

# Vulcan Might Have Existed, and Neptune Not

## On the Semantics of Empty Names

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### **1 Introduction**

As long ago as in 1974, Tyler Burge opened a paper with the following statement: “Non-denoting singular terms have been a prime stimulus, or irritant, to students of the use and formal representation of language” (Burge 1974, 309). That is no less true today than it was then. At about the same time, Saul Kripke wrote: “[N]o consideration in favor of the Frege-Russell view of proper names has seemed more conclusive than the fact that names can sometimes be empty” (Kripke 2011, 53). While still powerful, the idea that descriptivism is the cure for all our worries about empty proper names might have lost some of its sway more recently. It has been argued that at least more fancy versions of descriptivism designed in reaction to the powerful data Kripke marshaled against “the Frege-Russell view”, such as wide-scope descriptivism (cf. a. o. Dummett 1981, Sosa 2001), by that very token lose at least some of their promise for dealing with empty names

(cf. a.o. Brock 2004, Cullison and Caplan 2011).<sup>1</sup> In this paper, after going through some of the literature, we shall try to recover the promise descriptivism intuitively holds for empty names. This we shall do by further developing a switcher semantics for empty names. Switcher semantics work with a plurality of semantic evaluation functions and construe certain operators, for instance intensional operators, as “evaluation switchers”: They switch the semantic evaluation function to be used for what is in their scope. In (2006) and (2008), we have developed a switcher semantics for natural language proper names and *de re* modal operators.<sup>2</sup> This semantics allows proper names to have descriptive contents while at the same time accounting for Kripkean modal intuitions. So far, it has been developed only for denoting proper names. In this paper, we shall explore what we actually can do for empty names with the descriptive resources offered by switcher semantics. We shall argue that while there are limits to what can thus be done, the result

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<sup>1</sup>Ironically, it has also been argued that versions of Millianism designed to handle Fregean intuitions regarding identities and substitution failures such as Scott Soames’s version of pragmatic Millianism (2002), do not any longer do so well with respect to intuitions very similar to the ones originally used by Kripke in *Naming and Necessity* to argue for the claim that proper names are rigid designators (cf. Sider and Braun 2006).

<sup>2</sup>In (Glüer and Pagin 2012b), we defend the semantics against an objection by Graeme Forbes (Forbes 2011). In (Glüer and Pagin 2012a), we extend it to cover general terms including natural kind terms. In (Pagin and Westerståhl 2010c), Peter Pagin and Dag Westerståhl have used the switcher technique to develop a semantics for quotation that is what they call “general compositional” (cf. Pagin and Westerståhl 2010a; Pagin and Westerståhl 2010b). In talks, Pagin has extended switcher semantics to belief contexts, and to tense operators. Incidentally, the semantics that Egré et al. (2012) suggest for vague predicates also is a switcher semantics; here, negation works as a switcher.

is nevertheless better than what can be obtained by more traditional means.

We shall proceed as follows: In Section 2, we shall lay out what we take to be the phenomena to be explained, including some methodological reflections on how best to deal with them. Then, we shall take a quick run through the main options currently on the market. The main purpose of this will be to show that there is still room for improvement. In section 4, we shall introduce the basic ideas of switcher semantics, the form of compositionality it obeys, and its application to *de re* modal operators. And in section 5, we shall develop a suggestion as to how to extend switcher semantics to empty names.

## 2 The “Empty Names Phenomena”

Before we get started on the description of any messy natural language phenomena, we would like to define the use of ‘empty’ as applied to singular terms that will be employed throughout this paper:

(E) A singular term  $t$  is *empty* with respect to a possible world  $w$  iff  $\mathbf{I}(t, w)$  is undefined,

where  $\mathbf{I}$  is the term interpretation function.

$\mathbf{I}$  is such that if  $\mathbf{I}(t, w)$  is defined, then  $\mathbf{I}(t, w)$  is in  $\mathcal{D}(w)$ , where  $\mathcal{D}$  is a domain function assigning domains of objects to possible worlds. We shall say that a singular term  $t$  is *empty simpliciter* iff it is empty with respect to the actual world  $a$ .

What we shall call “the empty names phenomena” are observations about natural language that intuitively point in the direction of there being singular terms in natural language that are empty: Genuine proper names that do not refer to anything. These

observations intuitively also point towards these names being empty, but nevertheless meaningful. Moreover, there seem to be quite a number of empty proper names, and they seem to come from a number of significantly different domains: fiction, myth, and false (scientific) theory among them.

Here are a number of examples of sentences containing names that are good candidates for being empty:

- (1) Vulcan is a planet.
- (2) Vulcan is not a planet.
- (3) Sherlock Holmes is a detective.
- (4) Vulcan exists.
- (5) Vulcan does not exist.
- (6) Sherlock Holmes does not exist.
- (7) Le Verrier believes that Vulcan is a planet.
- (8) Le Verrier believes that Vulcan exists.
- (9) Vulcan might have been a planet.
- (10) Vulcan might have existed.

These are intended as examples of discourse we can call “literal”: Discourse about how the world literally is, is believed to be, or might have been. Used literally, sentence (3), for instance, intuitively is not true.<sup>3</sup> Such discourse can be distinguished from, for instance,

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<sup>3</sup>There are some speakers, however, who report not being able to consider (3) as anything but true – no matter how much they try to focus on its literal use.

“fictional discourse”. There, we describe the world as it is according to a certain fiction or myth. Used fictionally, (3) would intuitively be true. And so would (11):

(3) Sherlock Holmes is a detective.

(11) Sherlock Holmes exists.

There also is “metafictional discourse”, discourse about the fiction, but from a real world perspective:

(12) Sherlock Holmes is a fictional character.

(13) Sherlock Holmes was invented by Conan Doyle.

And then, there are, of course, all sorts of “mixed discourse”, combining any or all of the above forms:

(14) Sherlock Holmes does not exist – he is a fictional character.

(15) Sherlock Holmes is a fictional character addicted to cocaine.

These distinctions allow us to delimit our topic. Of course, a satisfactory account of empty names ultimately needs to cover all of these discourses. Here, however, we shall limit ambitions to the literal and the fictional. Moreover, we shall not attempt to account for attitude contexts at all. What, then, are the phenomena to be accounted for?

What we shall suggest is a version of possible worlds semantics, i.e. a semantics assigning possible worlds truth conditions to natural language sentences.<sup>4</sup> Such a seman-

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<sup>4</sup>It is plain vanilla possible worlds semantics in the sense of being neither two-dimensional, nor working with centered worlds. The unorthodoxy is limited to utilizing more than one semantic evaluation function.

tics is an empirical theory for a specific natural language. To our mind, a consequence of its being truth-conditional is that native (or competent) intuitions about truth conditions and truth values are to be taken as evidence for such a theory.<sup>5</sup> Now, of course not any old intuition must be accommodated, be the speaker ever so native. But once we are dealing with intuitions that are stable both over time, and over a sufficient range of examples and speakers, these intuitions require explanation. Moreover, the plausibility of the following principle is rather directly proportional to the stability of the intuitions we are trying to handle:

(EXP) Ceteris paribus, the more of the phenomena an account can give a *semantic* explanation for, the better it is.

When it comes to empty names, the situation is not as clear as one could wish. For one thing, there is no substantive body of empirical studies of speakers' truth value intuitions regarding sentences (1)-(10) above.<sup>6</sup> So, we have to rely on our own intuitions,

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<sup>5</sup>See Burge 1974, 309, for a very clear analogous statement for (Davidsonian) truth conditional semantics. Jim Pryor (Pryor 2006) argues for the opposite when considering which free logic best captures certain "entailments" carried by sentences expressing thoughts whose very thinkability depends on their not containing any empty singular (or general) terms. According to Pryor, this question is best decided while decoupling the "truth"-values assigned by such a logic to the sentences in question from any intuitive understanding of truth. But even if our primary purpose is not natural language semantics, it is hard to see how such an enterprise would work. Presumably, the entailment relations we are interested in are still supposed to be the intuitive ones. But wouldn't intuitions as to what entails what vanish with abstracting from what is true? In any case, we do not see any alternative to holding truth-conditional natural language semantics answerable to (stable) truth value intuitions by competent speakers.

<sup>6</sup>See Piccinini and Scott 2010 for some data, though.

and those reported in the literature. There is research indicating that this might be just fine – as long as writers do not meddle with their readers’ intuitions by telling them (too quickly) what they are.<sup>7</sup> So, unless you have already done so, take a minute now and consider the truth values of sentences (1)-(10).

In our experience, competent speakers of English neatly divide into two groups over these sentences. Within the groups, the intuitions are very stable. We might label the groups “Russellian speakers” (“R-speakers”) and “Fregean speakers” (“F-speakers”). Here are the truth value these groups assign:

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<sup>7</sup>Cf. Hansen 2012. It is in any case rather difficult to conduct x-phi experiments in ways that do precisely what they are supposed to do, i.e. prompt truth value intuitions towards the intended target sentences, and not towards certain folk-theories of semantics ordinary speakers might hold or develop on the spot. Cf. Marti 2009.

|      |  | R-speakers | F-speakers |
|------|--|------------|------------|
| (1)  | Vulcan is a planet.                          | F          | ∅          |
| (2)  | Vulcan is not a planet.                      | T & F      | ∅          |
| (3)  | Sherlock Holmes is a detective.              | F          | ∅          |
| (4)  | Vulcan exists.                               | F          | ∅          |
| (5)  | Vulcan does not exist.                       | T          | ∅          |
| (6)  | Sherlock Holmes does not exist.              | T          | ∅          |
| (7)  | Le Verrier believes that Vulcan is a planet. | T/F        | T/F        |
| (8)  | Le Verrier believes that Vulcan exists.      | T/F        | T/F        |
| (9)  | Vulcan might have been a planet.             | T & ∅      | ∅          |
| (10) | Vulcan might have existed.                   | T & ∅      | ∅          |

F-speakers basically think – as Frege did – that if a name does not have a referent, sentences containing it do not have a truth value. In the table, this is indicated by means of ‘∅’. There is one notable exception, though: belief sentences, or attitude contexts generally. These do have truth values (which truth value they have of course depends on the way the world is); this is indicated by means of ‘T/F’. That attitude contexts like (7) containing empty names do have truth values is the only truth value intuition that these two groups of speakers share. R-speakers basically think that all sentences containing empty names have truth values. Most of them are false – because there is no relevant object having the relevant properties. Notable exceptions are negations of simple atomic sentences. Here, intuitions vary; most R-speakers hold these sentences to be true, some



to be false, and some think that it depends on how one reads them. We shall assume that the most important R-intuitions here are a) that these sentences have truth values and b) that they are true. When it comes to negations of “atomic” sentences like (5) and (6), however, intuition does not waver among R-speakers: These are true. Modal contexts like (9) and (10) are iffy again; R-speakers seem divided between regarding most ordinary modal sentences as true, regarding them as lacking in truth value, and thinking that it depends on how one reads them. We shall call the whole complex of intuitions represented in the table above “the empty names phenomena”. Those regarding simple sentences and their negations like (1)-(3), we shall treat as the *core intuitions* among these phenomena.

The empty names phenomena are quite a bit more disorderly than the basic Fregean and Kripkean intuitions regarding non-empty names setting much of the general agenda for the semantics of proper names. Almost everyone agrees on the following: “Name identities” such as

(16) Hesperus is Phosphorus.

can be informative when they contain two different names. Substituting co-referring names for each other in attitude contexts such as

(17) Frege believes that Hesperus is Phosphorus.

can change truth value. These are the Fregean intuitions. Moreover, almost everybody agrees that substituting a co-referring definite description for a proper name can change the truth value of a modal sentence such as

(18) It might have been the case that the teacher of Alexander did not go into pedagogy.

This sentence has a reading on which it intuitively is false, while

(19) It might have been the case that Aristotle did not go into pedagogy.

does not. These are the Kripkean modal intuitions.<sup>8</sup>

Even though the empty names phenomena are less orderly than the Fregean and Kripkean intuitions regarding referring names, they are quite stable. That is, once we realize that there are two groups of speakers here, they actually cluster nicely and stably with the group a given speaker belongs to. The only thing really a bit disorderly here are the intuitions of the R-speakers concerning negation and modality. Therefore, we think that these intuitions on the whole are stable enough to call for explanations. Moreover, we think that they are stable enough to make semantic explanations preferable (*ceteris paribus*). The one phenomenon pushing most forcefully in this direction is, of course,

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<sup>8</sup>There are also Kripkean intuitions towards the epistemic status of sentences that are relevant. Formulated in terms of truth-value intuitions, there is, for instance, the intuition that

(i) It is a priori that the teacher of Alexander went into pedagogy.

is true, while

(ii) It is a priori that Alexander went into pedagogy.

is not. This is also quite widely accepted, but less central as there to date are few semantics handling object language epistemic operators. Then, there are intuitions regarding the truth value of simple sentences at possible worlds other than the actual. These are (somewhat) disputed, however. For discussion, see (Glüer and Pagin 2006, 520-523).

the nearly complete agreement that belief contexts containing empty names do have truth values.

The currently prevalent account of the semantics of proper names, however, has it that empty names do not have any semantic value. This is Millianism, the view that the semantic value of a proper name consists in nothing but its referent. Of course, there are many different versions of Millianism on the market, and the most important differences between them arise precisely from their trying to overcome the initially rather handicapping problems of accounting for both the Fregean intuitions and the empty names phenomena. In the next section, we shall take a quick and selective tour of the area.

### 3 Millians, Russellians, and Fregeans

Classical Russellianism towards ordinary language proper names treats these as abbreviations for definite descriptions. The relevant definite descriptions are then given a Russellian analysis (cf. Russell 1905), an analysis according to which (20) is analyzed as  $(20_R)$ , for instance:

(20) Pegasus flies.

$(20_R) \quad (\exists x) (Px \ \& \ ((\forall y) Py \rightarrow y = x) \ \& \ Fx),$

where ' $P$ ' is the (possibly complex) predicate contained in the relevant definite description (for instance 'is a flying horse') and ' $F$ ' stands for 'flies'. According to Classical Russellianism, proper names thus aren't singular terms. Nevertheless, we can say that proper names have descriptive content. It is easy to see how a position like this accounts for

the core of the empty names phenomena – for R-speakers. The scope distinctions available to Classical Russellianism provide two readings for negated sentences (as well as for other sentences containing sentential operators such as modal sentences). Depending on how it deals with existence, Classical Russellianism might also be able to deal with existentials involving empty names, i.e. sentences like (4)-(6). For negative existentials, one of the two readings Classical Russellianism offers is contradictory, thus explaining why speakers assign a uniform truth value. Moreover, Classical Russellianism provides descriptive material that can be used in accounting for belief contexts.

Classical Fregeanism, on the other hand, associates both *Sinn* and *Bedeutung* with a name. Names thus both have descriptive content and are referring expressions. According to Frege (1892), lack of a referent in a name does not deprive a sentence containing it of sense – but of truth value. This accounts for the core intuitions regarding empty proper names – for F-speakers. The only semantic use Frege made of the senses of empty proper names is in accounting for “indirect contexts” such as belief contexts. In such contexts, semantic values are shifted: Proper names here refer to the senses they have in “direct contexts”. Thus, belief sentences containing names that are empty in simple sentences do have truth values, according to Frege, because the names aren’t empty when occurring in such contexts.<sup>9</sup>

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<sup>9</sup>They also get new senses when thus occurring, according to Frege. (He does not tell us what these are like, though.) Since indirect contexts can contain further indirect contexts (belief operators can be arbitrarily iterated), these shifts in semantic value result in an infinite hierarchy of senses. Donald Davidson classically objected that this would make it impossible to learn a natural language (Davidson 1965). For more on this, see for instance Burge 1979, Parsons 1981, Dummett 1981, Kripke 2008. These Fregean ideas have some similarities with switcher semantics, and in Pagin and Westerståhl 2010c, a basically Fregean account of

Classical Russellianism and Classical Fregeanism are at their best when it comes to accounting for the Fregean intuitions towards name identities and belief contexts containing non-empty names. But when it comes to the Kripkean modal intuitions, they get things badly wrong. What we shall call “Classical Millianism”, on the other hand, gets the latter exactly right.<sup>10</sup> According to Classical Millianism, proper names do not have any descriptive content. Their semantic value consists solely in their referent. Kripke argued that the body of intuitions he provided is best explained by construing proper names as rigid designators:

(RD) A singular term  $t$  is a rigid designator iff for some object  $o$ ,  $t$  refers to  $o$  in every world where  $o$  exists and in no world to anything else.

A rigidity account of proper names thus is not incompatible with construing names as having intensions. These intensions, however, are constant functions. As was observed early on, we might as well do without such intensions altogether and construe names as directly referring expressions. Hence, Millianism.

Classical Millianism does not account for the Fregean intuitions, however. And it is at its worst when it comes to empty names. According to Classical Millianism, empty proper names do not have any semantic value. Consequently, the sentences containing quotation is developed by using the switcher technique.

<sup>10</sup>We have no idea in how far it is historically accurate to ascribe this account of the semantics of proper names to Mill. Frederick Kroon argues that Mill actually came at least very close to holding what he calls “Descriptive Millianism” (Kroon 2004).

them not only do not have any truth values, they do not even have meanings or express propositions. Classical Millianism, just by itself, does not provide any resources to remedy this. Frege had senses to make use of when it came to belief contexts, but Millianism with its radical anti-descriptivism does away with any further element in the semantics of proper names. Prima facie, any account the Millian provides of the Fregean intuitions, as well as of the full range of the empty names phenomena, thus needs to bring in extra-semantic resources.

And that is precisely what the two main versions of Millianism currently on offer do. When it comes to what is called “Pragmatic Millianism”, this is obvious. There are a number of different versions of pragmatic Millianism (cf. Adams and Stecker 1994, Adams, Fuller, and Stecker 1997, Taylor 2000, Soames 2002), but the main idea common to all of them is that while literally or semantically saying the same thing when uttering (17) or (21),

(21) Frege believes that Hesperus is Hesperus,

speakers at the same time also communicate certain descriptive or descriptively enriched propositions. What explains the intuition that substitution of co-referring names can change truth value in belief context then is that speakers mistake what is pragmatically communicated for what is literally said. And analogously for sentences containing empty names. With utterances of such sentences, speakers literally say nothing whatsoever, but they nevertheless manage to communicate certain descriptive or descriptively enriched propositions. Exactly how such enrichment works, and what the pragmatic

mechanisms are, pragmatic Millians have different ideas about. But for our purposes, the main idea suffices.

Pragmatic Millianism has been amply criticized in the literature. It has been argued that if pragmatic Millianism is right about why the fact that sentences containing empty names literally do not have truth values usually remains hidden from ordinary speakers, these speakers should nevertheless be able to recover this fact (cf. Reimer 2001, Piccinini and Scott 2010, but see also Green 2007). It is not obvious, however, that that holds for all versions of pragmatic Millianism. It has also been argued more generally, that pragmatic Millianism has a hard time explaining the apparent selectivity of the mistakes it ascribes to ordinary speakers (cf. Caplan 2006). Presumably, the pragmatic mechanisms in question generate descriptive or descriptively enriched propositions whenever proper names are used. Why do speakers mistake these propositions for what is said when it comes to belief contexts, but not when evaluating modal contexts, for instance? And if these descriptively enriched propositions are always available, wouldn't that make the Millian vulnerable to arguments based on intuitions very like the original Kripkean ones? For instance, enriching 'Aristotle' with the 'teacher of Alexander' would seem to allow a speaker to assert something true with

(22) It is necessary that Aristotle went into pedagogy,

But intuitively, (22) never seems to be true (cf. Sider and Braun 2006, 671). Finally, it has been argued that for every pragmatic move the Millian makes, there is an analogous move the descriptivist could make (cf. Caplan 2006). While the Millian introduces

descriptive propositions to deal with the Fregean intuitions, the idea is, the descriptivist could introduce pragmatically communicated singular propositions to deal with the Kripkean intuitions. Pragmatic descriptivism would thus be some sort of mirror image of pragmatic Millianism. Presumably, for every problem the pragmatic Millian faces, there would however also be a “mirror problem” for the pragmatic descriptivist.<sup>11</sup> More fundamentally, going pragmatic on half of the phenomena is a very heavy price to pay for any account of proper names. *Ceteris paribus*, more semantics would clearly make for a better account.

The other main version of Millianism currently on offer would seem to do better in this respect: “Gappy Millianism” (cf. Braun 1993; Braun 2002; Braun 2005, Salmon 1998). According to Gappy Millianism, sentences containing empty names express what David Kaplan called “structurally challenged propositions” (Kaplan 1989). These days, these are commonly called “gappy propositions”.<sup>12</sup> The gappy propositions relevant here are what results from a so-called “Russellian proposition” containing an individual when that individual is removed. The idea is that such a proposition has, or partly consists of, a structure containing slots for different kinds of entities. A whole proposition has all its slots filled. Removing an entity from a proposition thus results in an empty slot. But the slot,

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<sup>11</sup>For further criticism of pragmatic Millianism, see Speaks 2011. See Soames 2006a; Soames 2006b for defense.

<sup>12</sup>It is not completely easy to distinguish a gappy proposition – which is supposed to be a proposition – from what Russell called a “propositional function” – which as clearly is not a proposition as what is expressed by a predicate is not a proposition.



so to speak, is still there, even if unfilled. Thus, the claim is, even a gappy proposition is sufficiently proposition-like to do duty as what is semantically expressed by sentences containing empty names.<sup>13</sup>

An initial criticism of gappy Millianism is the following: Why should we think that gappy propositions have truth values (cf. Everett 2003)?<sup>14</sup> Properties (not to speak of more common and garden objects such as chairs and tables) do not have truth values, and atomic gappy propositions are hard to distinguish from mere properties. According to a “gappist” such as David Braun, structure is the answer (Braun 2005). A gappy atomic proposition does not merely consist of a property, there also is the structure itself – which contributes the gap, so to speak. Gappy propositions thus are sufficiently like propositions to make it quite natural to assign truth values to them – but not to properties, chairs or tables.<sup>15</sup> Braun’s idea then is to treat atomic sentences with empty names as false, and

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<sup>13</sup>David Braun argues that gappy propositions *are* propositions. His main argument is an argument for the claim that they are objects of attitudes such as belief. It involves a Twin Earth scenario in which the causal chain anchoring the name ‘Napoleon’ is blocked, and the name therefore empty (cf. Braun 2005, 601ff). This is supposed to show that gappy propositions are belief contents. In as far as this conclusion presupposes the very externalist semantics for proper names that is ultimately at issue here, the argument appears to be viciously circular, however.

<sup>14</sup>According to Salmon (1998), they do not.

<sup>15</sup>How does the sentence manage to be associated with the relevant structure, however? Why does the gappy proposition associated with a sentence containing an empty name contain a slot for an individual, for instance, and not for what corresponds to an existential quantifier, for instance a property of properties? It must, one suspects, be the name that is somehow responsible for that, despite its emptiness. Does this mean that empty proper names on this view in the end are not so completely devoid of semantic value as advertised?

their negations as true. In this way, the core empty names intuitions can be accounted for – for the R-speakers.

A prima facie unhappy consequence of gappy Millianism would seem to be that all atomic sentences you could form from the schema

(23) ... is a detective,

by replacing the dots with an empty name would express the same (gappy) proposition: the gappy detective proposition. This is quite counterintuitive; (23) appears to be true in fictional discourse, while (24) would be false in such discourse:

(24) Dr. Watson is a detective.

It is here that even gappy Millianism ultimately would seem to have to accept help from non-semantic sources.<sup>16</sup> It certainly does in Braun's hands; he invokes "ways of be-

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According to Taylor (2000), this is indeed the case. Applying a suggestion by Recanati concerning the semantics of directly referential terms (1993), Taylor holds that any proper name, whether referring or not, has "the semantic feature REF as an ingredient of their lexical meanings" (Taylor 2000, 19). And REF "indicates that the truth conditions of any utterance in which the relevant expression occurs will be singular" (Taylor 2000, 18).

<sup>16</sup>In Braun 2005, Braun acknowledges that there are uses of fictional names in which these are best construed as referring to fictional, i.e. abstract, objects. An example would be (12):

(12) Sherlock Holmes is a fictional character.

At the same time, however, ordinary speakers also hold (6) true:

(6) Sherlock Holmes does not exist.

Braun's conclusion is that ordinary, pre-theoretic intuition is incoherent (Braun 2005, 613). Therefore, he issues a set of recommendations for resolving "the ordinary indeterminacy in the name 'Holmes'. Replace

believing” at this point. According to him, believing that Sherlock Holmes is a detective and believing that Dr. Watson is a detective amount to a certain three-place relation obtaining between the subject, the gappy detective proposition, and different ways of believing (cf. Braun 2002; Braun 2005). Whatever it precisely means to believe a proposition in a Holmesy way (as opposed to a Watsony way), this proposal obviously will result in an unexpectedly large number of different ways of believing. These ways of believing would presumably have to be available in unlimited complexity in order for the account to work for simple and complex sentences containing one or more empty names. It is, for instance, not obvious what a way of believing (25) consists in:

(25) If Sherlock Holmes is a detective, Dr. Watson is, too.

Obviously, it cannot simply be a conjunctive way of believing. But then, how would this work? How would we be able to explain how a sentence of arbitrary complexity determines a way in which to believe the proposition it expresses – short of importing most of semantics into the account of the way-of-believing component of the belief relation? Traditionalists feeling that accounting for the possibility of having all these different beliefs, and tracing or modelling their various relations in systematic ways, is precisely one the name (or the current use of it) with two names (or two uses), the non-referring ‘Holmes<sub>1</sub>’ and the referring ‘Holmes<sub>2</sub>’. Distinguish carefully between the two, even if you do not always pronounce the subscripts” (Braun 2005, 614). We are more optimistic than Braun and think that the apparent incoherence of pre-theoretic intuition can be sufficiently resolved by means of the distinction between literal and meta-fictional discourse drawn above. Literal use of ‘Holmes’ corresponds to Braun’s ‘Holmes<sub>1</sub>’. And of course, what we are considering here are literal uses only.

of the explanatory jobs *contents* are supposed to do, not attitudes or ‘ways of attitudinizing’, thus seem to have some reason for complaint here.<sup>17</sup>

This brings us back to the idea that descriptivism really should be best suited for dealing with empty proper names. What we would want, however, is a descriptivism that does not fly in the face of the Kripkean intuitions. The most classical descriptive theory developed to account for the behavior of proper names in modal contexts is wide-scope descriptivism. If names have descriptive content, scope distinctions can make a difference with respect to the truth conditions of the sentences containing them. Wide-scope descriptivism is based on the claim that there is something – a semantic or a syntactic rule – that forces proper names to always take wide scope with respect to modal operators. Thus, the wide-scoper claims, the appearance of rigidity (and of the “scopelessness” of proper names in relation to modal operators): It is always the individual a name refers to in the actual world whose properties in other possible worlds determine the truth value of modal sentences.

When it comes to empty names, wide-scopism can account for the core intuitions. Which side it accounts for depends on the logical form it takes the relevant descriptive material to have. If names are understood as singular terms, wide-scopism naturally falls on the F-side, if they are understood as quantificational devices, it falls on the R-side. Nevertheless, it has recently been argued that descriptivism, especially in the form of wide-scopism, is not as good at treating empty names as we would wish. Stuart Brock

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<sup>17</sup>For further discussion, see Everett 2003, Mousavian 2011.

makes heavy weather of the observation that wide-scopism does not help with the modal intuitions towards empty names, especially towards modal existentials containing empty names (Brock 2004). There are speakers, most of them R-speakers, who consider sentences like (10) or (26) as true:

(10) Vulcan might have existed.

(26) Sherlock Holmes might have existed.

Kripke originally belonged with this group, but later argued that these sentences aren't true (cf. Kripke 1972, 24; 156-158; Kripke 2011). If some of these sentences were true, Kripke argues, we might end up with different individuals being Sherlock Holmes in different worlds. This is completely at odds with the basic idea of *de re* modality: That we are interested in what would be true of *this* very individual, no matter how described or designated, under different circumstances. This is indeed a very forceful consideration, and as long as we are talking *de re* modality, it seems utterly persuasive to us.

That, of course, leaves it open that these modal intuitions track a different notion of modality: *de dicto* modality. In that case, explaining the intuitions would be as urgent for an account of proper names as it would be to explain the intuition that Hesperus might not have been Phosphorus. This is, we think, indeed a challenge to be taken on, but it is

a challenge equally facing everyone.<sup>18,19</sup>

<sup>18</sup>A related problem is raised by Cullison and Caplan (2011). They fault wide-scope descriptivism for not providing any reading on which sentences like (i) are true:

- (i) It is necessary that it is not the case that Saul Kripke is Sherlock Holmes.

According to them, there is such a reading. They argue further that it does not help the descriptivist to adopt what they call “neutralism” instead of wide-scopism. According to neutralism, names can always take either wide or narrow scope with respect to any operator. Neutralism, Cullison and Caplan claim, can thus account for the truth of modal existentials such as (26) (cf. Cullison and Caplan 2011, 287, fn. 9). Neutralism, however, has a hard time explaining why there does not seem to be a false reading of modal sentences like (19).

If there indeed is a common and stable intuition that (i) has a true reading, this must be due to a *de re* reading of the modal operator. (Read *de dicto*, it should be fairly clear that (i) is intuitively false, it seems to us.) We are doubtful that this really is a very common and stable intuition. But even if it is, this problem does not generally favor Millianism. To provide such a reading, the Millianism has to be of one of two kinds. The first kind is such that it also provides sentences like

- (ii) Saul Kripke is Sherlock Holmes

with a truth value. This kind of Millianism faces a dilemma. Either the truth value of (ii) is provided by means of gappy Millianism, in which case ‘Sherlock Holmes’ contributes nothing, and consequently there is no semantic difference between (ii) and e.g. ‘Saul Kripke is Dr Watson’, contrary to intuition. Or else, a referent is provided for ‘Sherlock Holmes’. On Nathan Salmon’s (1998) view, for instance, the name refers (unambiguously) to the fictional character, an abstract object. But this view has the counter-intuitive consequence that (6) (‘Sherlock Holmes does not exist’) is literally false. Salmon tries to deal with that by reinterpreting (6) as saying that Holmes does not have the “Holmesque” properties (Salmon 1998, pp. 298, 304), but this is an interpretation not delivered compositionally.

The second kind of Millianism allows an atomic sentence like (ii) to be neither true nor false, but uses *negation* in a way that renders a sentence like

- (iii) It is *not* the case that Saul Kripke is NN

true. Salmon 1998, who espouses such a Millianism for names that he himself considers empty, achieves this by means of so-called *exclusion negation* (Salmon 1998, pp. 280, 310). Exclusion negation creates an intensional context in which the embedded sentence refers to the proposition it expresses. In this case, this

There might seem to be two kinds of descriptivism, however, that are somewhat more poised to take up that challenge than any other accounts of the semantics of proper names. These are two-dimensional semantics – and switcher semantics. Both provide proper names with descriptive content that can be used in accounting for Fregean intuitions as well as for the empty names phenomena. Both also account for the Kripkean intuitions, but without enforcing scope distinctions that might get into the way of using the descriptive material to account for *de dicto* modal intuitions. We are not aware of any explicit application of two-dimensional semantics to empty names; we shall leave it to the two-dimensionalist to develop their account in this direction. In what follows, we shall explore what can be done for empty names within switcher semantics.<sup>20</sup>

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proposition is gappy (e.g. (identity, Kripke,   )). Sentence (iii) is nevertheless true because the (gappy, or “structurally challenged”) proposition expressed by the embedded sentence is not true. However, even this version of gappy Millianism loses semantic distinctions that intuitively are there: the meaning of (iii) is the same as that of a sentence formed by substituting another empty name ‘MM’ for ‘NN’.

It should also be noted that exclusion negation, creating a new intensional context, is a semantic switcher in our sense. If semantic switching is allowed, it can be used to better effect, i.e. in a way that preserves intuitive semantic distinctions. We develop such a use of semantic switching below.

<sup>19</sup>For further, general criticism of recent defenses of descriptivism, see Everett 2005, Soames 2002.

<sup>20</sup>For comparison between switcher semantics, as we have developed it so far, and two-dimensional semantics, see Glüer and Pagin 2006, Glüer and Pagin 2012a, esp. fn.21.

#### 4 Switcher Semantics

In “Proper names and relational modality” (2006), we suggested what we call a “switcher semantics” for proper names and modal operators. This semantics explains the behavior of proper names in modal contexts without assuming either their rigidity or their non-descriptiveness. Before exploring the possibilities this switcher semantics offers for accounting for empty names, we shall have to quickly recapitulate its basic ideas.

Recall the data used in Kripke’s modal argument: Intuitively, there is a clear difference between sentences like the following:

(19) It might have been the case that Aristotle did not go into pedagogy.

(18) It might have been the case that the teacher of Alexander did not go into pedagogy.

(19) is true, while (18) (has one reading on which it) is false. We have argued that what data like these first and foremost show is that ordinary modal thinking is *de re*: In ordinary modal thinking, we are concerned with the objects we refer to, regardless of how they are designated, and we want to know what would be true of these very objects under varying possibilities. Consequently, there are two basic options for explaining the modal intuitions: by means of the semantics of proper names or by means of the semantics of modal expressions. The semantics that we have suggested makes use of both of them.

Its basic idea is to interpret modal expressions such that they treat simple singular terms differently from complex ones. More precisely, proper names occur *referentially* when in the scope of modal expressions. This is, so to speak, the “special effect” modal



operators have on simple singular terms.

To implement this idea in the semantic theory, we use two truth definition clauses. First, we define a second semantic evaluation function that we call “actualist evaluation”, and then we let this second evaluation kick in under the necessity operator.

In standard possible worlds semantic, atomic sentences are evaluated by means of

$$(P) \quad \text{True}(Pt_1, \dots, t_n, \mathbf{w}) \text{ iff } \langle \mathbf{I}(t_1, \mathbf{w}), \dots, \mathbf{I}(t_n, \mathbf{w}) \rangle \in \mathbf{I}(P, \mathbf{w}),$$

where  $\mathbf{I}$  is an interpretation function assigning referents to terms and extensions to predicates in possible worlds. Evaluation by means of (P), we shall call “possibilist evaluation”. Here, both terms and predicates are evaluated at the relevant possible world  $\mathbf{w}$ . In actualist evaluation, by contrast, we consider referents in the *actual* world  $\mathbf{a}$  instead:

$$(A) \quad \text{True}(Pt_1, \dots, t_n, \mathbf{w}) \text{ iff } \langle \mathbf{I}(t_1, \mathbf{a}), \dots, \mathbf{I}(t_n, \mathbf{a}) \rangle \in \mathbf{I}(P, \mathbf{w}).$$

In other words, in actualist evaluation, we consider whether those objects that the relevant singular terms *actually* refer to belong to the predicate’s extension at a possible world  $\mathbf{w}$ .

This simple idea needs to be made a little more complicated if we suppose that applied functional expressions, like ‘ $g(u)$ ’, where ‘ $u$ ’ again is a singular term, simple or complex, are singular, and that definite descriptions, like ‘the  $x$  such that  $Fx$ ’, or ‘ $\iota xFx$ ’, are singular too. In order to accommodate these terms with the desired result, (A) needs to be replaced by

$$(A+) \quad \text{Actua-true}(Pt_1, \dots, t_n, \mathbf{w}) \text{ iff } \langle \mathbf{V}(t_1, \mathbf{w}), \dots, \mathbf{V}(t_n, \mathbf{w}) \rangle \in \mathbf{I}(P, \mathbf{w}),$$

where the term evaluation function  $\mathbf{V}$  is defined as follows:

- (V)  $\mathbf{V}(t, \mathbf{w}) = \mathbf{I}(t, \mathbf{a})$ , in case  $t$  is simple,  
 $\mathbf{V}(g(u), \mathbf{w}) = \mathbf{I}(g, \mathbf{w})(\mathbf{V}(u, \mathbf{w}))$ ,  
 $\mathbf{V}(\iota x Fx, \mathbf{w}) =$  the unique entity  $b$  such that  $\text{True}(Fx, \mathbf{w})$  with  $b$  assigned  
to  $x$ , and undefined if there is no such object,

where  $\mathbf{I}(g, \mathbf{w})$  is the function (in extension) assigned to  $g$  in  $\mathbf{w}$ .

By  $\mathbf{V}$ , simple singular terms are evaluated with respect to the actual world while functional expressions and predicates within complex singular terms are evaluated with respect to the possible world in question.<sup>21</sup>

The second relevant part of the truth definition is the clause that makes (A+) kick in under the necessity operator:

- (M)  $\text{True}(\ulcorner \text{It is necessary that } \phi \urcorner, \mathbf{w})$  iff  $\text{Actua-true}(\phi, \mathbf{w}')$  at any world  $\mathbf{w}'$  accessible from  $\mathbf{w}$ .

This gives the desired result for our example pair; (19) is true, and (18) has a reading on

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<sup>21</sup>There is currently a revival of the idea to consider proper names as only superficially simple while assimilating their logical form to that of definite descriptions (cf. a.o. Burge 1973, Larson and Segal 1995, Geurts 1997, Bach 2002, Elbourne 2005, Matushansky 2008, Graff Fara 2011). This is not the place to motivate our skepticism towards such accounts (for discussion, see Hawthorne and Manley 2012, ch. 6.6). We would like to note, however, that even if such an account were correct one could still make use of the switcher semantics. For presumably any such account will work from some structural characterization of the category of proper names distinguishing them from definite descriptions, for instance by means of their surface form. The switcher semantics then could use this characterization in specifying when the modal operator triggers a switch and when it doesn't.

which it is false.<sup>22</sup>

Since it works with two different semantic evaluation functions, an evaluation switcher semantics assigns two intensions to every expression: A standard (or “possibilist”) possible worlds intension and what could be called an “actualist intension”. We suggest to identify an expression’s *linguistic meaning* with the ordered pair of these intensions. For simple singular terms, the actualist intension is different from the standard intension. From this perspective, the modal operator works as an “evaluation switcher”: it switches from evaluating an expression’s standard intension to evaluating its actualist intension.<sup>23</sup>

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<sup>22</sup>In Glüer and Pagin 2012a, this semantics is extended to general terms, especially natural kind terms and predicates. There, we also comment at greater length on one consequence of this semantics: Simple true name identities containing different names such as

(16) Hesperus is Phosphorus,

will not be “necessary” on this semantics (in the sense of being true at all accessible possible worlds). Their necessitations, however, will be true. Our hypothesis is that this distinguishes between a priori and a posteriori necessity: Assume a sentence has a true necessitation. If it is also true at all accessible possible worlds, it is an a priori necessity. If not, it is an a posteriori necessity.

<sup>23</sup>This semantics, properly completed, has the form of a truth definition. It is straightforward to give it instead as an explicit semantics, i.e. with a semantic function  $\mu$  mapping disambiguated expressions, worlds, contexts, and assignment functions on truth values in  $\{0, 1\}$ . (Contexts are not used above, but they play a role in accounting for natural kind terms and predicates in Glüer and Pagin 2012a.) By abstracting over these arguments (or some of them), we get meanings:  $\lambda w \lambda c \lambda f (\mu(e, w, c, f))$ . In an explicit switcher semantics, the shifting potential of the necessity operator will be realized by shifting to a new semantic function  $\mu_a$  that applies in modal contexts and corresponds to actua-truth. This is specified by

(EM)  $\mu(\Box p, w, c, f) = 1$  iff it holds for all  $w'$  accessible from  $w$  that  $\mu_a(p, w', c, f) = 1$ .

Clearly, this semantics is not compositional with respect to *intension*. A simple term and a definite description or functional expression may have the same intension but not be intersubstitutable in modal contexts.

As the switcher semantics for singular terms has been developed so far, their actualist intensions are “singular”: these functions are defined only if the terms refer in the actual world. And their possibilist intensions are partial: these functions are defined only at worlds where the terms refer. There is thus no prediction yet for contexts containing empty names. In the next section, we shall explore what can be done here.

## 5 Switcher Semantics for Empty Names

As the switcher semantics has been developed so far, it could be used as it stands for explaining the core intuitions of the F-speakers. That is, we could use it to predict that atomic sentences containing empty names, their negations, and *de re* modal sentences

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There is, however, a straightforward generalization of compositionality, called “general compositionality” in Pagin and Westerståhl (2010), and outlined in Pagin and Westerståhl 2010a, that preserves the essential properties of standard compositionality and subsumes the proposed semantics. Call a semantic function  $\mu$  *designated* in a set  $S$  of semantic functions for a language  $L$  iff  $\mu$  applies to all *unembedded* occurrences of grammatical terms (disambiguated expressions) for  $L$ . Then

(PC\*) A set of semantic functions  $S = \{\mu_1, \dots, \mu_k\}$  with designated function  $\mu_1$  for a language  $L$  with  $\Sigma_L$  as its set of syntactic operations, is *general compositional* iff for each pair  $\langle \mu_i, \sigma_j \rangle$  in  $S \times \Sigma_L$  there is a meaning operation  $r_{ij}$  and members  $\mu_{d_1}, \dots, \mu_{d_n} \in S$  such that for all terms  $t_1, \dots, t_n$  for which  $\sigma_j$  is defined,

$$\mu_i(\sigma_j(t_1, \dots, t_n)) = r_{ij}(\mu_{d_1}(t_1), \dots, \mu_{d_n}(t_n))$$

provided  $\mu_i$  is defined for  $\sigma_j(t_1, \dots, t_n)$ .

Instead of a simple recursion over syntax, we have mutual recursion over syntax in the definition of all semantic functions in the set  $S$ . Standard compositionality is the special case where  $S$  contains exactly one member, the designated and only semantic function. The switcher semantics proposed in this paper is general compositional.

(free from attitude or epistemic operators) all do not have truth values. At the same time, empty proper names can have descriptive contents on this semantics, and these descriptive contents are available to deal with belief contexts and to explain their possession of truth values. Moreover, if names are not rigid designators, this can be done – though not here – without having to “undo” any untoward consequences their rigidity would have.

Nevertheless, it would be nice if something could also be done to account for the intuitions of the R-speakers. The question is: Can we construe this as a kind of evaluation switch? There is no surface operator that would trigger such a switch, but here is an idea: Speakers who consider literal uses of (3) or (11) false *know* that they are speaking about an object that does not exist:

(3) Sherlock Holmes is a detective.

(11) Sherlock Holmes exists.

They intend to say something (false) about how the world actually is: That it does contain an object of a certain description, for instance. Or that such an object is a detective. Similarly, speakers who consider sentences like (27)

(27) Neptune might not have existed.

as true, intend to say something about how the world could have been: Such that it did not contain a certain object. Using these sentences, speakers intend to talk about objects of certain descriptions which do not exist in the situation under consideration, be that the actual one or a mere possibility. Let's call such intentions “proxy intentions”.

The basic idea then would be to treat proxy intentions as introducing a “hidden oper-

ator”: the proxy operator  $\pi$ .<sup>24</sup> The proxy operator is a switcher: It switches the evaluation of what is in its scope to what we shall call a “proxy evaluation”. As with actualist evaluation, the basic idea of proxy evaluation is that it treats simple singular terms differently: If a name does not have a referent in the world  $w$  under consideration, it “imports” one from  $w'$ , the world closest to  $a$  where the name has a referent, more precisely, where the name has a referent that does not exist in  $a$ .<sup>25</sup> For atomic sentences, proxy evaluation at  $w$  then “checks” whether the object imported from  $w'$  has the relevant property in  $w$ . Not existing in  $w$ , it never does, so by proxy evaluation all atomic sentences containing empty names come out false.

For the fictional use of empty names, we assume like many others that there is a “hidden” fiction operator  $\phi$ .  $\phi$  is a switcher, but no further evaluation function is needed.  $\phi$  acts as a modal operator that shifts the possible world from the world  $w$  under consideration to a world  $w'$ , which is the world closest to  $w$  where the relevant fiction is true.<sup>26</sup>

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<sup>24</sup>To keep the semantics syntax driven, the proxy operator must be considered a syntactic operator not realized in surface form, but part of logical form.

<sup>25</sup>Many thanks to Imogen Dickie for pointing out that our original version of proxy evaluation left open the (unlikely but unwanted) possibility of importing an object that exists in  $a$  (even though the name under consideration does not refer to it in  $a$ ), an object the properties of which would result in the truth of at least some atomic sentences containing the name. Note that  $w'$  does not have to be accessible from  $a$ . Also, the appeal to the existence of a *closest* world is a convenient simplification. All that is really needed is a world  $w'$  such that the name has a referent in  $w'$  (which does not exist in  $a$ ) and such that there is no other world  $w''$  equally close or closer to  $a$  where the name has a *different* referent (which does not exist in  $a$ ).

<sup>26</sup>Here we are obviously following in the footsteps of David Lewis (1978), even if the idea differs somewhat from his. Truth in fiction is not a main theme of the present paper, and so a more thorough discussion of adequacy conditions that may be needed within a possible-worlds framework must be deferred to another

There, we evaluate for possibilist truth.<sup>27</sup> Thus, a fictional use of (3) would come out true.

Before explaining and commenting on further details of the suggested extension to switcher semantics, we shall now present the basic clauses of its truth-definitional form: Instead of with two, we now work with *three different truth predicates*. Each holds (or not) of a formula  $A$ , a world  $w$  and an assignment  $g$ :

- Possibly True ( $\text{True}$ )
- Actua-True ( $\text{True}_a$ )
- Proxy-True ( $\text{True}_p$ )

Here  $\text{True}$  is the default; i.a., any sentence is *simply true* with respect to a possible world provided it is Possibly True. This is the truth predicate used by possibilist evaluation.

Then, there are three different term interpretation functions:  $\mathbf{I}, \mathbf{I}_a, \mathbf{I}_p$ , where  $\mathbf{I}$  is default.  $\mathbf{I}$  and  $\mathbf{I}_a$  may be partial. As before,  $a$  is the actual world. In what follows, we shall simplify a bit and only consider simple singular terms. Then, we define our three term

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occasion.

<sup>27</sup>In the text, we assume that fictional names are empty. But what about names of actually existing individuals used in fiction? This is not a problem as long as the referent in  $w$  is the same as in  $a$ . These come apart only if the descriptive material the fiction semantically associates with the name, i.e. puts into its semantic content, diverges sufficiently from the descriptive material in its literal content as to determine a different referent in the fictional world  $w$ . In such a case, our semantics predicts that these are two different names: The name used in the fiction actually is empty. And the name referring to the actual individual is not used in the fiction. The fiction, that is, is not about the actual bearer of the name at all. We think this is as it should be. Those who find this counterintuitive could try to complicate the semantics by using an actualist interpretation function for names of actually existing individuals occurring in fictional contexts and a fictional interpretation for truly fictional names.

interpretation functions as follows:

*Interpretation of terms:*

- i)  $\mathbf{I}(t, \mathbf{w})$ , given descriptively, or by the model
- ii)  $\mathbf{I}_a(t, \mathbf{w}) = \mathbf{I}(t, \mathbf{a})$
- iii)  $\mathbf{I}_p(t, \mathbf{w}) = \mathbf{I}(t, \mathbf{w}')$ , where  $\mathbf{w}'$  is the world closest to  $\mathbf{a}$  such that  $\mathbf{I}(t, \mathbf{w}')$  is defined and  $\mathbf{I}(t, \mathbf{w}') \notin \mathcal{D}(\mathbf{a})$ .

Next, we define our three evaluation functions for atomic sentences:

*Truth for atomic sentences:*

- i)  $T(Ft_1, \dots, t_n, \mathbf{w}, g)$  iff  $\langle \mathbf{I}(t_1, \mathbf{w}, g), \dots, \mathbf{I}(t_n, \mathbf{w}, g) \rangle \in \mathbf{I}(F, \mathbf{w})$
- ii)  $T_a(t_1, \dots, t_n, \mathbf{w}, g)$  iff  $\langle \mathbf{I}_a(t_1, \mathbf{w}, g), \dots, \mathbf{I}_a(t_n, \mathbf{w}, g) \rangle \in \mathbf{I}(F, \mathbf{w})$
- iii)  $T_p(Ft_1, \dots, t_n, \mathbf{w}, g)$  iff  $\langle \mathbf{I}_p(t_1, \mathbf{w}, g), \dots, \mathbf{I}_p(t_n, \mathbf{w}, g) \rangle \in \mathbf{I}(F, \mathbf{w})$

As before, the idea is that possibilist evaluation is the default. Conjunction, disjunction, and existential quantification can be defined as usual, except for variable truth predicates. These operations never switch evaluation; rather, they “keep” it. In Pagin and Westerståhl 2010c, a distinction is thus made between operators that are “evaluation keepers” and operators that are “evaluation switchers”. *De re* modal operators are switchers, and so is the proxy operator. The fiction operator is a keeper; it shifts the world but does not switch evaluation.

As noted in earlier work (Glüer and Pagin 2006, Glüer and Pagin 2012a), in addition to *de re* modal operators we can define *de dicto* modal operators. In contrast to *de re* modal operators, these are keepers. A simple *de dicto* modal sentence containing a simple sin-



gular term  $t$  thus will be true at a possible world  $w$  iff there is a world  $w'$  accessible from  $w$  such that the referent of  $t$  at  $w'$  is within the extension of the predicate at  $w'$ . Here are the recursion clauses for all of these operators:

*Recursion, for all truth predicates  $T_x$ :*

- i)  $T_x(A \& B, w, g)$  iff  $T_x(A, w, g)$  and  $T_x(B, w, g)$
- ii)  $T_x(\neg A, w, g)$  iff  $\mathbf{I}_x(t, w)$  defined, for all  $t$  in  $A$ , and not  $T_x(A, w, g)$
- iii)  $T_x(\exists y(Ay), w, g)$  iff for some  $g'[y]g$  s.t.  $g'(y) \in D(w)$ ,  $T_x(Ay, w, g')$
- iv)  $T_x(\diamond_d A, w, g)$  iff  $T_x(A, w', g)$ , for some world  $w'$  accessible from  $w$  (modality *de dicto*).
- v)  $T_x(\diamond_r A, w, g)$  iff  $T_d(A, w', g)$ , for some world  $w'$  accessible from  $w$  (modality *de re*).
- vi)  $T_x(\pi A, w, g)$  iff  $T_p(A, w, g)$
- vii)  $T_x(\phi A, w, g)$  iff  $T(A, w', g)$ , where  $w'$  is the world closest to  $w$  where fiction  $\Phi$  is True.<sup>28</sup>

What does all of this get us for empty names? Quite a bit. To evaluate a sentence containing an empty name, we now first need to determine whether it contains any hidden operators. If it doesn't, things are as before: atomic sentences, their negations as well as simple *de re* modal sentences and their negations all lack truth value. For sentences

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<sup>28</sup>Here we assume an extra-linguistic context dependence in the semantics of the  $\phi$  operator, picking out the relevant fiction  $\Phi$ . To keep things simple, we have refrained from making this context dependence explicit.

containing hidden operators or *de dicto* modal operators, however, we now can get truth values.

Let's look at these in a bit more detail. Assume that our speaker has proxy intentions. Sentences like (1) and (3) will then be construed as simple proxy sentences:

- (1) Vulcan is a planet.
- (3) Sherlock Holmes is a detective.

Assuming that the descriptive material semantically associated with the names 'Vulcan' and 'Sherlock Holmes' is not contradictory, there will be a world  $w'$  closest to the actual world such that the names have a referent at  $w'$ . These names thus have a proxy interpretation. Consequently, the sentences are proxy truth evaluable and have a truth value: They are false. This, we think, accommodates the R-intuitions towards atomic sentences containing empty names – to the degree they ought to be accommodated. What this does not provide is truth values for sentences containing “names” for impossible objects such as the round square. There are no possible worlds from which to “import” objects for such “names” to refer to. But that is as it should be, since any attempt to name such objects is bound to fail.

Analogously for negated sentences such as (2) and (28):

- (2) Vulcan is not a planet.
- (28) Sherlock Holmes is not a detective.

Construed as negated proxy sentences about possible objects, these sentences do have

truth values: they are true. What we do not get from this are two readings for these sentences.<sup>29</sup> Nevertheless, the more important, more stable part of the R-intuitions is accommodated. This, we feel, is quite sufficient.

Something to be noted here is the following: There might be two atomic predicates  $F$  and  $G$  that are inconsistent, for instance ‘bald’ and ‘hairy’. With the proxy evaluation, (29) and (30) will then both be true:

(29) Sherlock Holmes is not bald.

(30) Sherlock Holmes is not hairy.

This might seem inconsistent, for we have

(31)  $\forall x(x \text{ is hairy iff } x \text{ is not bald})$

But in fact, it is perfectly consistent, since

(32) Sherlock Holmes is hairy iff Sherlock Holmes is not bald.

is *not* an instance of (31), because ‘Sherlock Holmes’ does not refer to a possible value of  $x$  (in the world in question). In fact, the truth of (31) together with the falsity of (32) entails that ‘Sherlock Holmes’ does not refer. What this illustrates is that there is a price to be paid for these truth values: We have to switch to a free logic.<sup>30</sup>  $\pi$ -operated sen-

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<sup>29</sup>Which operator takes wide scope over the other does not make any difference here.

<sup>30</sup>More precisely, the logic to be adopted is a negative free logic, i.e. a free logic according to which atomic sentences containing empty proper names are false. Such a move is also – albeit in a truth-theoretical framework – advocated in Burge 1974 and Sainsbury 2005. According to Sainsbury, proper names have “non-descriptive reference conditions” (of the form  $\forall x(\text{‘NN’ refers to } x \text{ iff } x = \text{NN})$ ) allowing them to be

tences instantiate universally quantified generalizations only on the assumption that the contained singular terms refer. And, analogously, existential generalization from true  $\pi$ -operated sentences containing singular terms is valid only on the assumption that those terms refer.

Now assume our speaker is engaging in fictional discourse. A sentence like (3) will then be construed as a simple fictional sentence. The name ‘Sherlock Holmes’ will refer to the object determined by the descriptive material the fiction semantically associates with it – if there is such an object in the domain of the world  $w$  closest to  $a$  in which the relevant fiction  $\Phi$  is true. If there is such an object, the sentence has a truth value. Which one will depend on the relevant fiction. In what we can call “the world of the Conan Doyle novels”, (3) comes out true.<sup>31</sup> And analogously for negated fictional sentences about possible objects. In the world of the Conan Doyle novels, (28), for instance, will be false. This is just as it should be.

Using our *de dicto* modal operator, we can also get truth values for modal sentences containing empty names such as (9):

(9) Vulcan might have been a planet.

meaningful, yet empty. At the same time, these conditions are such that non-empty names are rigid, and empty names empty at all possible worlds (cf. Sainsbury 2005, 93. We did not quite understand what rigidity amounts to in a truth-theoretic semantics, however). Consequently, Sainsbury does not have any resources for dealing with (*de dicto*) modal sentences such as (9) or (10). More on those sentences below.

<sup>31</sup>One could try to treat talk about scientific theories known to be false in a similar way: as containing a hidden ‘according to the theory’ operator.

Such sentences will be true as long as we are talking about objects existing in worlds accessible from the actual world. This is as desired, as well.<sup>32</sup>

This *de dicto* modal operator can also be embedded under the fiction operator, thus delivering truth conditions for the fictional use of sentences like (33):

(33) Sherlock Holmes might have lived in New York.

For arbitrary simple singular term and predicate, we derive truth conditions as follows:

(33')  $T((\phi(\diamond_d(Ft)), \mathbf{a}, g)$  iff  
 $T(\diamond_d(Ft), \mathbf{w}, g)$  where  $\mathbf{w}$  is the world closest to  $\mathbf{a}$  where  $\Phi$  is True iff  
 $T(Ft, \mathbf{w}', g)$  for some  $\mathbf{w}'$  accessible from  $\mathbf{w}$ , and here  $\mathbf{I}(t, \mathbf{w}')$  must be defined.<sup>33</sup>

What about existentials such as (4) and (11) and negative existentials such as (5) and (6)?

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<sup>32</sup>This result does not depend on construing the sentence as a proxy sentence. Of course, we could do that, i.e. consider the modal sentence as embedded under a proxy operator. This doesn't result in a change in truth conditions, however:

(9')  $T((\pi(\diamond_d(\text{Planet}(\text{Vulcan}))), \mathbf{a}, g)$  iff  $T_p((\diamond_d(\text{Planet}(\text{Vulcan}))), \mathbf{a}, g)$  iff there is a world  $\mathbf{w}'$  accessible from  $\mathbf{a}$  such that  $T_p((\text{Planet}(\text{Vulcan})), \mathbf{w}', g)$ .

This will be true only if 'Vulcan' refers in  $\mathbf{w}'$ . Again, it does not matter, either, which operator takes wide scope over the other. Thus, there is only one *de dicto* reading of sentences like (9). This is as desired.

<sup>33</sup>This does not require that the object  $t$  refers to in  $\mathbf{w}'$  is the same object  $t$  refers to in  $\mathbf{w}$ . More precisely, it allows such discrepancy iff  $t$  is a fictionally empty term. This might come handy for fictional talk about fictional objects. Examples would be the characters in the play in *Hamlet*. Kripke (2011) talks about this example, too.

- (4) Vulcan exists.
- (11) Sherlock Holmes exists.
- (5) Vulcan does not exist.
- (6) Sherlock Holmes does not exist.

We could treat existence as a predicate. For this, we need an existence predicate interpretation function:

*Interpretation of the existence predicate E:*

$$\mathbf{I}(E, \mathbf{w}) = \mathcal{D}(\mathbf{w})$$

Construed as proxy sentences, we would then get the result that (4) and (11) are false, and their negations true. In the world of the Conan Doyle novels, the fictional version of (11) would be true, and that of (6) would be false. This is as desired. As before, the price to pay for these truth values is switching to a free logic.<sup>34</sup>

We can then also get truth values for modal existentials such as (10) or (26):

- (10) Vulcan might have existed.
- (26) Sherlock Holmes might have existed.

And, maybe most intriguingly, we can get truth values for modal negative existentials for *non-empty* names such as (27):

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<sup>34</sup>It is, however, the price that almost everyone – basically except for Russell himself – has to pay for truth values for existentials.

(27) Neptune might not have existed.

Not being able to assign truth values to such sentences is a serious drawback for any account of the semantics of names. Since the speaker uttering (27) can rather safely be assumed to have a proxy intention, we get the following:

(27')  $T(\pi(\diamond_d(\neg Et)), \mathbf{a}, \mathbf{g})$  iff

$T_p(\diamond_d(\neg Et), \mathbf{a}, \mathbf{g})$  iff

there is a world  $\mathbf{w}$  accessible from  $\mathbf{a}$  where  $T_p((\neg Et), \mathbf{w}, \mathbf{g})$ .

$\mathbf{w}$  is a world where  $t$  does not refer by  $\mathbf{I}$ , but  $\mathbf{I}_p(t, \mathbf{w})$  is defined. By  $\mathbf{I}_p$ ,  $t$  refers to the object it refers to by  $\mathbf{I}$  in the world closest to  $\mathbf{a}$  where  $\mathbf{I}$  is defined for  $t$ . Clearly, that is  $\mathbf{a}$  itself. Thus, we not only get the right truth value – true – here, we also accommodate the intuition that we are talking about *this* very object, Neptune, and saying that *it* might not have existed – *de dicto*.<sup>35</sup> Clearly, there is much to be explored and discussed when it comes to switcher semantics and the (various) notion(s) of epistemic, or *de dicto*, modality. The semantics of the fiction operator most probably requires fine-tuning as well. As the topic of this paper was empty names, all this will have to wait for another occasion,

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<sup>35</sup>This effect is achieved by tying proxy evaluation at variable world  $\mathbf{w}$  back to  $\mathbf{a}$ . In combination with *de dicto* modal operators, what results is an interpretation of modal discourse that is in between *de re* and *de dicto*, so to speak. The modality is epistemic, or *de dicto*, in character, but the  $\pi$ -operator keeps the object talked about constant as sentences are evaluated at different worlds. In this sense, proxy evaluation is ‘in between’ possibilist and actualist evaluation.

(27) can be read purely *de dicto*, too. Then, it is made true by any accessible world  $\mathbf{w}$  where the descriptive material semantically associated with ‘Neptune’ does not determine a referent. Neptune, however, might well exist in such a world.

however.

To sum things up, the suggested extension of switcher semantics all in all does quite well regarding empty names. It is the only semantics so far on the market that accounts for the F-intuitions as well as (the most important part of) the R-intuitions, including those regarding (*de dicto*) modal sentences containing empty names. It accommodates a fiction operator and provides the right truth values for the fictional uses of the sentences considered. This fiction operator can even be combined with the *de dicto* modal operator to account for discourse about possibilities in the fiction. Like most other semantics for empty names, it pays the price of adopting a free logic for accounting for the truth values of existentials containing empty names. Once we are willing to pay that price, however, we gain the additional, not inconsiderable benefit of being able to account for (*de dicto*) modal negative existentials containing non-empty names.<sup>36</sup>

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<sup>36</sup>Versions of this material have been presented at the Logos Workshop on Singular Thought in Barcelona (January 2009), the Logic, Language, and Mind Seminar in Stockholm (2009), the Amsterdam Graduate Conference (October 2009), the Northwestern Pre-APA Philosophy of Language Workshop (February 2012), the Contextual Semantics Seminar in Gothenburg (April 2012), and the workshop on Reference and Frege Puzzles in Umeå (2013). We would like to thank all participants for their very helpful questions and suggestions, especially Robin Cooper, Imogen Dickie, Janice Dowell, Ragnar Francén, Michael Glanzberg, Chris Kennedy, Jim Pryor, Francois Recanati, Gillian Russell, Isidora Stojanovich, Martin Stokoff, Dag Westerståhl, and Åsa Wikforss. Special thanks are due to Genoveva Martí, Manuel García-Carpintero, and an anonymous referee. Work on this material has been supported by the Swedish Research Council (VR project grant 2009-1195) and by fellowships from the IEA (Institut d'études avancées à Paris), where we spent the spring of 2010.



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