Against the Russellian Open Future

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Todd (2016) proposes an analysis of future-directed sentences, in particular sentences of the form 'will(ϕ)', that is based on the classic Russellian analysis of definite descriptions. Todd's analysis is supposed to vindicate the claim that the future is metaphysically open while retaining a simple Ockhamist semantics of future contingents and the principles of classical logic, i.e. bivalence and the law of excluded middle. Consequently, an open futurist can straightforwardly retain classical logic without appeal to supervaluations, determinacy operators, or any further controversial semantical or metaphysical complication. In this paper, we will show that this quasi-Russellian analysis of 'will' both lacks linguistic motivation and faces a variety of significant problems. In particular, we show that the standard arguments for Russell's treatment of definite descriptions fail to apply to statements of the form 'will(ϕ)'.

In a recent paper in *Mind*, Patrick Todd (2016) proposes an analysis of future-directed sentences—in particular, sentences of the form 'will(ϕ)'—based in part on the classic Russellian (1905) analysis of definite descriptions. Todd's analysis is supposed to vindicate the claim that the future is metaphysically open while retaining a simple Ockhamist semantics of future contingents and the principles of classical logic, that is, bivalence and the law of excluded middle (LEM). The main virtue of Todd's analysis is presumably that a proponent of the open future can maintain classical logic without appeal to supervaluations, determinacy operators, post-semantic sophistications, or any other controversial semantical or metaphysical complication.[1]

In this paper, we argue that this proposed analysis of 'will' both lacks linguistic motivation and faces a variety of significant problems. We show that the standard arguments for Russell's treatment of definite

[1] However, since Todd does not discuss supervaluationist views or views that distinguish semantics and post-semantics in any detail (see, for example, MacFarlane 2014, pp. 201–36), it is not clear what advantage his view is supposed to have over them.

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descriptions fail to apply to statements of the form 'will(ϕ)'. Hence, one can agree with Russell on definite descriptions without that providing any motivation for the claim that statements of the form 'will(ϕ)' should be given a quasi-Russellian analysis. For example, the structural ambiguities predicted by the Russellian analysis of descriptions are unattested when it comes to sentences of the form 'will(ϕ)' embedded under, for example, negation and various attitude verbs. Consequently, we contend that the quasi-Russellian analysis makes the wrong predictions about the meaning of sentences of the form 'will(ϕ)'.

Finally, we consider a possible fallback position: one could think that a weaker version of Todd's position, without the Russellian baggage, might withstand our objections. But if Todd's proposal is construed in this minimal way, that is, as a claim merely about the *truth conditions* of 'will(ϕ)', given a certain sophistication to avoid the falsity of future *necessities*, the view collapses into another view that Todd has antecedently dismissed. This not only renders Todd's analysis redundant, it leaves us with an analysis that, according to Todd himself, is inadequate.

1. Russellian definite descriptions

To understand Todd's proposed analysis, we need to start with a concise recap of Russell's analysis of definite descriptions. According to Russell (1905), the logical form of a sentence such as (1)—that is, the truth-conditional meaning of (1)—is (2).

(1) The F is G.
(2) $\exists x(\mathrm{F}(x) \wedge \forall y(\mathrm{F}(y) \rightarrow x = y) \wedge \mathrm{G}(x))$

This analysis of definite descriptions is considered to have several advantages over its main rival, namely, the referential analysis due principally to Frege (1892) and Strawson (1950). For example, in contrast to the referential analysis, Russell's analysis does not engender truth-value gaps when a description fails to denote or refer. To illustrate, consider (3), which is analysed by Russell as (4).

(3) The king of France is bald.
(4) $\exists x(\text{king–of–France}\ (x) \wedge \forall y(\text{king–of–France}\ (y) \rightarrow x = y) \wedge \text{bald}(x))$

While the description in (3) fails to denote, this is immaterial to the evaluation of its truth-value. The sentence in (3) is false because it literally asserts that there exists a unique king of France. In other words, the literal meaning of (3) is (5), and (5) is straightforwardly false.

(5) There is a unique king of France and he is bald.

Russell's analysis of definite descriptions also provides an elegant way of avoiding failures of LEM. Consider the sentence:

(6) Either the king of France is bald or the king of France is not bald.

On the referential analysis, both disjuncts fail to express anything truth-evaluable, and accordingly it is predicted to be neither true nor false. However, because Russell analyses 'the F is G' as a complex quantificational construction, adding a negation gives rise to a structural ambiguity, an ambiguity of scope. So, if (3) is negated, it gives rise to the following two possible readings:

(7) The king of France is not bald.

(a) $\exists x(\text{king\_of\_France}(x) \wedge \forall y(\text{king\_of\_France}(y) \rightarrow x = y) \wedge \neg\text{bald}(x))$

(b) $\neg\exists x(\text{king\_of\_France}(x) \wedge \forall y(\text{king\_of\_France}(y) \rightarrow x = y) \wedge \text{bald}(x))$

This might seem problematic, as the sentence in (7) is not obviously ambiguous. Specifically, it is not clear that (7) should have the reading predicted in (7b). But that the sentence can be used to express this content is made plausible by the observation that one can felicitously add the continuation in (8).

(8) The king of France is not bald, because there is no king of France.

Notice that if the negation in (8) takes narrow scope, the continuation 'because there is no king of France' would then, given Russell's analysis, directly contradict the content of 'the king of France is bald'. Yet it does not sound contradictory to assert (8), so this seems like a good reason to conclude that the negation must be taking wide scope. Consequently, it is plausible to assume that (7b) is a possible reading of (7)— precisely as Russell's analysis predicts.

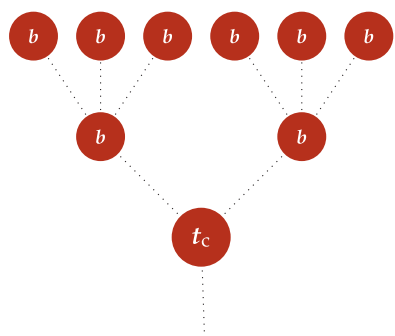
In conclusion, Russell's analysis avoids failures of LEM: on the intuitively true reading of (6), the negation in the second disjunct is simply taking wide scope, and thereby making the logical form of (6) equivalent to '$\phi \vee \neg\phi$'. However, Russell also predicts that (6) has a false reading. To see this, imagine that a speaker who is under the misapprehension that there is a king of France asserts (6). Here the speaker seems to be making some kind of mistake, rendering his assertion false. This reading is captured in terms of scope, namely, narrow-scope negation.

There is, of course, a wide variety of additional advantages to Russell's analysis, but for the purposes of understanding Todd's proposal, this summary should suffice.

2. Todd's analysis of 'will(ϕ)'

To capture the sense in which the the future is *metaphysically open*, theorists following Prior (1967, pp. 117–34) have employed the idea of *branching*.[2] A 'branching world' is a tree structure which can be modelled as a set of complete world histories that coincide up until the time of utterance, and then diverge.[3] On this approach, an utterance does not take place in a complete world—a chronicle of all truths at all times—but instead in a branching world with many causally possible futures.

(branching: causally possible futures)



(set of complete world histories at t_c)

A simple semantics for future-directed sentences would have it that 'will(ϕ)' is true iff in 'the future' ϕ is true. But on the branching framework, since there are many causally possible futures that are candidates

[2] In fact the idea was suggested by Saul Kripke in a letter to Arthur Prior in 1958; see Ploug and Øhrstrøm (2012) for discussion of the correspondence.

[3] In terms of the model theory, a context of utterance c determines a set of worlds W_c (with the same natural laws as c) such that for any sentence ϕ and any worlds $w, w' \in W_c$, for all times $t < t_c$, $I(\phi, w, t) = I(\phi, w', t)$, where I is the interpretation function mapping sentences to truth-values at world-time pairs. For a detailed discussion of the model-theoretic semantics of future-directed talk, see MacFarlane (2014, pp. 201–18).

for actuality, it is not clear what branch or branches are relevant. What future histories must feature ϕ for 'will(ϕ)' to be true?[4]

According to the view developed by Prior (1967, p. 132)—the so-called Peircean position—the answer is 'all of them': that is, to say something will happen is just to say that it happens in every possible future.

Peircean semantics: 'will(ϕ)' is true iff all futures feature ϕ.

As Todd notes, one significant advantage of the Peircean view is that it is consistent with classical logic. Specifically, on the Peircean view, one can be an open futurist while retaining bivalence and LEM, precisely as Todd desires. Nevertheless, Todd thinks there is a significant problem with the Peircean view, namely, that it equates 'will' with 'will definitely' (or 'will inevitably') and that this runs counter to the common usage of 'will'. As Todd puts it, 'to say that something "will" happen is simply to say that it "does" (in the future) happen, nothing more' Todd (2016, p. 783). The fact that there are causally possible futures where it does not rain tomorrow does not seem to conflict with the claim that it will nevertheless rain tomorrow. But on the Peircean view, the sentence 'It will rain tomorrow' is true just in case it rains in *all* causally possible futures. Hence the view cannot distinguish tomorrow's inevitable rain from tomorrow's mere contingent rain. Thus, while there may be uses of 'will' that are adequately captured by the Peircean analysis, Todd thinks that it fails to capture the intuitive meaning of a variety of uses of 'will'— what Todd (2016, p. 782) refers to as the 'predictive' uses.

Another problem with the Peircean view is that since 'will' is a quantifier (over possible futures), it is predicted to give rise to scope ambiguities when interacting with other logical operators. For example, when negated, 'will(ϕ)' should give rise to two interpretations: 'will($\neg\phi$)' versus '$\neg$will(ϕ)'. But the sentence 'There will not be a sea battle tomorrow', for example, does not seem to give rise to two different readings depending on the scope of the negation. We

[4] Lewis (1986, p. 207) addresses this question as follows (note that he mentions Todd's preferred answer): 'If there are two futures, and both are equally mine with nothing to choose between them, and one holds a sea fight and the other does not, what could it mean for me to say that the future holds a sea fight? Not a rhetorical question: we have three options. (1) It is false that the future holds a sea fight; because "the future" is a denotationless improper description. (2) It is true that the future holds a sea fight; because "the future" denotes neither of the two partial futures but rather their disunited sum, which does hold a sea fight. (3) It is neither true nor false that the future holds a sea fight; because "the future" has indeterminate denotation, and we get different truth-values on different resolutions of the indeterminacy. Offhand, the third option—indeterminacy—seems best.'

mention this problem because a variant of it will recur when we turn our attention to Todd's analysis below.[5]

To capture the intuitive meaning of predictive uses of 'will', Todd turns to a so-called Ockhamist semantics. On the Ockhamist semantics, the truth of 'will(ϕ)' does not require that ϕ obtain in every possible future, but instead 'that [ϕ] happens in the unique actual future, in the actual way things go from here' Todd (2016, p. 787).[6] Todd (2016, p. 789) provides the following characterization of the Ockhamist semantics:

Ockhamist semantics: 'will(ϕ)' is true iff the actual future features ϕ.

With this semantics, the question is what happens if one maintains (as Todd does) that the future is open, that is, that there is no unique actual future. For example, it might seem natural to conclude that sentences of the form 'will(ϕ)' are then truth-valueless. Consider an analogy. Say one endorses the standard view of indexicals whereby a sentence like 'You are tired' is true in a context c iff the addressee of c is tired. It seems natural to think that if the context does not supply a unique addressee (say the speaker is hallucinating), the utterance is somehow defective—there is presupposition failure—and thus it gets no truth-value. So, analogously, if there is no unique actual future, an utterance of 'will(ϕ)' is defective and thus gets no truth-value.[7] But if

[5] A referee for this journal objected that it is easy to generate two readings, 'It will not be the case that there is a sea battle tomorrow' and 'There will be no sea battle tomorrow'. However, the mere fact that negation can occur in different positions in the surface syntax does not entail ambiguity. For example, one can generate two syntactically distinct sentences by adding a negation to 'Bill is sitting', i.e. 'It is not the case that Bill is sitting' and 'Bill is not sitting', but almost everyone agrees that these sentences are truth-conditionally equivalent. So what is relevant here is whether the sentence has two truth-conditionally distinct readings (that can plausibly be explained as a result of differences in the scope of the negation)—and not simply whether the negation of the sentence can be represented by two sentences with distinct surface syntax. Our point is that a suitable semantics for 'will' should not predict that a negated 'will(ϕ)' has two truth-conditionally distinct readings. See also MacFarlane (2014, p. 216) for discussion.

[6] For discussions of the Ockhamist view, see Prior (1967, pp. 126–34) and Rosenkranz (2012); for discussion of 'thin red line' views, see Belnap (1994) and MacFarlane (2014, pp. 209–13). Though Todd disagrees with their *metaphysical* assumptions—one might say he endorses a 'thin red line' semantics but without a 'thin red line' metaphysics.

[7] A more explicit rendering of the Ockhamist semantics (and post-semantics) is this: 'will(ϕ)' is true in context c iff $[\![\phi]\!]^{c, w_c, t'} = 1$, for some $t' > t_c$. But since in a branching framework the context c merely determines a set of worlds W_c instead of a 'world of the context' w_c, the term w_c in the biconditional fails to refer, and thus—one might think—leads to a truth-value gap.

the goal is maintaining classical logic (bivalence and LEM), then this is clearly not a desirable outcome.

Thus, to avoid the conclusion that such uses of 'will' are truth-valueless, Todd turns to Russell's analysis of definite descriptions. He says,

> [I]f there exists no 'unique actual future', what becomes of 'The unique actual future features p'? That, in turn, depends on the logical form of 'The unique actual future features *p*'. If Russell is right, then its logical form is (roughly) as follows: 'There exists a unique actual future, and that future features *p*'. And, then, given open futurism—that there is no unique actual future—this claim will turn out false, since its first conjunct is false. And then future contingents will turn out false. (Todd 2016, p. 789)

In other words, Todd's reasoning seems to be the following:

1. 'will(ϕ)' is true iff the actual future features ϕ.
(Ockhamist semantics for 'will')

2. 'The actual future features ϕ' has the logical form 'There exists a unique actual future and it features ϕ'.
(Russellian analysis of 'the F is G')

3. So 'will(ϕ)' is true iff there exists a unique actual future and it features ϕ.
(1, 2)

4. There is no unique actual future.
(open future assumption)

5. Thus, 'will(ϕ)' is false.
(3, 4, *modus tollens*)

In other words, a Russellian interpretation of the Ockhamist semantics combined with the assumption of an open future yields that all predictive uses of 'will(ϕ)' are false. This should then suffice to retain classical logic, that is, bivalence, LEM, etc.

There is, however, one significant problem with this argument: it is valid only if bivalence is already assumed. The conclusion relies on an application of *modus tollens*, which is valid only if the logic is bivalent. Relinquishing bivalence, all that follows from this argument is that 'will(ϕ)' is *not true*—which is of course consistent with 'will(ϕ)' being not false.[8]

[8] Todd actually states the Ockhamist semantics in the 'material mode' as the following biconditional, which he calls UAF: It will be the case that ϕ iff the actual future features ϕ. We

Another way of displaying the problem with this argument is to observe that a proponent of the Frege-Strawson analysis of definite descriptions can unproblematically accept the premisses of a perfectly parallel argument yet reject the conclusion:

1. 'The F is G' is true iff there exists a unique F and it is G.

2. There is no unique F.

3. Thus, 'The F is G' is false.

Again, the conclusion follows only if we assume bivalence, namely, that if ϕ is not true, then ϕ is false. And, of course, the proponent of the Frege-Strawson analysis rejects bivalence, since sentences like 'The F is G' are neither true nor false on this view when there is no unique F.

In order to guarantee the conclusion that 'will(ϕ)' is false, Todd needs a stronger assumption. In particular, he needs 'will(ϕ)' to literally mean, or literally assert, that there exists a unique actual future that features ϕ—not merely the weaker claim about its biconditional equivalence. In other words, Todd must commit to a claim specifically about the linguistic *meaning* (or *content*) of 'will(ϕ)' in order to secure his desired conclusion that occurrences of 'will(ϕ)' are false (when the future is open). Consequently, Todd is best construed as interpreting the Ockhamist position in the following way: An occurrence of (9) is an abbreviation for (10), which contains the definite description 'the unique actual future'.[9]

semantically ascend in order to make the Ockhamist position a *semantic* thesis about the truth conditions of the object language, as is standard. This does not change the essential point. Notice that those who deny bivalence will not accept both the conditional UAF and that there is no unique actual future—for them, UAF is neither true nor false when there is no unique actual future, since the left-hand side is truth-valueless. So the material mode version of the argument also presumes bivalence. (Again compare this to Strawson on 'The F is G iff there is a unique F and it is G'.) Todd (2016, pp. 788–9 n. 26) discusses the 'formal mode' construal of Ockhamism that we give in the text, and says that it is 'more or less' the same as his formulation.

[9] The term 'Ockhamism'—introduced by Prior—is used in differing ways in the literature. Prior's Ockhamism, however, does not exactly accord with William of Ockham's actual views on the future, which involved issues concerning God's foreknowledge. Here we make no commitment on the view of the historical Ockham, or about the best way to use the term 'Ockhamism', but it should be noted that Todd's understanding of 'Ockhamism' is non-standard. For example, it is much more committal than the views that are called 'Ockhamism' in the literature on tense logic and the semantics of tense. An Ockhamist *semantics* is usually understood simply in terms of the *truth conditions* of future-directed language, not as a thesis about the 'logical form' of such statements (see, for example, Øhrstrøm and Hasle (2011) and MacFarlane (2014, §9.2). But Todd is not careful to distinguish between different claims one could make concerning the 'equivalence' between (9) and (10).

(9) will(ϕ)
(10) The unique actual future features ϕ.

And then by assuming a Russellian analysis of definite descriptions, Todd can maintain that the true logical form of (9) is the Russellian expansion in (11). (The quantifiers in (11) range over possible futures.[10])

(11) $\exists w(\text{actual}(w) \wedge \forall w'(\text{actual}(w') \rightarrow w' = w) \wedge w \in \phi)$

Todd combines this proposal about the meaning of 'will' with the following metaphysical view: the future is metaphysically *open*, and if the future is genuinely metaphysically open, then there is no unique actual future. Rather, there are many causally possible futures that are all candidates for actuality, and thus none are at present metaphysically 'privileged'. With this metaphysics in the background, it then trivially follows that sentences of the form 'will(ϕ)' are false. As Todd puts it,

> On the relevant semantics for 'will', something 'will' happen (as a first approximation) if and only if 'the unique actual future' features the thing happening. But if there is no 'unique actual future', as open futurists contend, then (on a Russellian analysis) such a proposition simply comes out false, for precisely the same reason that 'The present King of France is bald' comes out false, according to Russell. (Todd 2016, p. 776)

Hence, the view retains bivalence (future contingents are all false!) and LEM ('will(ϕ) $\vee$ $\neg$will(ϕ)' is valid, because '$\neg$will(ϕ)' is always true!). Preserving classical logic, then, might be counted as a virtue of Todd's analysis.

3. Problems for the quasi-Russellian analysis

In this section, we argue that Todd's proposed analysis of 'will' suffers from some significant problems. In particular, as an analysis of the meaning of the natural language 'will' it gives rise to several incorrect

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He sometimes puts it in terms of (9) and (10) 'saying' the same thing, sometimes in terms of (9) and (10) having the same 'logical form', and officially puts it in terms of the mere biconditional equivalence between (9) and (10). Ultimately it won't matter how the term 'Ockhamism' is used, since we will only take issue with Todd's Russellian analysis of (9) as (11).

[10] That is, relative to a context c, the quantifiers range over the set of worlds W_c as defined in footnote 3 above. Also, there is actually a further wrinkle in the proposal, which we will ignore for now, but return to and criticize in the final section. The further wrinkle has no impact on the objections to be raised.

empirical predictions. However, before proceeding to this discussion, we need to address an objection.

3.1 The dialectical situation

One might put forward the following interpretation of Todd's paper: Todd is simply taking for granted the Ockhamist analysis of 'will', according to which 'will(ϕ)' is equivalent to 'the unique actual future features ϕ'. Moreover, Todd's aim is only to point out that if (a) one endorses a Russellian analysis of definite descriptions, and (b) assumes an open future, then (assuming Ockhamism) instances of 'will(ϕ)' are always false. In other words, one might construe Todd as providing a simple argument along the following lines:

1. Take for granted that the logical form of 'will(ϕ)' is 'the unique actual future features ϕ' as the Ockhamist assumes.
2. Assume Russell's analysis of definite descriptions, so that the logical form of 'the unique actual future features ϕ' is 'there exists a unique actual future and it features ϕ'.
3. Assume an open future, so that there is no unique actual future.
4. Conclusion: Sentences of the form 'will(ϕ)' are false (because they falsely assert the existence of a unique actual future).

If this truly captures the objective of Todd's paper, one might then argue that it is irrelevant to observe that his proposed analysis of 'will' gives rise to incorrect predictions about natural language uses of 'will'. The reason is that these predictions simply stem from the presupposition of Ockhamism combined with the assumption of Russellianism about definite descriptions. To put the point differently: one might think that Todd is not engaged in the project of providing an analysis of the natural language meaning of 'will'; rather, he is merely trying to demonstrate what follows from the assumption of Ockhamism about 'will' and Russellianism about definite descriptions; so our objections about the meaning of 'will' in natural language are irrelevant.

We think that there are several reasons to be sceptical of this proposed interpretation of Todd's project. First, it is trivial to observe that future contingents are false *if* it is assumed that future contingents assert the existence of a unique actual future and, moreover, that there is no such unique actual future. This is essentially an argument of the form: a sentence S is false if the content of S is ϕ and ϕ is false. This observation is thoroughly uncontroversial, but it is also somewhat

uninteresting. The very title of Todd's paper, 'Future Contingents Are All False!', would suggest that he is aiming for a stronger conclusion. Hence, a more charitable interpretation of Todd's paper is that he is defending (or at least providing motivation for) the semantical claim below (while merely taking for granted the metaphysical claim).

> **Semantical claim**: If there is no unique actual future, then 'will(ϕ)' is false.
> **Metaphysical claim**: There is no unique actual future.

Accepting the semantical claim requires accepting a specific analysis of the meaning (or content) of 'will(ϕ)', namely, Todd's proposed quasi-Russellian analysis. The key question is whether this analysis is plausible, and this is what we are questioning.

Second, Todd is explicitly searching for an analysis of 'will' that is congenial to proponents of the open future and consistent with classical logic. But as Todd plainly recognizes, such an analysis is already available, specifically, the Peircean analysis. However, Todd rejects this analysis on the grounds that it provides an inadequate analysis of the meaning of 'will'.[11] That is, Todd rejects the Peircean analysis because it fails to capture certain aspects of the meaning of 'will', namely, certain ways that the word 'will' can be—and is—used in natural language. So Todd's rejection of the Peircean view relies explicitly on considerations about the meaning of 'will' in natural language. Consequently, such considerations cannot simply be ignored when assessing Todd's alternative proposal.

Third, Todd repeatedly states that there is a clear parallel between the debate about definite descriptions and the debate about 'will'. Indeed, Todd even writes that

> the 'all false' view concerning future contingents is exactly as strong as the Russellian case concerning 'the present King of France'. And, given the prevalence of the Russellian view, I believe most will agree that this case is very strong indeed. (Todd 2016, p. 791)

But, remember, the arguments for the Russellian analysis of definite descriptions are arguments that are meant to demonstrate that it better captures the meaning (or content) of 'The F is G' than rival analyses. So, if the case for Todd's quasi-Russellian view is exactly as strong, one should think that the arguments for Russell's analysis of definite descriptions would simply carry over to the analysis of 'will'. However, our general point is that they do not. The standard arguments for Russell's analysis are simply not arguments for Todd's proposed quasi-Russellian

[11] See, for instance, Todd's discussion of Prior and Tuggy (Todd 2016, pp. 782–4).

analysis of 'will'. So the case for Todd's analysis of 'will' is *not* as strong as the case for the Russellian analysis of definite descriptions.

3.2 Predictive problems

One immediate consequence of Russell's analysis of descriptions is that sentences such as (12)–(13) are analysed as having identical logical forms. As a result, (12)–(13) are not just truth-conditionally equivalent, they have the same literal contents—that is, they express the same proposition.

(12) There is a unique king of France and he is bald.
(13) The king of France is bald.

This consequence carries over directly to Todd's Russell-inspired semantics for 'will(ϕ)'. On Todd's analysis, the sentences in (14)–(15) have the same logical forms and, as result, the same literal contents.

(14) There is a unique actual future and it features ϕ.
(15) will(ϕ).

This might seem an innocuous consequence, but once one turns to compound sentences, specifically embedded occurrences of 'will(ϕ)', it becomes clear that this assumed equivalence is highly problematic.[12] To demonstrate this, let's start with a simple example.

(16) Phar Lap will not win.

On Todd's analysis, the sentence in (16) is structurally ambiguous. Specifically, (16) is predicted to have (at least) two possible readings depending on the syntactic position of the negation, that is, depending on whether at logical form the negation takes narrow or wide scope relative to the existential quantifier expressed by 'will'.

(17) (a) $\exists w(\text{actual}(w) \wedge \forall w'(\text{actual}(w') \rightarrow w' = w) \wedge w \in \{w \mid$ Phar Lap does *not* win in $w\}$)
(b) $\neg\exists w(\text{actual}(w) \wedge \forall w'(\text{actual}(w') \rightarrow w' = w) \wedge w \in \{w \mid$ Phar Lap wins in $w\}$)

In other words, Todd's analysis predicts that the sentence in (16) can literally express the content of either of the sentences in (18)–(19). Here, (18) corresponds to narrow-scope negation while (19) corresponds to wide-scope negation.

[12] This is also a serious problem for Russell's analysis, and this issue is discussed in detail by Elbourne (2005, 2010), Schoubye (2011, 2013). However, as will be demonstrated, the problem is even worse for Todd.

(18) There is a unique actual future and it features Phar Lap not winning. = (17a)
(19) It is not the case that there is a unique actual future and that it features Phar Lap winning. = (17b)

This is completely parallel to the structural ambiguity predicted by Russell's analysis of descriptions; see the discussion of (7) above.

Todd's parallel prediction of a structural ambiguity has the same immediate problem as Russell's analysis, namely, that the predicted wide-scope reading of 'Phar Lap will not win' is intuitively unavailable. That is, (16) cannot intuitively be understood as 'It is not the case that there is a unique actual future and that it features Phar Lap winning'. However, in this case, the intuitively unavailable reading cannot be made more salient by providing a continuation designed to bring it out (as in the case of definite descriptions). Indeed, such a continuation simply renders the whole sentence infelicitous; compare the following:

(20) # Phar Lap will not win, because there is no unique actual future.

Given Todd's analysis, (20) should be felicitous. Specifically, the continuation in (20) should simply force a wide-scope reading of the negation, as in (8). However, (20) seems clearly infelicitous, so it seems that forcing a wide-scope reading is simply not possible.

In general, denying the existence of a unique actual future is not sufficient to license the assertion of a negated future contingent. But, by contrast, denying that a definite description denotes *is* sufficient to license an assertion of an appropriately negated sentence. For example, observe the clear contrast in felicity between the following sentence pairs:

(21) Look, there is no king of France, so the king of France is not bald, OK?
(22) # Look, there is no unique actual future, so this fair coin will not land heads, OK?[13]
(23) The butler did not commit the crime, because there is no butler here.
(24) # Hilary Clinton will not lose the 2016 election, because there is no unique actual future.

[13] Notice also that forcing the negation to take wide scope at surface level makes no difference, that is, the following is also infelicitous: 'Look, there is no unique actual future, so it is not the case that this fair coin will land heads.'

In short, there is an essential difference between definite descriptions and future contingents, namely, that the former are susceptible to wide-scope interpretations whereas the latter are not. This is a problem for any analysis that predicts that such wide-scope readings are available, for instance, quasi-Russellian analyses such as Todd's. More generally, it is a problem for any analysis that explicates the meaning of 'will' in terms of an existential quantifier.

However, the lack of wide-scope readings demonstrated above raises another problem. Remember, according to Todd, one of the virtues of his proposed analysis is that it salvages LEM. But now consider the following:

(25) Either Phar Lap will win or Phar Lap will not win.

The sentence in (25) seems true and unambiguous. This raises two problems for Todd. First, given Todd's analysis, the true reading of (25) requires that the negation in the right-hand disjunct is taking wide scope. But, as demonstrated a moment ago, there is no evidence that such wide-scope readings are even possible. So the reading which, again given Todd's quasi-Russellian analysis, would explain why (25) seems true is simply unavailable.

Second, because of the negation in the second disjunct, Todd's analysis predicts that (25) also has an alternative reading, namely, one where the negation is taking narrow scope. On this reading, the logical form of (25) is (26).

(26) $\exists w(\text{actual}(w) \wedge \forall w'(\text{actual}(w') \rightarrow w' = w) \wedge w \in \{w \mid \text{PL wins in } w\}) \vee \exists w(\text{actual}(w) \wedge \forall w'(\text{actual}(w') \rightarrow w' = w) \wedge w \in \{w \mid \text{PL does not win in } w\})$

But, by assumption, there is no unique actual future, so this disjunction is false. As a result, (25) is predicted to also have a *false* reading. But, intuitively, (25) cannot be false, so it simply does not have a false reading.

In short, the structural ambiguities that proved advantageous to the Russellian analysis of descriptions are unattested when it comes to sentences of the form 'will(ϕ)'. Consequently, predicting that those sentences should exhibit such structural ambiguities raises an immediate explanatory problem for Todd's view.

4. Belief in future contingents

One often-cited advantage of Russell's analysis is its ability to account for so-called *de dicto* and *de re* ambiguities.[14] For example, consider the following:

(27) Isla believes that the president of the United States is a Harvard graduate.

This sentence has (at least) two possible readings. First, suppose Isla believes of Barack Obama that *he* is a Harvard graduate. If so, (27) has a true (*de re*) reading compatible with Isla not knowing that Barack Obama is the president of the United States. In contrast, now suppose Isla has a general belief that there is some unique individual who is both the president of the United States and a Harvard graduate. If so, (27) has a true (*de dicto*) reading compatible with Isla having no beliefs about Barack Obama.

On Russell's analysis of descriptions, *de dicto* and *de re* readings can be captured in terms of scope.[15] That is, (27) has two possible logical forms:

(28) $\exists!x(\text{US—president}\ (x) \wedge \text{BEL}_{Isla}(\text{Harvard—graduate}(x)))$
(29) $\text{BEL}_{Isla}(\exists!x(\text{US—president}\ (x) \wedge \text{Harvard—graduate}(x)))$

The *de re* reading is captured by (28) because the description is taking wide scope relative to the attitude verb. So the object of Isla's belief is a specific individual, namely, the unique individual who satisfies the predicate 'president of the United States'. Since that individual is Barack Obama, Isla's belief is *about* Barack Obama. In contrast, the *de dicto* reading is captured by (29), because the description is taking narrow scope. Here, the object of Isla's belief is a general proposition, namely, that there exists exactly one individual who has the property of being the president of the United States and of being a Harvard graduate. That this individual is identical to Barack Obama is, however, not part of Isla's belief.

Russell's analysis of descriptions is also often considered particularly elegant, because it can explain why one can truly attribute thoughts to individuals about non-existent entities. For example, if Isla believes that there is a king of France and that he is bald, then the following attitude report is intuitively true:

(30) Isla believes that the king of France is bald.

[14] See Neale (1990), Ludlow (2007) and Schoubye (2011, 2013) for discussion.

[15] We use 'BEL_{Isla}' as an abbreviation for 'Isla believes' and '$\exists!\text{xF}(x)$' as an abbreviation for '$\exists x\ (\text{F}(x) \wedge \forall y\ (\text{F}(y) \rightarrow x = y))$'.

Russell's analysis unproblematically predicts this, because on one reading of (30) its logical form is that given by

(31) $\text{BEL}_{Isla}(\exists!x(\text{king\_of\_France}(x) \wedge \text{bald}(x)))$

In other words, on one of the possible readings predicted by Russell's analysis, the content of Isla's belief is the conjunction of the claim that there exists a unique king of France and that he is bald. However, it is important to recognize that the reason that this explanation is successful is because it assumes that the assertion of existence of a unique F associated with any occurrence of 'the F' becomes *part* of the (mental) content of the attitude under which it is embedded. This is what explains the truth of (30) despite the actual non-existence of a king of France.

Given Todd's quasi-Russellian analysis, an occurrence of 'will(ϕ)' in the complement of an attitude verb should also give rise to ambiguities akin to the *de dicto* and *de re* ambiguities demonstrated above. This is a simple consequence of analysing 'will(ϕ)' as existentially quantified. So a sentence such as (32) is predicted to have two possible logical forms, (32a) and (32b) (where x indicates the speaker).

(32) I believe that there will be a sea battle tomorrow.

(a) $\exists!w(\text{actual}(w) \wedge \text{BEL}_x(w \in \{w \mid \text{sea-battle tomorrow in } w\}))$

(b) $\text{BEL}_x(\exists!w(\text{actual}(w) \wedge w \in \{w \mid \text{sea-battle tomorrow in } w\}))$

The problem with this prediction is that (32) appears to have neither of these readings. First, notice that (33) seems perfectly felicitous.[16]

(33) I do not believe that there is a unique actual future, but I believe that there will be a sea battle tomorrow.

In other words, it is felicitous to assert that one believes that the future will turn out one way while denying that it could not turn out differently. However, if Todd's analysis of 'will(ϕ)' is correct, 'will(ϕ)' asserts the existence of a unique actual future. This assertion of existence (like the assertion of existence associated with 'the F') can be interpreted either *de dicto* or *de re*, as illustrated in (32a) and (32b) above. So, if Todd's analysis is correct, (33) should have the following two readings:

[16] This is a completely general observation, that is, there are multiple equally felicitous variations of (33), such as 'I think the future is genuinely open, but I also think that there will be a sea battle tomorrow' and 'Of course, nothing is inevitable, but I think that there will be sea battle tomorrow'.

(33) (a) # I do not believe that there a unique actual future, but I believe that there is a unique actual future and it features a sea battle tomorrow.

(b) # I do not believe that there is a unique actual future, but there is a unique actual future and I believe that it features a sea battle tomorrow.

Again, to repeat an earlier point, since the existence of a unique actual future is part of what is expressed by 'will(ϕ)', this existence claim either becomes part of the content of the attitude report itself (*de dicto*, similar to the case described in (31) above) or it becomes flat out asserted (*de re*). But, as (33a) and (33b) demonstrate, both of these options lead to infelicity. Hence, neither of these could plausibly be readings of (33).

Both readings are, however, predicted by Todd's analysis, which raises an immediate problem for Todd, namely, how to explain why sentences such as (33) do not exhibit structural ambiguities corresponding to *de dicto* and *de re* readings.

Finally, notice that once non-doxastic attitude verbs are considered, the predictions start looking even more bizarre.[17] Consider, for example,

(34) I fear that that there will be a sea battle tomorrow.

Again, the assertion of existence of a unique actual future should be able to take either narrow or wide scope. So, on the narrow-scope reading of (34), the sentence is predicted to be true if and only if the speaker fears (a) that there is a unique actual future, and (b) that that future features a sea battle. However, there is clearly no way of interpreting (34) as expressing a fear that there is a metaphysically privileged future (i.e. fear of a 'thin red line').

So when Todd states the following, he is simply mistaken:

> *If* you side with Russell (against Strawson) concerning presupposition failure, then you should, if you are an open futurist, think that future contingents all turn out false. (Todd 2016, p. 782)

The arguments in favour of Russell's analysis of definite descriptions are orthogonal to the semantics of 'will' (and related future-directed sentences). That is, those arguments simply do not carry over in any relevant way to sentences of the form 'will(ϕ)'. As a result, one can comfortably side with Russell on definite descriptions (even if one

[17] This is a problem that Todd's account shares with Russell's analysis of descriptions. It was first observed, we believe, by Heim (1991), but it has been extensively discussed by Elbourne (2005, 2010) and Schoubye (2013). The latter, in particular, considers (and dismisses) a wide range of responses on behalf of the Russellian.

probably should not) without thereby being committed to a quasi-Russellian analysis of 'will(ϕ)'.

5. The Peircean reduction

Recall that Todd's appeal to the Russellian apparatus is meant to help establish the following key thesis:

Semantical claim: If there is no unique actual future, then 'will(ϕ)' is false.

We have shown above that the application of Russell's analysis is not apt. But one might think that a more straightforward version of Todd's position— free of the Russellian baggage—could survive our complaints.

Consider this construal of Todd's reasoning. He assumes an Ockhamist semantics: 'will(ϕ)' is true iff the actual future features ϕ. He then insists that there is a further issue of whether we treat the description on the right-hand side in a Russellian manner or in the manner of Frege-Strawson. As we have argued above, this strategy will not justify Todd's desired conclusion (that all future contingents are false), but it is also just generally a perplexing line of reasoning. Of course, for any semantic clause, we can think of its right-hand side as a metalanguage 'description' of the circumstances in which it is true. But it is confused to think that issues concerning the natural language semantics of 'the' are going to decide how to interpret that metalanguage description. The clause just needs to be explicit. If 'will(ϕ)' should be false when there is no unique actual future, then the clause should be this:

Bivalent semantics

$$\text{w}\mathit{ill}(\phi) \text{ is } \begin{cases} \text{true} & \textit{if there is a unique actual future and it features } \phi \\ \text{false} & \textit{otherwise.} \end{cases}$$

If, instead, 'will(ϕ)' should get a value of neither-true-nor-false (neuter) when there is not a unique actual future, we just write the clause like so:

Trivalent semantics

$$\text{w}\mathit{ill}(\phi) \text{ is } \begin{cases} \text{true} & \textit{if there is a unique actual future and it features } \phi \\ \text{false} & \textit{if there is a unique actual future and it does not feature } \phi \\ \text{neuter} & \textit{otherwise.} \end{cases}$$

So, understood this way, the debate between Russell and Frege-Strawson on definite descriptions is just not relevant. Given this, should Todd not simply argue for the mere truth-conditional (and bivalent) semantics without getting into the semantics of definite descriptions, and without making heavy-duty commitments about the logical form and content of 'will' sentences? That would certainly make things easier, and would avoid some of our main complaints. But there is a problem.

Up to this point we have been ignoring a perhaps obvious, but clearly non-trivial, problem for Todd's analysis. It predicts that even utterances of 'will(ϕ)' that are *not* future contingents turn out false too! Consider, for example, the following:

(35) The coin will land either heads or tails.

Assuming normal conditions—such that in every causally possible future the coin lands either heads or tails—an utterance of (35) should be true. But on the proposal thus far, it comes out false. Todd is aware of this problem. His proposed solution is to make the proposed analysis disjunctive by tacking on the Peircean view as an extra disjunct:

> **Todd semantics**: 'will(ϕ)' is true iff there is a unique actual future and it features ϕ *or* all possible futures feature ϕ.

This gets the result that future contingents remain false, while future necessities such as (35) come out true. The problem is that now the quasi-Russellian analysis is nothing but an idle wheel. Under the assumption that there is no unique actual future (which Todd accepts), the claim that every possible future features ϕ is equivalent to the claim that either there is a unique actual future that features ϕ or every possible future features ϕ. So, on the assumption that there is never a unique actual future, Todd's semantics is logically and truth-conditionally equivalent to the Peircean semantics.[18] This equivalence can be demonstrated quite easily.

1. $\neg\exists w(\text{actual}(w) \wedge \forall w'(\text{actual}(w') \rightarrow w = w'))$
(open future assumption)

Thus, the biconditional (2) $\leftrightarrow$ (3) follows.

[18] In terms of the background model theory we can put the point more generally. Either the models provide a 'thin red line' or they do not. If they do, then the Peircean disjunct is redundant. If they do not, then Ockhamist disjunct is redundant. Either way one disjunct is redundant.

2. $\forall w(\phi \in w)$
(the Peircean analysis of 'will(ϕ)')
3. $\exists w(\text{actual}(w) \wedge \forall w'(\text{actual}(w') \rightarrow w = w')) \wedge w \in \phi) \vee \forall w(\phi \in w)$
(Todd's analysis of 'will(ϕ)')

So, in terms of mere truth conditions, the quasi-Russellian part of Todd's view is now completely redundant. Thus, if the view is to have any substance, it has to be the stronger view we attacked in the previous sections, which treats instances of 'will(ϕ)' as disguised Russellian definite descriptions.

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