be true seems equally inadmissible whatever their subjects may be." Review of "Über die Stellung der Gegenstandstheorie im System der Wissenschaften", *Mind* 1907 p 439.

Russell is clearer in his reviews than in 'On Denoting' that it is the semantic version of the principle of contradiction that is threatened by Meinong's theory. Both the immediately preceding quote from his 1907 review and the following quote from his review of 1905 indicate that it is conflict with the logical principle of contradiction rather than the metaphysical version that troubles Russell.

Russell: "But the chief objection to Meinong's view seems to me to lie in the fact that it involves denying the law of contradiction when impossible objects are constituents." having earlier mentioned Ameseder's point, from a preceding article in the collection Russell is reviewing, that when B is impossible 'A differs from B' and 'A does not differ from B' can both be true, Russell continues "If 'A differs from B' and 'A does not differ from B' are to be both true, we cannot tell, for example, whether a class composed of A and B has one member or two." Review of 'Gegenstandstheorie und Psychologie', *Mind* 1905 p. 533. Here Russell is quite explicitly objecting to the joint truth of contradictory propositions.

In contrast, Russell's statements in 'On Denoting' are in the material mode, the chief objection on this occasion being that impossible objects are 'apt to infringe on the law of

however, end this historical exegesis of the debate between Russell and Meinong, because it has been proven that Russell's objections cannot succeed. Russell attempted to show that Meinong's theory is internally inconsistent and necessarily leads to contradictions. This is not true.[3] Both Terence Parsons (*Nonexistent Objects* 88–92) and Richard Routley (*Exploring Meinong's Jungle* 513–518) have produced logical formalisations of Meinong's system, and both have proved their systems consistent.[4] Parsons' version of Meinong's theory even has a classical model. Therefore, there is no question that Russell's line of objections to theories of non-existent objects is finished.[5]

Types of Negation

Meinong held to the semantic version of the principle of contradiction, (Routley 1980, p.87 n. 4) and so it has been suggested that Meinong must endorse a distinction between so-called internal and external (or predicate and sentential) negation.[6] The distinction has been described

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contradiction' (p. 45) and what is intolerable on this occasion is the contention that the existent King of France exists and does not exist, or the contention that the round square is round and not round.

3. This point has been made by several commentators. It is made, for example, by Karel Lambert: „The major negative thesis of this essay is that Russell did *not* 'demolish' Meinong's theory of objects; he did not show that 'it must always be self-contradictory to deny the being of anything', that the world of *Außersein* is impossible." (1974, p. 304). An anonymous referee for this journal also drew my attention to J.N. Findlay's contribution to *Jenseits von Sein und Nichtsein*, where he makes the same point.

4. Other logicians have produced different, equally consistent, theories of non-existent objects. See for instance, Rapaport (1978), Zalta (1988), Perszyk (1993), Jacquette (1996), and Pasniczek (1997). Though I do not consider them in particular here, the general dilemma for logical reconstructions of Meinong's theories confronts them as well namely, that of providing an analysis of complementation that is intuitively compelling and plausible as an account of metaphysical impossibility without thereby making it logically impossible for there to be objects with complementary properties.

5. Since Meinong did not himself formalise his system, and since both Parsons' and Routley's formalisations differ slightly from Meinong's theory (as do other published formal theories of non-existent objects), it is still an open question whether Meinong's own theory is inconsistent.

6. Which Meinong was, in any case, more than happy to do: „If one compares the judgements 'It is not the case that A is B' and 'A is not B' on this score, it is first of all beyond doubt that they are not exactly identical, since the one concerns the non-existence of a predicative circumstance (*Nichtsein eines Soseins*) and the other concerns a negative predicative circum-

as between a case where the negative notion applies to a single idea in the sentence and a case where the negative notion applies to the combination of both parts of a subject-predicate nexus (Jespersen p. 329). In predicate negation, it seems, a new statement is formed from a subject-predicate statement by predicating the complement of the predicate of the subject. Thus, the predicate negation of the statement 'Socrates is wise' is formed by predicating 'unwise,'[7] of Socrates. In sentential negation, the predicative connection is negated, hence 'Socrates isn't wise'. In this case it seems the negation of a statement is simply whichever statement is true if and only if the first statement is false.

In many cases it does not appear to make a difference whether negation applies to the sentence or applies to the predicate, but some differences have been observed.[8] 'She is unhappy' and 'She is not happy' appear to mean the same thing, but when the adverb 'very' is added to the sentences the meanings diverge ('She is very unhappy' versus 'She is not very happy'). Also consider an ambiguous sentence such as 'I didn't go because I was afraid'. One sense of this sentence is compatible with the speaker having gone (though for some other reason besides fear), the other sense isn't (It cites fear as the reason for not going). Removing the ambiguity seems to depend on determining whether the negation affects the whole sentence or just a part (as in 'I went not because I was afraid'). A similar effect is observable in the pair 'I didn't visit because I wanted to see her' versus 'I didn't visit because I wanted to avoid her'.[9]

From a logical point of view, there is no obvious reason why these observable grammatical differences have to be regarded as different *types* of negation. There is nothing, on the surface at least, to prevent logical translations of English sentences making use of syntactical measures to mark the distinction, such as the procedure in which a well-formed formula is constructed. Russell, for example, distinguishes between "The present King of France is not bald" and "It is not the case that the present King of France is bald" in just this manner. The logical form of "the present King of France is not bald" is revealed to

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stance (*Nichtsosein*); in the first case, essentially, a circumstance of higher order, and in the second case a circumstance of lower order" (*Über Möglichkeit* 173—my translation).

7. Precisely what 'unwise' means becomes a difficult question.

8. The following examples are from Jespersen *op cit*. pp. 329–30.

9. I have modified Jespersen's examples which were 'I didn't call because I wanted to see her' and 'I didn't call because I wanted to avoid her' (*ibid*. p. 330).

be an existential generalisation (∃x)((x is a King of France & (y) (y is a King of France ⊃ y = x)) & ~ x is bald). Here, negation enters early into the process of constructing the formula. In contrast, in Russell's analysis of "It is not the case that the King of France is bald", negation is the last step in the construction: ~ (∃x)((x is a King of France & (y) (y is a King of France ⊃ y = x)) & x is bald).

Meinong cannot rely on the use of a standard truth-functional negation operator (together with the process of formula construction) to express the distinction he needs between sentential and predicate negation. This is because even when the negation is buried within a subordinate clause by the process of constructing a formula, certain syntactical measures can bring it out to where it will have a more general effect. Consider a principle put forward by Karel Lambert (something is the Φ iff it is Φ and only it is Φ).

(KL) (x) [x = (iy)(Φy) ≡ (Φx & (z)(Φz ⊃ x = z))]
(i) is a description operator[10]

Now consider a Meinongian object with contradictory properties like the round non-round i.e. (ix)(Rx & ~Rx). Adopting Lambert's principle, for an arbitrary a, we get

(a = (ix)(Rx & ~Rx)) ≡ ((Ra & ~Ra) & (y)((Ry & ~Ry) ⊃ y = a))

Given the formal contradiction in the first conjunct of the right hand side of this biconditional, the right hand side, and consequently the left hand side of the biconditional is false. Since a is arbitrary this means no object is identical with the round non-round, or, in other words, that there is no such thing.[11] Lambert wishes to use KL to argue that there

10. For a detailed treatment of this operator see, for example, chapter four of *Logic, Bivalence and Denotation* by Bencivenga, Lambert and van Fraassen (1991).

11. Routley has criticized this argument, producing a model that shows Lambert's principle is not logically valid. The refutation is unsatisfactory, in my view, because it relies on a formal structure that no one would use to model Meinong's theory. As such it is irrelevant to a consideration of Meinong's position, and it was against Meinong's position that Lambert's argument was directed. Lambert's (other) argument against Russell is not similarly affected because Lambert was trying to show that Russell hadn't succeeded in proving that NECESSARILY non-subsistent objects generate contradictions. For Lambert's purposes, any suitable formal system can be used to show that Russell's claim is false. Things are different in the

can't be any impossible (contradictory) objects, but another way to interpret the argument is simply that Rx & ~Rx is not an adequate way of representing the type of negation presupposed by Meinong's round non-round thing.

Here is an intuitive way of thinking about (classical) complementation. A property collects various objects together, the ones that have that property, and this (usually) leaves a remainder consisting of things that don't have the property. Things in this remainder, though multiply different, *are* alike in one respect, namely not having the given property. They can thus be said to have the complement of that property. Considering the unary case for simplicity's sake, let P be some property, so V(P) is the extension of P, a number of objects. In the interests of legibility, I'll use 'P*' to indicate the complement of 'P,' (since the prime notation often gets lost among my apostrophes). So, P* is the complement of P, so V(P*) will be $\{x: x \notin V(P)\}$. Assuming bivalence we have, for some object a, V(P*a) = true iff $a \in V(P^*)$ iff $a \notin V(P)$ iff V(Pa) = false iff V(~Pa) = true. This thought process yields the simplest definition of the predicate negation, or complement, of a property is:

D1) P* is the complement of $P =_{df.} \forall x\ (P^*x \leftrightarrow \sim Px)$

Meinong cannot use definition one, D1, since on that definition it would never be true that any object has both a property and its complement, since every object has a property if and only if it does not have its complement. This holds even though nothing has been said about the domain of interpretation, and in particular, nothing has been said to restrict the domain to things that exist.

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case of Routley's criticisms of Lambert. Routley argues that no Meinongian would accept Lambert's principle, since if it were valid it would support a full assumption postulate. But what is to stop us restricting the range of Lambert's principle to assumptible predicates? Change the principle to

(KL*) $(x)\ [x = (iy)(Fy) \equiv (Fx\ \&\ (z)(Fz \supset x = z))]$ where F is any assumptible predicate.

Meinong clearly believed that 'being round' and 'being square' were assumptible predicates: "Not only is the much heralded gold mountain made of gold, but the round square is as surely round as it is square." ("The Theory of Objects" p. 82).

(The arguments discussed in this footnote are from Lambert's "Impossible Objects" and Routley's "The Durability of Impossible Objects").

Routley

Routley provides two suggested definitions of predicate negation.[12] The first proposal, what I'll call 'D2', is just to treat complement of P as any other predicate subject to the condition that the complement of the complement of P is equivalent to P. In other words, treat P* like Q, except that P** is stipulated to be equivalent to P (Routley 1980 p. 194).

More explicitly, D2, in model theoretic terms, is:

> V('Pa … a_n') = true iff <I('a'), … I('a_n')> ∈ I('P'), where I is an interpretation function that assigns objects in the domain to the name constants in the language, and sets of (ordered n-tuples of)objects in the domain to predicates in the language, and V is a function that assigns truth values to sentences.
> V('P*a … a_n') = true iff <I('a'), … I('a_n')> ∈ I('P*'), with I and V as before. All this subject to the proviso that V('P**a … a_n') = V('Pa … a_n').

Trouble is, it is unclear what right we have to call P* 'the complement of P,' given that P* is almost exactly like Q. All the definition, D2, gives us is a meaningless mark beside a letter. On the standard definition, there is a clear semantic relation between a predicate and its complement. The name 'predicate *negation'* is appropriate, because the complement of a property is a property that any object has just in case it lacks the straight property. By allowing the truth valuations of atomic statements involving a property to be independent of those involving its complement, Routley's first proposal, D2, removes this intuitive and clear connection between a property and its complement.

Routley's second proposal (D3) exploits multiple (in this case, just two) worlds. We have a model with two worlds, w_1 and w_2. Initial well-formed formulae are assigned values independently on w_1 and w_2. The assignment rules for the logical connectives are as per the underlying logic, but are only made at w_1. Routley then gives the assignment rules for predicate negation (*ibid.* p.194).[13] In the unary case:

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12. Jacquette appears to use these definitions in his work *Meinongian Logic*.

13. There is an obvious similarity between the assignment rules for predicate negation and the Routley * semantics for negation in relevant logic. The principle difference is, of

V(‘Pa,’ any world *w*) = true iff <I(‘a,’ *w*)> ∈ I(‘P,’ *w*).
V(‘P*a,’ w_1) = true iff V(‘Pa,’ w_2) is false.
V(‘P*a,’ w_2) = true iff V(‘Pa,’ w_1) is false.

The statements ensure that the two worlds match up accordingly that an object has a property at each world if and only if it lacks its complement at the other. No further conditions are placed on P* and P except those expressed in the above two statements (i.e. two properties are complementary exactly when possession of one at w_1 precludes possession of the other at w_2, and vice versa). Routley proceeds to show that predicate double negation is valid under D3. And also that under these conditions, predicate negation does not collapse into sentential negation.

Again, this definition, D3, makes it hard to see the connection between complementation and impossibility. Let this world be w_1. And let TwinEarth be w_2. The following scenario satisfies Routley’s definition. Suppose anything drinks beer, P*, at Bonner’s Irish Pub on Earth if and only if it is false that it drinks whisky, P, at TwinBonner’s on TwinEarth. Suppose, too, that anything drinks beer, P*, at TwinBonner’s if and only if it is false that it drinks whisky, P, at Bonner’s on Earth. According to this supposition, then, drinking beer and drinking whisky will be complementary properties on D3. Then we have:

> V(‘Andrew drinks beer,’ Bonner’s Irish Pub) = true iff V(‘Andrew drinks whisky,’ TwinBonner’s) is false.
>
> V(‘Andrew drinks beer,’ TwinBonner’s) = true iff V(‘Andrew drinks whisky,’ Bonner’s Irish Pub) is false.

Then one day I come in to Bonner’s and order a beer with a whisky chaser. Now, am I an impossible object? Of course not, yet that is what we are entitled to say if Routley’s redefinition is correct. It follows that on this day, I am neither drinking beer nor whisky at TwinBonner’s, but so what? Routley’s redefinition makes drinking a beer and drinking whisky complementary properties on this interpretation, and thus makes me an impossible object, which is absurd.

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course, that in relevant logic the assignment rules are relations between statements and truth values, rather than functions from statements to truth values. For a simple treatment of the Routley * semantics, see Graham Priest’s *An Introduction to Non-Classical Logics*.

We would not normally think of drinking beer and drinking whisky as complementary properties, but that is beside the point. We are not dealing with the standard definition of complementation but with a deviant one. '… drinks beer' and '… drinks whisky' bear the semantic relations set forth in Routley's redefinition of complementation, D3, so on D3 they are complementary properties. The truth valuations of sentences involving either predicate are determined independently, subject to those guidelines for matching up the assignments of Earth and TwinEarth, thus there is nothing preventing me from instantiating both properties on Earth (although doing so prevents me from instantiating either property on TwinEarth). Since it is obvious that I am not an impossible object, we cannot define an impossible object as one that has complementary properties, if we accept Routley's redefinition of complementation. Some other definition of an impossible object would be necessary, and possessing complementary properties would no longer account for the impossibility of the round square, which would need some other explanation.

Parsons

Parsons provides the definition of complementation that I find more satisfactory, but not entirely satisfactory. The notion of complementary properties has been invoked to explain what might be impossible about the round square, and how it violates the principle of non-contradiction. A good definition of complementation preserves these internal connections with the concepts of impossibility and being contradictory. Meinong's thought with regard to the principle of non-contradiction was that it is only supposed to apply to existing (and possible) objects, and Parsons takes his cue from here. With reference to a background distinct distinction between nuclear and extra-nuclear properties,[14] Parsons

14. The distinction between nuclear and extra-nuclear properties is enormously important to Parsons' theory. Parsons is aware of the difficulties attached to motivating this distinction intuitively, but he gives a number of examples of nuclear and extra-nuclear predicates to help us as it were 'go on in the same way' (p. 23). 'Is blue,' 'is tall,' 'kicked Socrates,' 'was kicked by Socrates,' 'kicked somebody,' 'is golden,' and 'is a mountain' are all categorised as nuclear. 'Exists,' 'is mythical,' 'is fictional,' 'is possible,' 'is impossible,' 'is thought about by Meinong,' 'is worshipped by someone,' and 'is complete' are all categorised as extra-nuclear.

defines, D4, the (nuclear) complement (he says "nuclear negation") of a property, P, as that nuclear property, P*, that all *existing* objects have if and only if they lack P (Parsons 1980, p. 19). That is:

D4) P* is the complement of P $=_{df.}$ $\forall x\ (E!x \rightarrow (P^*x \leftrightarrow \sim Px))$

He repudiates D1, and says there is no property, Q, such that for any object x, x has Q if and only if x lacks P, where any object includes non-subsistents as well as existing/subsisting objects (*ibid.* p. 105).

Parsons' technical definition in *Nonexistent Objects* of the complement of P, namely $P^* =_{df} [\lambda^N x\ \sim Px]$ exploits his nuclear abstraction operator 'λ^N' (p. 105). The operator obeys his "nuclear abstraction theorem," which in the unary case takes the form:

(Nuclear Abstraction theorem)[15] $(y)(E!y \rightarrow ([\lambda^N x\ \phi]y \leftrightarrow \phi y/x))$.

In Quasi-English this roughly means: For all objects y, if y exists then y possesses the complex property possessed by all objects that makes it a fact that ϕ if and only if ϕ is also a fact when said of y (or when y is involved). In Parsons' system any object possessing both a property and its complement is impossible.[16] However, the proof does not go

15. The nuclear abstraction theorem follows from Parsons' extranuclear abstraction axiom and his watering down axiom.

16.

1. $(x)(E!x \rightarrow (\sim px \leftrightarrow p^*x))$	Parsons' nuclear abstraction theorem
2. $E!a \rightarrow (\sim pa \leftrightarrow p^*a)$	Universal instantiation
3. $E!a \rightarrow ((\sim pa \rightarrow p^*a)\ \&\ (p^*a \rightarrow \sim pa))$	truth-functional equivalence (material equivalence)
4. $E!a \rightarrow ((\sim\sim pa\ v\ p^*a)\ \&\ (\sim p^*a\ v\ \sim pa))$	truth-functional equivalence (material implication)
5. $E!a \rightarrow ((t\ pa\ v\ p^*a)\ \&\ (\sim p^*a\ v\ \sim pa))$	truth-functional equivalence (double negation)
6. $\sim E!a\ v\ ((pa\ v\ p^*a)\ \&\ (\sim p^*a\ v\ \sim pa))$	truth-functional equivalence (material implication)
7. $(\sim E!a\ v\ (pa\ v\ p^*a))\ \&\ (\sim E!a\ v\ (\sim p^*a\ v\ \sim pa))$	truth-functional equivalence (distribution)
8. $\sim E!a\ v\ (\sim p^*a\ v\ \sim pa)$	simplification
9. $\sim E!a\ v\ \sim(p^*a\ \&\ pa)$	De Morgan's theorem
10. $E!a \rightarrow \sim(p^*a\ \&\ pa)$	truth functional equivalence (material implication)
11. $(x)\ (E!x \rightarrow \sim(p^*x\ \&\ px))$	Universal generalisation

through if the nuclear abstraction theorem is not a starting point, in other words, if it is merely an assumption that two properties disagree about every existing object i.e. (x) (E!x → (px ↔ ~qx)), then a simple model shows there's a world where some existing object has both p and q.[17]

Yet even Parsons' analysis is not entirely satisfactory and is open to a couple of searching questions. First, how do we find the complement of any property P? The definition Parsons provides (the property possessed by all existing objects that lack P) does not really identify a single property as such (indeed, Parson's draws attention to this fact himself, (p. 105)) because it does not talk about its extension outside the (existing) subclass of the domain. We see from clause 8 of Parsons' semantics that a nuclear complement is a nuclear property, but we cannot know which one. If nuclear properties are distinguished extensionally,[18] then two distinct properties (distinct because, e.g. the magnetic golden mountain has one but not the other), could nonetheless both be the complement of some property P provided that they jointly disagree with P on all the existing objects. This creates the difficulty that we won't actually know, other than by stipulation, that the round square is non-round (because square), since, because it is a non-existent object, its squareness won't guarantee its non-roundness and this is so even supposing that no existing squares are round.[19] For we assume that 'round' and

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12. □ (x) (E!x → ~(p*x & px)) Necessitation
13. ~ ◊ (½x) ~(E!x → ~(p*x & px)) Quantifier Exchange, □◊-Exchange
14. ~ ◊ (½x) (E!x & (p*x & px)) truth-functional equivalence

17. Consider a model such that w_1 R w_2 and 'E!a,' 'pa,' and 'qa' are all true at w_2. So 'E!a & (pa & qa)' is true at w_2. So '(∃x)(E!x & (px & qx))' is true at w_2. So, '◊(∃x)(E!x & (px & qx))' is true at w_1. Hence '~◊(∃x)(E!x & (px & qx))' is false at w_1. In fact, the formula (x) (E!x → (px ↔ ~qx)) encapsulates Parsons' alternative definition of complementation provided in the footnote to page 20. The counter-model above shows that this definition would not satisfactorily bring out the pre-theoretical connections between being impossible and possessing complementary properties.

18. Parsons isn't entirely clear. On page 74 he says that coextensive nuclear properties are identical. But he seems to say on page 105 that properties should not be distinguished extensionally. Necessarily co-extensive properties may still differ.

19. Nuclear complements are obtained from extranuclear complements derivatively from the extranuclear complement and the watering down axiom. The extranuclear complement of an extranuclear property is that extranuclear property P* possessed by every object that lacks the extranuclear property P (p. 104). So, no object has both an extranuclear property and its complement. The (primary) extension of the watered down version of the extranuclear complement is the intersection of the extension of the extranuclear complement and the set of existents (clause 8 of p. 79, and also clause 14.18 of page 130). Parsons' system does not

'non-round' disagree about every single existing thing. And we also suppose that 'square' disagrees with 'round' and agrees with 'non-round' about every single existing thing. But for all we know 'square' and 'non-round' may disagree about the magnetic golden mountain, and hence be distinct properties, although both are equally truly said to be the complement of 'round'. And if 'square' and 'non-round' disagree about some things, anything's being square does not entail its being non-round. So we won't know whether the round square is non-round (other than by stipulation).[20]

Now to consider what is good about Parsons' definition. Parsons' suggestion initially rings alarm bells, I think, because we tend to think of complementation as a logical notion, and it is not clear that it is permissible to define it in terms of the behaviour of a portion of the elements in his domain. His definition, in effect, says that a set is the complement of another set just in case every existing object belongs to one of the sets and no existing object belongs to both sets. The trouble is, why should we accept this? As long as we are defining a concept in terms of the behaviour of a small portion of the domain,[21] why not say a set is the complement of another set just in case no yellow object belongs to both sets (but every yellow object belongs to one of the sets)? And how is Parsons' redefinition related to impossibility?

Let's call this new notion: yellow-complementation. Why isn't an object impossible if and only if it possesses yellow-complementary properties? Part of the answer to this question is that it is an altogether empirical matter which things are yellow and what their properties are. We need to consider a concrete example. We might have the following generalisation 'For any object x, if x is yellow, then x is coloured iff x is not transparent to visible light'. If this is true, 'x is coloured' and 'x is transparent to visible light' are yellow-complementary properties.

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specify what the full extension of this watered down property is (see p. 73). There is literally no guidance as to whether a non-existent has or does not have a nuclear complement (such as non-round).

20. What do I mean by stipulation? Well, there could be additional meaning postulates added to Parsons' system such as „Necessarily, everything square is non-round". Without such a postulate, there is no logical guarantee that a round square is even impossible (since the simple model of note 16 could be interpreted with 'p' meaning 'round' and 'q' meaning 'square').

21. The fraction of objects that exist is, according to Meinong, „infinitely small in comparison with the totality of the objects of knowledge" („Theory of Objects" p. 79).

We need to consider two questions. First how this definition relates to impossible objects and, second the extent to which 'x is coloured' and 'x is transparent to visible light' are genuinely complementary. The answers come to mind quite readily. It would be impossible for a yellow thing to have both these properties, and for yellow things, these properties would be complementary. But it is important that we prefix these features with 'for yellow objects'. Clearly, the properties are not complementary for objects in general. An object, such as a joke, may lack both properties, and another may possess both properties. For example, some birds see ultra-violet light and ultra-violet coloured things, though we do not. If we are realists about colour, we can imagine a treated glass hunting shelter, made to be opaque to ultra-violet light, and hence coloured ultra-violet so the birds can't see through it. Yet visible light passes through it so the hunters inside could see the birds.[22] This hunting shelter would be both coloured, and transparent to visible light. This illustration is admittedly rather strained, but the crucial point is clear enough: the hunting shelter would not be an impossible object. Returning to Parsons' definition then, by analogy we should say that he has really given us a definition of what is impossible-for-existing-objects, and complementary-for-existing-objects. In fact, Parsons recognises this and in his book *Nonexistent Objects* he explicitly identifies being impossible with being impossible-for-existing-objects. An object, x, is possible *simpliciter* if it is possible that there is an existing object with all of x's nuclear properties (and perhaps more besides), and an object is impossible *simpliciter* if it is not possible that there is an existing object with all of x's nuclear properties (p. 21). There is a clear connection between Parsons' interpretation of impossibility and his redefinition of complementation. The definition is explicitly metaphysical. We are not to look here for a general notion of a logically impossible object besides what is impossible-for-existing-objects.

Following the considerations adduced in this paper, it seems Parsons' explanation of predicate negation is satisfactory provided one accepts the formal apparatus Parsons lays out to express the distinction. There are a number of possible objections one could make to that, but it would be beyond the scope of this paper to explore them in detail here. Such a claim is unfair without an illustration of a source of potential difficulties,

22. I guess this would look like stained glass to the birds as some light birds can see would still pass through it.

so consider the following. As was mentioned earlier, the distinction between nuclear and extra-nuclear properties is enormously important to Parsons' theory. The example Parsons gives of nuclear properties ('is blue,' 'is tall,' etc.) suggest to me that 'is round' and 'is square' are also nuclear. This troubles me because Parsons' definition of complementation treats the nuclear complement of a predicate as the watered-down version of the extra-nuclear complement of an extra-nuclear predicate. Does this mean that for there to be a complement of 'is round' there must be an extra-nuclear property of roundness? If so, we seem to have two properties of roundness. This strikes me as problematic because it seems to invite a third-man type argument against the distinction: How are they both roundness properties? I won't venture an answer to this question, as it is obviously more general than the issue of understanding predicate negation for Meinong.

The general argument of this paper is this: A Meinongian needs a sense of complementation in which it is logically possible for there to be objects that possess both a property and its complement. At the same time, there has to be a recognisable sense in which possession of a property and its complement is impossible. Parsons' analysis of complementation retains the close connection between possessing complementary properties and being impossible, but still permits the consistent treatment of objects with complementary properties. Routley's suggestion, to treat the complement of a property as just like another property (subject to the stipulation that predicate double negation), a method taken up by Jacquette, does not provide a satisfying understanding of predicate negation. Routley's intensional treatment of predicate negation also fails to provide a fulfilling understanding of predicate negation. Naturally, there is room for other candidate explications of predicate negation, but it is fair to say that the importance of this dilemma has not been fully appreciated by Meinongian logicians. At this stage, it seems that Meinongians should turn to Parsons' explication of the notion.

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