Quantifying In from a Fregean Perspective

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1. Introduction

As Quine (1956) observed, the following sentence has a reading which, if true, would be of special interest to the authorities:

> (1)   Ralph believes that someone is a spy.

This is the reading where the quantifier is naturally understood as taking wide scope relative to the attitude verb and as binding a variable within the scope of the attitude verb.[1] This reading is usually called the *de re* reading. In this essay, I am interested in addressing the question: what should the semantic analysis of this kind of reading look like from a Fregean perspective—a perspective according to which attitude states are generally relations to structured Fregean thoughts, themselves composed of senses?

The question was broached by Kaplan (1968), who sketched some natural ideas about the target truth-conditions for such ascriptions. He did not address the issue of how his broadly Fregean truth-conditions

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    1. Note that some would question whether *someone* here is helpfully classified as a quantifier, motivated perhaps by the exceptional scoping properties of indefinites (see Reinhart 1997 for one classic discussion), and some would prefer to achieve the *de re* reading in situ (that is, while keeping *someone* within the scope of the attitude verb). I return to the latter style of analysis in section 12.

S E T H   Y A L C I N

were to be derived compositionally, however, and subsequent work has not settled the matter. This has left contemporary Fregeans with a semantic lacuna. As compared with rival approaches to attitude ascription—for instance, work in the tradition of possible world semantics[2]—the Fregean position is underdeveloped.

This essay is a beginning at addressing the deficit in the Fregean account. I describe a compositional Fregean treatment for binding variables across attitude verbs, one requiring no exotic syntactic structures and no lexical ambiguity. The treatment extends cleanly to multiply *de re* ascriptions (i.e., to ascriptions containing multiple elements that are read *de re*). The account brings the Fregean position close to the simple view that the *de dicto/de re* ambiguity is, in at least a core class of cases, an ambiguity of scope.

The compositional semantics to be described has some indirect bearing on the issue of the nature of modes of presentation. It does not itself supply a theory of senses—I attempt to remain as neutral as possible on that issue throughout—but it provides a source of constraints. In particular, given certain popular additional assumptions (described below), the account I describe can be seen to fit naturally with an externalist variety of Fregeanism, one on which what modes of presentation are employed in thought—that is, what Fregean thoughts one has—may sometimes metaphysically depend in part on external factors.

This project is relevant to the assessment of recent work in the neo-Fregean literature. For example, Chalmers (2011) proposes a Fregean semantics for attitude ascriptions but does not show how to generalize it to *de re* readings compositionally.[3] An important test of any attitude semantics, however, is given by the question how well it handles cases of quantifying in. Or again, Stanley (2011) has suggested that the best Fregean theory of *de se* ascription will be a certain special case of the best Fregean theory of *de re* ascription. He too advances no specific compo-

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2. See, for example, Cresswell and von Stechow 1982, Percus and Sauerland 2003, Aloni 2005, Ninan 2012, and Holliday and Perry 2014. Note: some of these views are Fregean in a certain thin sense, which we might also describe as "descriptivist." In this thin sense, Lewis (1979), for example, is a Fregean, because he holds that any belief about an object must be mediated by a descriptive condition believed to be satisfied by the object. While this sense of 'Fregean' is perfectly legitimate, it is not the sense in play in this essay. Again, our sort of Fregean models attitude states as relations to structured Fregean thoughts built from senses.

3. He does offer truth-conditions for one kind of *de re* reading. There is a gap between doing this and providing a compositional semantics, a point reviewed below.

sitional proposal about how a Fregean theory of quantifying in should go. Without such details, however, we cannot assess Stanley's proposal about the *de se* from a semantic point of view, and it is correspondingly hard to view that proposal as a competitor to other fully compositional accounts, such as the theory of *de se* ascription built around the centered worlds framework of Lewis (1979).[4] Thus this work is indirectly relevant to the debate about Fregean versus Lewisian conceptions of *de se* attitudes—at least inasmuch as we expect a theory of content to dovetail in some intelligible way with a theory of the compositional semantics of attitude ascriptions. Indeed, as I briefly argue at the conclusion of the essay, the Fregean approach to quantifying in I motivate below undermines Stanley's particular semantic proposal. All things considered, the Fregean should not generally view *de se* ascription as a species of *de re* ascription.

The essay is organized as follows. In section 2, I review the traditional *de dicto/de re* distinction as it arises for attitude contexts and review the classic idea of analyzing it as an ambiguity of scope. In section 3, I explain why the textbook Fregean view has trouble vindicating the scopal analysis. In section 4, I remind the reader of Quine's puzzle of double vision. A sensible response to that puzzle is a desideratum for any semantic analysis of quantifying in. In sections 5–7, I motivate a Fregean proposal about the truth-conditions of constructions involving quantifying in, building chiefly on Kaplan (1968) and Sosa (1970). In these sections, I discuss the role of acquaintance and interactions with the internalism/externalism debate, and I separate some views about the metaphysics of senses. In section 8, I stress the point that to give a proposal about the truth-conditions of the relevant class of *de re* attitude constructions isn't yet to give a compositional semantics for those constructions. Section 9 gets into the constructive compositional semantics and delivers the main positive contribution: I offer Fregeans a way of extending an independently needed abstraction rule in order to get the results they want for quantifying into attitude verbs. In section 10, I explain the compositional semantic difficulty Kaplan's classic proposal about the truth-conditions of *de re* ascriptions raises as compared to the truth-conditions assumed here. In section 11, I use the theory developed in the preceding sections to critique Stanley (2011)'s position that the Fregean should view *de se* ascription as a species of *de re* ascription. In section 12, I describe a category of *de re* readings (noted by Fodor 1970)

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4. See Chierchia 1989, Anand 2006, and Ninan 2010, 2012.

S E T H Y A L C I N

not falling under the analysis of this essay, framing it as an open problem for Fregean approaches; and I discuss the syntactic costs of the view developed here. I conclude in section 13.

2. *De Re/De Dicto* as a Scope Ambiguity

There is a bit of a terminological morass around *de dicto* and *de re*. Sometimes the jargon is used to mark a distinction between two kinds of modality (as in 'modality *de re*'); other times it is used to mark a distinction between two kinds of mental state (as in '*de re* belief'); still other times it used to mark a syntactic distinction assumed to correspond to one of these (or to both).[5] What will be in focus here is a linguistic distinction, corresponding (I theorize) to a certain kind of structural ambiguity, in particular an ambiguity of scope. Whether the ambiguity tracks some interesting nonlinguistic joint in nature is something I will address later. Paradigmatically, the ambiguity arises owing to the semantic interaction of quantifiers and other determiner phrases with intensional verbs or operators. My focus here is restricted entirely to interactions with attitude verbs. To return to the most famous example:

(1) Ralph believes that someone is a spy.

Quine (1956) noted that the sentence is ambiguous: it could mean that Ralph has the commonplace view that the world contains spies; or it could mean that there is some particular individual Ralph holds to be a spy. The former we call the *de dicto* reading of the ascription; the latter *de re*. The potential for this kind of ambiguity was observed already by Russell (1905), who noted that the ascription 'I thought that your yacht was longer than it is' has two readings.

A natural thought, suggested in effect by Russell, is that this ambiguity is a matter of the relative scopes of the quantifier and attitude verb. Partly this is the thought that the ambiguity is structural, not lexical:

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5. See Kneale 1962 for some of the historical background on *de dicto/de re* understood as a modal distinction. Talk of belief (knowledge, desire, and so forth) *de dicto* and *de re* emerged in the twentieth century, tracing back apparently to Quine (1956)'s distinction between *notional* and *relational* varieties of attitude. Quine's distinction was tied by some subsequent theorists—especially during and after the externalist turn of the 1970s—to a (putative) psychological or epistemic distinction between "singular" ("referential," "object-directed," "acquaintance-based") attitude states and "general" ("satisfactional," "descriptive") attitude states (see, for instance, Burge 1977 among many others). That alleged distinction in turn harkens back, of course, to Russell (1910).

Quantifying In from a Fregean Perspective

there are two possible logical forms compatible with the surface grammar of (1)—logical forms not differing in respect of what lexical items they incorporate—with one corresponding to the *de dicto* reading and the other corresponding to the *de re*. What exactly are these two logical forms? Naively, the ideal, if we could have it, would be to analyze along these lines:

(1a) Ralph believes that $(\exists x : x$ is a spy$)$.
(1b) $\exists x :$ Ralph believes that x is a spy.

Such a treatment is so natural that even Quine, the great skeptic about quantifying into intensional constructions, used these renderings in his initial explication of the target distinction.[6]

A slight wrinkle does need to be added to the (1a)/(1b)-style analysis of the ambiguity, however. It is a familiar point that generalized quantifiers (*everyone*, *most cats*, and so forth) in natural language are better treated not as the variable-binding operators we find in standard first-order logic but as expressing second-order properties.[7] We do better to handle the necessary variable-binding work by resort to tacit lambda abstraction.[8] Thus a linguistically more workable partial rendering of the two logical forms for (1) would be along these lines:[9]

(1c) Ralph believes that $[\exists(\lambda x.x$ is a spy$)]$. (*de dicto*)
(1d) $\exists(\lambda x.$ Ralph believes that x is a spy$)$. (*de re*)

Observe that in (1d) we have a variable in the scope of the attitude verb that is bound by a λ-binder outside of that scope. Strictly speaking, this is

6. Though to be clear, Quine does not use the word 'scope', and his ultimate analysis does *not* treat this case as a true scope ambiguity. See note 13 below. Russell (1905) was a more unambiguous proponent of a simple scopal analysis of this kind of ambiguity.

7. See Lewis 1970, Montague 1973, and Barwise and Cooper 1981. As is well known, aspects of the basic idea are already in Frege; see, for example, Frege 1997a [1892]. Naturally, the idea continues to be debated; see Szabolcsi 2010 for an overview of recent work.

8. The lambda binder (or lambda abstraction operator) 'λ' is a device for forming predicates from sentences. Given an open sentence '*Fx*', '$\lambda x.Fx$' is a one-place predicate; read it as corresponding to the property of being an *x* such that *Fx*. Predicates formed with lambda operators are *lambda terms*. We write the arguments of lambda terms to their left. In general $(t)\lambda v.\phi$ reduces (beta-converts) to $\phi[v := t]$; thus, for example, $(s)\lambda x.Fx$ reduces to $F(s)$. For further introduction, see, for example, Stalnaker 1977.

9. Where convenient I use '$\exists$' as short for the English generalized quantifier *someone*.

S E T H Y A L C I N

not well described as "quantifying in," as the variable binding is not performed by the quantifier. My title, which defers to historical usage, is thus imperfect: when I speak loosely of "quantifying in," I will generally have in mind a more general phenomenon, namely, any case where we have the binding of a variable within the scope of the attitude verb by a lambda binder outside of its scope. It is this more general phenomenon, and not anything about quantification per se, that is the target of analysis in this essay. Of course, with lambda abstraction, we can achieve anything that strict and literal quantifying in would achieve. So in (1c)/(1d), we again have a simple and natural treatment of the *de dicto/de re* ambiguity as structural and not lexical. Call this the *scopal* analysis of the ambiguity.

The device of lambda abstraction has the added conceptual advantage that it isolates what is common to the relevant class of *de re* readings: they all involve "binding in." The basic problem is to understand how to semantically interpret elements like:

λx. Ralph believes that x is a spy

and their kin. Once we have an account of this, we will have a general story about "quantifying in" for any quantifier or definite description. Lambdas also help to make syntactically intelligible the idea that the traditional *de dicto/de re* ambiguity may (in principle) be extended to attitude ascriptions involving proper names and indexicals. Thus we can distinguish *de dicto* and *de re* readings of

(2)   Ralph believes that Ortcutt is a spy

as follows:

(2a) Ralph believes that [Ortcutt is a spy]. (*de dicto*)
(2b) (Ortcutt) λx. Ralph believes that x is a spy. (*de re*)

(Similarly for indexicals.) Of course, on many views about the semantics of proper names and attitude verbs, the syntactic difference between (2a) and (2b) will not correspond to any difference in truth-conditions. But on still other views, it can. Anyway, the point is that if we have a syntax allowing both logical forms (2a) and (2b)—as we might if only owing to considerations of generality—our Latin jargon will extend to this case straightforwardly.

Although the scopal analysis does not wear on its sleeve a particular view about how attitude states are to be modeled, it is not compatible with just any account of the nature of attitude states. Notably for present

purposes, it is not easy to reconcile with the conception of attitude states we receive from Frege. Let me review why.

3. The Tension between Fregeanism and the Scopal Analysis

Frege teaches that the contents of mental states like belief—what he called *thoughts*—are abstract, mind- and language-independent structured objects having modes of presentation as parts. The structure of the content of a mental state is typically partly reflected by the structure of the *that*-clause used to ascribe the state in natural language, with the constituents of the *that*-clause each generally corresponding to a mode of presentation (its *sense*) that is part of the content of the state ascribed. The modes of presentation composing a thought will be, intuitively, modes of presentation *of* the objects and properties the state is about (with modes of presentation generally determining a "referent" or denotation); and the thought will determine truth-conditions as a function of the references of its component modes of presentation.[10]

That says enough already to get into the tension between the Fregean model of attitudes and the scopal analysis. One central aspect of the problem concerns how the Fregean can vindicate the logical form (1d). For that logical form to be correct, the semantic value of the bound variable under *believes*—an individual, or anyway a function from variable assignments to individuals—somehow must figure in the determination of the Fregean state of mind Ralph is said to be in on the *de re* reading of (1). How does this work? If we are Fregean, to believe is always to be belief-related to a Fregean thought. But an individual is not the sort of thing that can be part of a Fregean thought; nor can an individual suffice to uniquely determine a mode of presentation that could figure in such a thought. (And similarly for functions from assignments to individuals.) To put it as Russell did, there is no backward road from reference to sense. It is not immediately obvious in the Fregean setting how to make room for the idea that what Ralph believes could be a function of an individual, independently of how that individual is presented.

10. These positions are articulated in, inter alia, Frege 1997b [1892] and 1997c [1918]. The claim that some modes of presentation are literally parts of others is evidently supposed to be taken with a theoretical grain of salt; Frege (1963 [1923], 1) includes the line: "To be sure, we really talk figuratively when we transfer the relation of whole and part to thoughts; yet the analogy is so ready to hand and so generally appropriate that we are hardly even bothered by the hitches which occur from time to time." See Heck and May 2011 for further discussion.

S E T H   Y A L C I N

The difficulty is compounded if we adopt the further Fregean doctrine that expressions that occur in indirect contexts denote their customary senses. This doctrine appears to require the bound variable in (1d) to range over modes of presentation. But if

λx. Ralph believes that x is a spy

is reconstrued as a property of modes of presentation, then what (1d) says is that someone is a mode of presentation of a certain sort—obviously an incorrect result. Persons are not modes of presentation.[11]

A problem also arises for the analysis of the *de dicto* reading given by (1c). That logical form includes an expression '∃' (corresponding to *someone*) that, we had been assuming, denotes a second-order property. But if expressions that occur in indirect contexts denote their customary senses, then *someone* in (1) would denote a certain mode of presentation on the *de dicto* reading, not a second-order property. At best it misleads, therefore, to use the same symbol '∃' in the logical forms of each of the *de dicto* and *de re* readings, as we have in (1c) and (1d). We cannot obviously talk about a single expression here changing scope across the examples.

So Frege's model of attitudes is prima facie hard to square with the simple analysis, and the tension gets worse if we also adopt his proposal about the references of expressions in indirect contexts.

4. Double Vision

Is this an objection to the Fregean position? Very plausibly it would be, were it not for a famous independent objection to the simple analysis due to Quine (1956). Quine raised a question about the coherence of the property of individuals said to be instantiated by (1d), by pressing a difficulty that arises when a believer knows an individual in two different ways without realizing it is the same individual (cases of "double vision"). Suppose Ortcutt is the grey-haired man Ralph sees at the beach and believes to be a pillar of the community; suppose also that Ortcutt is the man in the brown hat Ralph glimpses under questionable circumstances and believes to be a spy. The first half of this story gets us that someone—namely, Ortcutt—is such that Ralph believes him not to be a spy. The second half gets us that someone—namely, Ortcutt again—is such that Ralph believes him to be a spy. If we analyze *de re* ascription

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11. Though some modes of presentation may be metaphysically dependent on persons or other objects. I provide further discussion of this idea below (section 7).

Quantifying In from a Fregean Perspective

along the general lines of (1d), this leads to the conclusion that Ortcutt has the following two properties:

(i) $\lambda x.$ Ralph believes that x is not a spy.
(ii) $\lambda x.$ Ralph believes that x is a spy.

This raises a problem: what conception of belief could allow both of these properties to be satisfied by a single individual, compatible with the idea that Ralph's state of belief is coherent and rational (if imperfect)?

The conceptions of belief content that cooperate most straightforwardly with the simple analysis—I have in mind the possible worlds model employing the resources of standard quantified modal logic and the Russellian conception of propositions—face nontrivial difficulties answering this question.[12] Quine, already skeptical about quantification into intensional contexts, doubted that the question could receive a satisfactory answer and so recommended that we reject the analysis prompting the question. Passing over the simple analysis, he defended the position that *someone* on the *de dicto* reading of (1) is mentioned, not used, and hence is not a scope-taking expression; and he held that *believes* is of variable adicity, sometimes taking two arguments (when read *de dicto*) and sometimes taking three or more (*de re*).[13] While few have followed Quine in the particulars of his positive account, many share his attitude that double-vision cases recommend a conception of belief precluding the simple analysis.

To the extent that Quine's problem eases the pressure to vindicate the simple analysis, the Fregean welcomes it. And indeed, double-vision cases seem to cry out for description in terms of Fregean jargon: it is natural to want to say that Ralph thinks of Ortcutt relative to two distinct guises or modes of presentation. Still, it remains for Fregeans to supply

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12. The challenge facing the Russellian here is noted by Evans 1982, 84. See Cresswell and von Stechow 1982; Stalnaker 1988, 2009; and Ninan 2012 for discussion of the problem in the context of a possible worlds approach.

13. Roughly, his position was that the logical form of the *de dicto* reading of (1) is (i), while the logical form of the *de re* reading is (ii):

(i) Ralph believes-true '∃(is a spy)'
(ii) ∃($\lambda x.$ Ralph believes-true (x, 'is a spy'))

Quine wished to evade the charge that this is an ambiguity theory by holding that *believes* is a "multigrade" predicate expressing an operation on sequences. See Quine 1977 for further discussion. See also Kripke 2005, n. 11.

SETH YALCIN

their own analysis of the ambiguity in (1); and further, it remains to show how to do this compatible with a satisfying treatment of double vision. We turn to this now.

5. Settling on Target Truth-Conditions

Begin with the question as to what the truth-conditions of the *de re* reading of (1) should be, given a Fregean perspective. Here it is useful to review some terrain covered by Kaplan (1968) and Sosa (1970). Start with the natural idea that the *de re* reading of (1) fails to fully characterize the relevant Fregean thought to which Ralph is belief-related. Rather, the ascription incompletely characterizes Ralph's Fregean state of mind, partially but not completely specifying the content of the state. What the ascription says is that Ralph is belief-related to some Fregean thought or other falling into a certain class, a class picked out with the help of an individual. This gets us the following idea about the target truth-conditions for the *de re* reading of (1):

(3) $\exists x : \exists m : M(m, x) \land \text{Ralph } B\,(m \oplus \text{IS-A-SPY}).$[14]

(See, by way of comparison, Kaplan 1968 and Sellars 1968.) Now the standard worry about this idea, due to Sleigh (1967) and independently noted by Kaplan (1968), is that it makes *de re* belief too easy. Consider:

(4) Ralph believes that the shortest spy is a spy. (*de dicto*)
(5) Somebody is the shortest spy.

Together these do not intuitively suffice to entail the *de re* ascription:

(6) Somebody is such that Ralph believes that he is a spy.

But they would license this entailment, were we to accept the truth-conditions (3). For the Fregean, (4) will mean that Ralph stands in a belief relation to a certain Fregean thought. One part of this thought will be a certain mode of presentation, namely, the sense of *the shortest spy*. Given (5) and the assumption that the references of definite descriptions are individuals, this sense will be a mode of presentation of whoever the shortest spy is—say, Smith. So there is an individual x (Smith) such that

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14. $M(m, x)$ iff m is a mode of presentation of x; B is the (Fregean) belief relation; '$\oplus$' is a symbol for the Fregean's notion of predicative combination of modes of presentation, whatever that is ("sense glue"); and expressions in small caps denote their customary senses.

Quantifying In from a Fregean Perspective

there is a mode of presentation *m* of *x* such that Ralph is belief-related to the Fregean thought $m \oplus$ IS-A-SPY. But this is just what it is for (6) to be true, if (3) is correct—meaning (4) and (5) entail (6). Therefore (3) is not correct.

One conceivable response to this objection would be to deny that the sense of *the shortest spy* is a mode of presentation of an individual. One might hold instead that the references of definite descriptions are (for example) generally of the type of generalized quantifiers (that is, second-order properties) or that they are individual concepts (functions from worlds to individuals). Either view, suitably developed, might be used to block the entailment from (4) and (5) to (6).

A second, arguably superior, response would appeal to the idea that on normal uses of (4), it has truth-conditions in the shape of (4), except that the existential quantifier over modes of presentation gets contextually restricted. (And similarly for *de re* readings generally.) A view like this was defended by Sosa (1970), albeit in a setting that was not explicitly Fregean.[15] A more explicitly Fregean version of the idea appears in Schiffer (1977).[16] We would slightly amend (3) to yield:

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15. Sosa's (1970, 885) proposed truth-conditions for *de re* readings are as follows:
    S believes about *x* that it is *F* (believes *x* to be *F*) if and only if there is a singular term α such that S believes ⌜α is F⌝,
where α both denotes *x* and is a distinguished term, where "S believes ⌜α is F⌝" is understood to mean "S has a belief (in a proposition) that, given normal circumstances, he could correctly express in our language by asserting the sentence composed of α followed by 'is' followed by 'F'." Addressing the question what makes something a distinguished term, Sosa (1970, 890) writes: "This, I fear, is a wholly pragmatic matter which can change radically from one occasion to the next." I discuss the kind of examples prompting this remark from Sosa below.
(The dialectic in Sosa 1970 takes a curious trajectory: despite endorsing the view just described, Sosa ultimately seems to want to circle back to the idea that exportation from attitude contexts is, after all, unrestrictedly valid. I share the reservations of Kripke (2011) about this dimension of Sosa's paper.)
16. According to Schiffer (1977, 32), *de re* ascriptions contain "an implicit indexical component requiring reference to a mode of presentation or a type of mode of presentation. The idea, more generally, is that whenever a speaker assertively utters a sentence of the form ⌜so-and-so believes *t* is such-and-such⌝, where *t* is a singular term used by the speaker to refer to a thing *x*, then there is a mode of presentation, or a type of mode of presentation, such that the speaker's utterance is true if, and only if, so-and-so believes *x* to be such-and-such under that mode of presentation, or under a mode of presentation of that type." (Schiffer does not cite Sosa.)
Subsequent work has explored variations on the theme of existentially quantifying over modes of presentation in the semantics of attitude ascriptions. See, for instance, Schiffer 1987, 1992 and Crimmins and Perry 1989, which merge this idea with a Russellian con-

S E T H   Y A L C I N

(7) $\exists x : \exists m \in C : M(m, x) \wedge \text{Ralph } B(m \oplus \text{IS-A-SPY})$,

where C is the relevant restricted subdomain of the relevant domain of senses, fixed by context. This view would strengthen the truth-conditions of (4), and of *de re* readings generally, as a function of context; and there- by it would block the problematic pattern of inference. Following Sosa and Schiffer, we can take the pragmatic resolution of the restriction to be sensitive to background knowledge about the agent and situation being described, and the interests and purposes of the interlocutors.[17]

Ultimately I will take it that truth-conditions in the manner of (7) reflect the right approach for a Fregean account of *de re* ascription, and my objective will be to explore how to compositionally derive truth- conditions in this general shape. But before we proceed to that work, we should consider a third kind of reaction to our problem about the short- est spy. Reflection on this third response will provide additional moti- vation for taking (7) as our target truth-conditions and will clarify the range of views about attitude states that this approach can encompass.

6. Acquaintance

The third response goes back to Kaplan (1968). According to it, the truth of a *de re* belief ascription requires some sort of *relation of acquaintance* to obtain between the thinker and the *res*. Theorists who traffic in acquain- tance relations are usually not just thinking about how to articulate the truth-conditions of natural language *de re* belief ascriptions. Rather, acquaintance relations are thought to have some kind of independent, nonlinguistic explanatory importance. Many imagine them, or some- thing like them, to figure in the story about the nature and character of the intentionality of mental states. Acquaintance is understood to be that relation between an agent and an object that enables the agent to have a thought about the object, in a certain robust sense of "about." It is hard to say more in abstraction from specific theories of acquaintance, but an

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ception of propositions. See also Percus and Sauerland 2003 and Yalcin 2011 for (quite different) explorations of this kind of idea from within a possible worlds setting.

17. "What mode of presentation or type of mode of presentation the speaker means will be inferred, by the hearer, on the basis of (a) the sentence uttered, and (b) the mutual knowledge the speaker and hearer have about what modes of presentation would be relevant to their present concerns, and about what ones the speaker is likely to know the believer to have" (Schiffer 1977, 32–33). It will be natural for our Fregean to take this all on board.

Quantifying In from a Fregean Perspective

example that we have already at hand will suffice to illustrate. Suppose that unbeknownst to Ralph, the shortest spy is Tiny. Let (4) be true, so that Ralph counts as thinking the banality that the shortest spy is a spy. In thinking this banality, Ralph thinks about the shortest spy. Does Ralph thereby count as thinking about Tiny? The intuition is supposed to be that there is some interesting sense of "about" for which the answer is "no." Ralph is not suitably *en rapport* with Tiny to count as thinking about him in this more robust sense (Kaplan 1968). "Acquaintance" is our tentative name for the relation, whatever it is, that Ralph needs to stand in to Tiny, so that he can think thoughts robustly about Tiny in this sense.

What makes for acquaintance? One common kind of idea is that the agent must employ some kind of "discriminating conception" of the object thought about, where this "would enable the subject to distinguish that object from all other things" in thought, or "know which object it is that one is thinking about" (Evans [1982, 65] interpreting Russell; see also Hintikka 1962 for related thoughts); and further, that this "conception" be one that was in fact relevantly causally provoked by, or is informationally connected to, the object itself (see, by way of comparison, Kaplan 1968 and Lewis 1979). By 'acquaintance', I have something like this in mind. The exact details do not matter for our purposes. The proposal we are interested in is the idea that some relation of acquaintance along these lines is what is required, truth-conditionally speaking, by *de re* attitude ascriptions. We could call this idea DE RE ACQUAINTANCE:

> DE RE ACQUAINTANCE. The truth of any *de re* ascription turns on what the subject of the ascription is acquaintance-related to.

This is a linguistic claim, one about the truth-conditions of some pieces of language. It is agnostic among a variety of conceptions of mental content.[18] Consider now one Fregean implementation of this claim. For the Fregean, acquaintance relations may be modeled as three-place relations between an agent, a mode of presentation grasped by the agent, and the object (referent) determined by that mode of presentation. Thus Kaplan (1968) introduces a three-place relation R, and proposes truth-conditions for (6) (and the *de re* reading of (1)) looking relevantly like this:[19]

18. For instance, it is compatible with the internalist view of Lewis (1979), or with the externalist view of Burge (1979b).

19. Kaplan's (1968) own, evidently tentative way of thinking about acquaintance roughly fits the sort of paradigm recently described: the subject of the ascription must

S E T H   Y A L C I N

(8) $\exists x : \exists m : R\,(m, x, \text{Ralph}) \wedge \text{Ralph } B\,(m \oplus \text{IS-A-SPY}).$

On this approach, the need for acquaintance in the truth-conditions of (6) is what is taken to block the inference from (4) and (5) to (6); and Ralph's being acquaintance-related to the relevant spy is what is supposed to make the truth of (6) of special interest to the authorities. So we have here another way of solving the problem about the shortest spy.[20]

There are (at least) two problems with the approach to *de re* ascription reflected by (8). One problem is that it turns out to be challenging to derive a truth-condition in exactly this shape compositionally from the parts of a *de re* attitude ascription, given prevailing assumptions about the syntax of such ascriptions. I return to this issue later, when we will be better positioned to frame the difficulty.

The second and more basic problem is that DE RE ACQUAINTANCE is highly questionable. Key problem cases here go back to Fodor (1970) and Sosa (1970).[21] Sosa (1970, 890) offered a number of counterexamples, including the following:

> Suppose a sergeant, after consulting with higher authority, returns to his platoon and says to the shortest man: "Shorty, they want you to go first." Actually the desire expressed by the higher authority was that the shortest man go first; i.e., it desires [what it would express in saying, "the shortest man is to go first"]. And yet, in the context, and given a shortest man, that suffices for *exportation*: it enables us to move 'the shortest man' outside the scope of the psychological modality, and enables us to conclude that it is true of the shortest man that the authority desires that he go first.

deploy a suitably "vivid," descriptively detailed representation of the *res*, and its being a representation *of* the *res* owes to its bearing some kind of external causal connection to that *res* (a relation analogous to the relation between a photograph and what the photograph is a photograph of).

20. Although this view about the truth-conditions of *de re* ascription does not mandate an internalist view about content, it does point toward a way one might attempt to reconcile that position with the external requirements paradigmatically associated with *de re* ascription. For it highlights the possibility of a view that factors such external requirements into *R*, so that one might in principle maintain that what Ralph is *B* related to is always a matter that is entirely fixed by the state of Ralph's head. As a result, this kind of approach is sometimes associated with internalism, and with two-dimensional views that aim to factor out a notion of narrow content.

21. Closely related examples are noted in Partee 1970, building on Donnellan 1966. See also Bonomi 1995 and Aloni 2005.

Quantifying In from a Fregean Perspective

Consider the sentence (9):

(9) The authority wants the shortest man to go first.

Sosa's observation is in effect that a true *de re* reading of the description in (9) is available in the scenario, despite the fact that there is no relevant relation of acquaintance obtaining between the authority and Shorty, and despite the fact that the only relevant thing the authority wants is a "descriptive" want to the effect that the shortest man, whoever he is, go first. Examples to the same point appear in Fodor 1970. I will call this kind of reading a *descriptive de re* reading.

A slight source of noise in this example is the fact that the *de dicto* reading of (9) is also clearly true. To reinforce the point, we would do well therefore to consider a variation of the example where the *de dicto* reading is false but the target *de re* reading is true (see, by way of comparison, Fodor 1970, 230–31). Thus adjust the story so that the sergeant is relaying his order to a corporal. It is manifest in their shared context that the shortest man is the guy at the end of the line. The sergeant might say:

(10) The authority wants the guy at the end of the line to go first

—even though the authority, we can stipulate, does not especially prefer situations w such that the guy at the end of the line in w goes first in w. Here the *de dicto* reading is false, but a descriptive *de re* reading is available that is intuitively true.[22] The possibility of descriptive *de re* readings undermines DE RE ACQUAINTANCE, since on these readings, it is plain

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22. It might be replied that this putative *de re* reading really involves a sort of loose talk, talk of a sort that does not merit explanation within the compositional semantics of the expressions involved. Kripke (2011) reacts this way to a number of Sosa's examples (though he does not discuss the one cited above). He calls these "toy duck cases," suggesting an analogy to the following kind of case: If a child in a toy store points at a plastic duck and asks, "Is that a goose?," the reply can come: "No, that's a duck." The reply is felicitous, but its felicity should not be explained by a new semantics for 'duck', or for sentences containing 'duck'.

Kripke's general point—beware toy duck cases—is well taken, and I am sympathetic with his assessment of the particular examples he discusses. It is much less clear whether every descriptive *de re* reading can be explained away along these lines. Kripke makes no argument to this conclusion, and it seems to me it would be nontrivial to mount such an argument. In any case, my ultimate contribution to the Fregean view will be orthogonal to this issue.

S E T H   Y A L C I N

that the subject needn't be acquaintance-related to the *res* for the corre-
sponding ascriptions to be true.[23]

Note that for all we have yet shown, there may very well be a dis-
tinctive category of thought assigning a special importance to something
like acquaintance. To reject DE RE ACQUAINTANCE is not to hold that
acquaintance is irrelevant to the mental. The point has been only that
if there is such a distinctive category of thought, it is not cleanly aligned
with *de re* readings.

7. Acquaintance-Requiring Senses

A question remains. Even if we are persuaded by the examples that
acquaintance is not always required by the truth of a *de re* ascription, it
may nevertheless be suggested that acquaintance is sometimes required.
Some may wish to retreat to WEAK DE RE ACQUAINTANCE:

> WEAK DE RE ACQUAINTANCE. The truth of a *de re* ascription may in some
> cases turn on what the subject of the ascription is acquaintance-related to.

(Notably, it could be suggested that while acquaintance is not required by
descriptive *de re* readings, it is required by the ordinary *de re* readings, or
some important subclass thereof.) The question is whether the Fregean
embracing truth-conditions in the shape of (7), repeated:

$$(7) \quad \exists x : \exists m \in C : M(m, x) \wedge \text{Ralph } B(m \oplus \text{IS-A-SPY})$$

is capable of accommodating this kind of idea.

Superficially it seems not, as (7), unlike (8), includes no explicit
mention of any acquaintance relation. But Fregeans can opt to fold any
putatively acquaintance-requiring reading of a *de re* ascription into the
prerequisites for thinking thoughts containing the relevant modes of
presentation. That is, they might maintain that being belief-related to
the Fregean thought that Ortcutt is a spy, for example, is (at least on one

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23. We might add that acquaintance is also not sufficient in the relevant sense for the
truth of a *de re* ascription. Reiterating a point made by Schiffer (1977), among others,
Hawthorne and Manley (2012, 43) offer the following example: "Suppose, for example,
that Ralph was kidnapped, taken to an undisclosed location, and introduced to a masked
man — 'Ralph, meet the shortest spy'. All but the most stringent acquaintance constraints
will allow that Ralph can now have singular thoughts about that individual. However, there
will clearly be plenty of contexts in which it is unacceptable, and at best highly misleading,
to say, 'There is someone Ralph believes to be the shortest spy'. After all, we may suppose
that Ralph still does not have information about the shortest spy that would be of interest
to the F.B.I."

Quantifying In from a Fregean Perspective

reading) a state one can enter only if the suitable relation of acquaintance obtains between one and Ortcutt. This would be to say that some modes of presentation—call them *acquaintance-requiring senses*—are such that one can grasp them only if one stands in the appropriate relation of acquaintance to the thing that the sense is a mode of presentation of.[24] This externalist variety of Fregean could then hold that on at least some readings, the quantification over senses in (7) restricts to acquaintance-requiring senses (inter alia, perhaps).

   The idea that there are acquaintance-requiring senses is distinct from the idea that some senses are metaphysically dependent on their associated referents. These ideas might be natural to hold together, but they are logically independent. To say that a sense is acquaintance requiring is to say something about what it takes to grasp the sense. It is not to say anything about what it takes for the sense itself to exist. Further, to say that some senses are metaphysically dependent on their associated refer-ents—that is, to say that some senses are *object-dependent*—is not yet to say that some senses literally have their referents as parts, or that these referents are literally parts of the thoughts such senses participate in.[25] (We might call this latter idea *strong* object dependence.)[26]

   Those who have explored ways of reconciling a Fregean view of attitude content with an externalist conception of attitude states have tended to reach for object-dependent senses. A notable example is Evans (1981, 295–96), who seems to take it as obvious that there must be such senses: "on the present conception, the sense of a singular term is a way of thinking about a particular object: something that obviously could not exist if that object did not exist to be thought about." This is certainly one natural direction we could take in thinking about senses. It is less than clear, however, whether Frege would have taken this direction. To Evans's dismay, Frege was certainly happy to speak of modes of pre-sentation even in the absence of there actually being anything so

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24. I set aside the idea that there could be senses that are acquaintance-requiring relative to some agents but not others.

25. Compare: a property may be object-dependent without its being literally partly composed of the object it is metaphysically dependent upon.

26. Evans (1981) apparently conflates these two senses of object dependence. This seems to be part of what leads him to the radically un-Fregean view that thoughts may have concrete objects as parts. For further critical discussion of Evans's approach, see Perry 2000 and Stalnaker 2012.

SETH YALCIN

presented.[27] Further, Frege (1997c [1918]) spoke of a "third realm" (337) of "eternally unchangeable" (344) thoughts that "man has no power over" (345). The general ring is not one of a domain of contingently existing objects.[28] (Burge 1992 suggests that numbers and functions were also taken by Frege to be members of this third realm.) If the realm is unchangeable, presumably it couldn't have been changed by, say, Wittgenstein's having had a daughter. But, of course, if modes of presentation were apt to be object-dependent, and Wittgenstein had had a daughter, then presumably there would have been senses that do not in fact exist, namely, object-dependent modes of presentation of that daughter. Wittgenstein's actions would thereby have had a direct effect on the population of the third realm; had he acted differently, the third realm would have been correspondingly different. We end up with a realm of abstract entities that in fact are highly sensitive to empirical contingencies of all sorts. That is certainly a possible view; but it seems rather out of step with what Frege envisaged.

An alternative externalist extension of Frege's picture would work within Frege's apparent assumption that the thoughts there are exist necessarily. It would hold that acquaintance with an object is sometimes required to grasp a thought, not that the existence of the thought depends on the existence of the object. In worlds where the object does not exist, the relevant acquaintance-based thoughts concerning it would still exist; it is just that it would not be possible for inhabitants of such worlds to think those thoughts. We might consider the relevant *res* of such thoughts as a kind of representational resource, one essential for picking out the corresponding thoughts about the *res*. In a possible world where the *res* does not exist, the world simply lacks what is required for any state of mind in that world to represent the corresponding class of singular Fregean thoughts. But the thoughts nevertheless exist in that world. A view like this would be reminiscent, in some respects, of the conception of singular propositions articulated by Plantinga (1983).

We needn't take a stand on this delicate issue about the metaphysics of senses here. This choice point goes beyond the semantic question

27. Evans makes various ingenious attempts to explain away Frege's apparent comfort with sense in the absence of reference (Evans 1981; Evans 1982, chap. 1). I regret I lack the space to seriously engage the interpretive question here.

28. Though the entities in this realm were of course permitted to bear extrinsic relations to ordinary objects contingently. (It is contingent what thoughts I think, and so forth.)

Quantifying In from a Fregean Perspective

that is our primary focus. Let me summarize the main points of this section. WEAK DE RE ACQUAINTANCE is compatible with truth conditions for *de re* ascription in the general shape of (4). (And in fact, so is DE RE ACQUAINTANCE.) To have these together, one may appeal to a category of acquaintance-requiring senses. One can then hold that on some (all) *de re* readings, the tacit quantification over modes of presentation in the truth-conditions of an ascription involves a restriction to senses of this kind. To allow for acquaintance-requiring senses is to go in for an externalist variety of Fregeanism, one where what Fregean thoughts one thinks may sometimes depend on one's relations to one's environment. Thus our target Fregean truth-conditions for *de re* readings are compatible with (but do not entail) an externalist variety of Fregeanism. Allowing for acquaintance-requiring senses does not logically require one to recognize object-dependent senses. Perhaps the best conception of acquaintance-requiring senses is one that takes them to be object-dependent; but this is a question we leave open.[29]

Passing then on the truth-conditions (8) (what Kaplan [1968] seemed to gravitate toward), we work with (7) as our Fregean outlook on the *de re*.[30]

As effectively noted by Kaplan (1968), truth-conditions in this shape comport with a natural approach to cases of double vision. The Fregean can say that Ralph believes *de re* that Ortcutt is a spy and also that Ralph believes *de re* that Ortcutt is not a spy. He can say this without needing to convict Ralph of irrationality, by supplying these ascriptions with truth-conditions along these general lines:

(11) Ralph believes (*de re*) that Ortcutt is a spy.

$$\exists m \in C : M(m, \text{Ortcutt}) \wedge \text{Ralph } B(m \oplus \text{IS-A-SPY})$$

(12) Ralph believes (*de re*) that Ortcutt is not a spy.

$$\exists m \in C : M(m, \text{Ortcutt}) \wedge \text{Ralph } B(\text{NOT} \oplus (m \oplus \text{IS-A-SPY}))$$

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29. I do not claim that acquaintance-requiring senses, and hence a Fregean externalism, is the *only* Fregean means of preserving WEAK DE RE ACQUAINTANCE. Another logical possibility is that the tacit quantification over modes of presentation is restricted to senses that—as a matter of contingent fact, but not as a matter of the metaphysics of the senses in question—figure in an acquaintance relation for the subject of the ascription. I leave it to Fregean internalists to develop this view.

30. Note this idea supplies a further means of blocking the entailment from (4) and (5) to (6), as it supplies another way that (6) can be contextually strengthened.

S E T H   Y A L C I N

Such truth-conditions render (11) and (12) logically compatible but would entail no logical defect in Ralph, since, of course, distinct modes of presentation may witness each existential quantification.

It has been argued that the kind of tacit quantification over modes of presentation our Fregean advocates can also be used to dispel various related puzzles, notably Kripke's puzzle about belief (Kripke 1979) and Richard's phone booth case (Richard 1983); see inter alia Crimmins and Perry 1989, Richard 1990, Crimmins 1992, and Schiffer 1992. I will not pause to review these arguments.

Having settled on (7) for the *de re* reading of (1), we also want a Fregean idea about the truth-conditions for the *de dicto* reading of (1). Here I assume the Fregean adopts the most obvious proposal, namely:

(13) Ralph *B* (SOMEONE $\oplus$ IS-A-SPY)

Henceforth we will take (13) and (7) to characterize the Fregean's account of the truth-conditions of the *de dicto* and *de re* readings of (1), respectively.

8. That Truth-conditions Are Not Semantics

One might think that (13) and (7) together supply a Fregean semantic account of the *de dicto/de re* distinction. On the contrary: from a semantic point of view, these only frame the work to be done. It remains to be shown whether and how these target truth-conditions can be derived compositionally in some plausible way from the meanings of the parts of (1), together with plausible assumptions about its syntax on each reading. Relatedly, it remains to be seen whether the Fregean takes the *de dicto/de re* ambiguity to be purely structural and scopal, or partly lexical (or something else). Without clarification on these matters, it is difficult to assess the Fregean view so far described in any serious way, semantically speaking.

In some places, Kaplan (1968) may give the impression that in advancing a package along the lines of (7)/(8) and (13), the Fregean already shows how he or she can avoid postulating ambiguity in *believes* in the face of the *de dicto/de re* distinction. I doubt this was in fact Kaplan's position, but in any case, such a view would be mistaken. To appreciate the point, it may help to observe that on the most naive way of proceeding, an ambiguity theory for *believes* is perhaps the most straightforward way of

Quantifying In from a Fregean Perspective

achieving the truth-conditions conjectured in (13) and (7). What we could do is simply have the following two entries in our lexicon:[31]

(14) $[\![\mathbf{believes}_1]\!] = \lambda s^t.\lambda y.yBt$
(15) $[\![\mathbf{believes}_2]\!] = \lambda s^{et}.\lambda x.\lambda y.\exists m : M(m, x) \wedge yB(m \oplus s)$

The first of these would cover *de dicto* readings, the second *de re*. To merely give truth-conditions for the *de dicto* and *de re* readings in terms of a single binary relation *B* is not yet to reveal that *believes* is unambiguous. That leap involves an illicit slide between object language and metalanguage. Generally speaking, the proposed truth-conditions simply underdetermine the compositional semantics of attitude verbs.

It is incumbent on the Fregean to find a way to avoid lexical ambiguity of the sort reflected by (14) and (15), because the idea that there is such ambiguity is highly implausible. First, (15) only suffices to cover one *res*; in multiply *de re* constructions, we would need still further lexical entries, with no clear upper bound. Second, (15) would require a quite nonstandard syntax, one where *believes* forms a syntactic constituent with the main verb of its complement clause. Third, the *de re/de dicto* ambiguity is available for basically every attitude verb (not to mention modal operators of other varieties). If it were merely some quirk about *believes*, we might perhaps be forgiven for trying to write the distinction into the lexicon directly. But it is not. It is a systematic phenomenon, one about how intensional operators and determiner phrases interact in general. Our theory of it must uncover the system.

9. Fregean Predicate Abstraction

From a compositional semantic point of view, our Fregeans have two main challenges. First, they must explain the origin of the existential quantification over modes of presentation that occurs in (7). Second, and rather more generally, they must explain how expressions come to refer to their customary senses in indirect contexts. The first challenge threatens ambiguity in *believes*. The second threatens something slightly worse, namely, ambiguity for every expression in the language.

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31. Here s^t is a variable over Fregean thoughts (senses that determine a reference of type *t*, the type of truth-values), and s^{et} a variable over the sorts of senses that yield Fregean thoughts when "completed" with the mode of presentation of an individual (senses that determine a reference of type *et*, the type of first-order properties). Boldface indicates an expression's being mentioned, not used; I resort to it mainly when stating semantic values.

S E T H   Y A L C I N

Our chief topic is the first challenge. (The second challenge, of course, merits detailed treatment on its own; but see the appendix.) I will attempt to meet it in a way that departs from the simple analysis as minimally as possible. So we shall work with (1d), repeated below, as our touchstone:

(1d) $\exists(\lambda x.$ Ralph believes that x is a spy$)$.

To be in position to mimic the simple analysis, we must understand it better. A natural question to ask upon first seeing (1d) is: how exactly is the lambda abstraction introduced? After we review one viable answer to this question for the simple analysis, we will be in a position to introduce an alternative answer on behalf of the Fregeans, one that will vindicate their target truth-conditions (7).

There are various ways one might go about getting the lambda abstraction required by the simple analysis. For concreteness, I will follow the lead of Lewis (1970) and Heim and Kratzer (1998) and work with the following package of syntactic and semantic assumptions. We aim for a finitely statable, locally compositional system driven principally, if not entirely, by functional application (not far from Frege's own vision).[32] Our syntax borrows from the tradition of generative grammar. The logical form of the *de re* reading of (1) is, at the relevant level of abstraction, this:

(16)
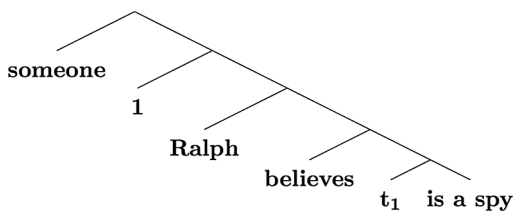
We can describe this structure as generated by movement: starting from the surface form (1), the quantifier moves out, leaving behind a trace $\mathbf{t_1}$; and before the quantifier lands at its new home at the top of the syntactic

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32. By *locally compositional*, I mean a semantics wherein the meaning of any given complex constituent is determined by the meanings of its immediate constituents and their syntactic configuration. (This is also sometimes called *strong* compositionality, or *strong direct* compositionality.)

Quantifying In from a Fregean Perspective

tree, it first adjoins to the tree a branching node dominating a numeral (call it a *binder*) that matches the numerical index on the trace.[33] Semantically, the trace will be interpreted as a variable, and the binder will serve to trigger lambda abstraction over that variable.

To interpret the trace as a variable, our extensions are relative to assignment functions g, so that the trace receives an assignment-function-sensitive semantic value in the manner standard for variables:

$$[\![\mathbf{t}_1]\!]^g \ = g\,(1)$$

To achieve the desired lambda abstraction, our semantics includes the following composition rule for interpreting branching structures containing (headed by) numerals:

> **Predicate abstraction**
> Let α be a branching node with daughters β and γ, where β dominates only a numerical index i. Then, for any variable assignment a, $[\![\alpha]\!]^g = \lambda x.[\![\gamma]\!]^{g^{x/i}}$.

This composition rule, together with the syntax described above, together with standard assumptions about the semantic types of the lexical items in the sentence, will suffice to yield the result that the semantic value of the constituent adjoined to *someone* in (16) is equivalent to the property:

> (17) $\lambda x.$ Ralph believes x is a spy

—the desired result.[34] Of course, what (17) amounts to exactly will depend on further decisions made within the semantics, especially con-

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33. Since May 1977, a not uncommon view is that if a quantifier appears in a tensed clause, it cannot raise out of that clause (at least, not by the operation known as *quantifier raising*, or QR). Movement of a quantifier out of the tensed complement of an attitude verb is not textbook QR. Hence the Fregean arguably incurs a nontrivial syntactic debt in postulating the kind of movement described here. For more context and some discussion of the current state of thinking about QR, see Szabolcsi 2010, sec 2.3.4. I return to this issue briefly in section 12.

34. For further motivation and discussion of the assumptions in play here, see Heim and Kratzer 1998, chap. 7. Note, it would not be difficult to assign a semantic value directly to the binder, allowing it to compose with its sister clause directly by functional application as usual (for relevant discussion, see Lewis 1970 and Rabern 2012). In the setting of a type-driven semantics, we would need to introduce a type for assignment functions. I use Heim and Kratzer's formulation for ease of exposition. (Note, the basic idea presented here does not rely on any peculiarities of Heim and Kratzer's system. It can be realized on various implementations of generalized quantifier theory.)

cerning attitude verbs. For example, if the simple analysis were realized in the context of a textbook possible worlds semantics for attitude verbs, (17) would ultimately be cashed out as follows:

(18) $\lambda x.\forall w' \in B^w_{\text{Ralph}} : x$ is a spy in w'

(where B^w_{Ralph} is the set of worlds left open by what Ralph believes in w, with w the world of evaluation for the sentence (1)). A Russellian might, by contrast, aim for a semantics cashing (17) out along these lines:

(19) $\lambda x.$ Ralph $B\langle x,$ spyhood$\rangle$

Now return to the situation of our Fregeans. They can have the predicate abstraction rule just described. No doubt they will want something like it to deal with movement of determiner phrases out of non-attitudinal contexts—for coping with quantifiers in object position, for example ('John offended every linguist', and so on). The key point to observe in the present context is simply that the rule does not assist Fregeans in dealing specifically with *de re* attitude ascription. The reason for this should be plain. The meaning of the trace in (16) cannot combine by functional application with the predicate *is a spy*, since for Fregeans, the latter denotes, in this context, a sense; and neither can we form a complex sense from these two elements, since the variable does not denote a sense. So the Fregean view predicts composition failure (and hence undefinedness) for structures like (16), unless further assumptions are made.

So let there be further assumptions. I suggest that what our Fregeans should want is a predicate abstraction rule for dealing with movement out of attitude contexts. Such a rule could incorporate the existential quantification over modes of presentation sadly relegated to the lexicon by (15). Our Fregeans need not state such a rule separately; rather, they can simply expand the definition of the predicate abstraction rule above, making it defined where it is presently undefined. The following adjustment would do the job:

Fregean predicate abstraction
Let α be a branching node with daughters β and γ, where β dominates only a numerical index i. Then, for any variable assignment g,
(i) $[\![\alpha]\!]^g = \lambda x.[\![\gamma]\!]^{g^{x/i}}$, if defined; else
(ii) $[\![\alpha]\!]^g = \lambda x.\exists m \in C : M(m, x) \wedge [\![\gamma]\!]^{g^{m/i}}$

Quantifying In from a Fregean Perspective

(where *C* is some restriction on the domain of senses, supplied by context).

This composition rule generalizes the earlier one native to the simple analysis. The clause (i) is just ordinary predicate abstraction. Where ordinary predicate abstraction goes undefined, as it will for Fregeans in *de re* attitude ascriptions, (ii) then kicks in. In such cases, (ii) will introduce the desired existential quantification over modes of presentation, while also introducing the property of individuals demanded by the simple analysis. This gets the desired Fregean truth-conditions (7) for the *de re* reading of (1).[35] It does so in a compositional fashion, with a syntax of a textbook sort, and without requiring any ambiguity in *believes*. In effect, it supplies Fregeans with their own distinctive way of cashing out the property (17), just as (18) and (19) cash out that property for the possible worlds theorist and Russellian, respectively. This rule brings Fregeans fairly close to vindicating the kind of logical form envisaged by the simple analysis.

An advantage of this approach is that it generalizes smoothly to multiply *de re* constructions. Consider for example:

(20) Ralph believes somebody hit the postmaster general.

Here we can, of course, get the singly *de re* reading corresponding to:

(21) $\exists(\lambda x.$ Ralph believes x hit the postmaster general$)$.

But it is easy to get a doubly *de re* reading as well, with the description also scoping out:

(22) The postmaster general $(\lambda y. \exists(\lambda x.$ Ralph believes x hit y$))$.

Fregean predicate abstraction automatically allows for the possibility of such readings—doubly *de re*, triply *de re*, and so forth—without the need for further assumptions.

That Fregeans require a slightly more elaborate rule of predicate abstraction is a cost of the view. But the cost is, in a way, already part of the price for senses in general. After all, once senses are in the picture, the predicate abstraction rule has to be extended in some way or other for attitude contexts. Further, the Fregean might reasonably argue that she offers a bargain, as the rule pays for a comparatively straightforward and

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35. Provided, again, that we can meet the second challenge, namely, that of explaining how expressions in indirect contexts come to denote their senses. (On that, see the appendix.)

intuitively natural treatment of double vision cases. And given a longer conversation about costs and benefits, Fregeans will no doubt bring up Frege's puzzle.

Note that on the present approach, the relevant existential quantification over modes of presentation is not directly introduced by the attitude verb; nor are attitude relations construed as three-place relations between agents, propositions, and modes of presentation. These mark two important differences with so-called "hidden indexical" theories of attitude reports (for example, Schiffer 1992), which are otherwise similar in requiring tacit existential quantification over modes of presentation.

10. Compositionality and Acquaintance

Above I noted that I would work with (7), rather than (8), as the target Fregean proposal on the *de re*, citing as one reason a worry about vindicating (8) compositionally. We are now in a position to elaborate this concern. The difficulty is that it is unclear whether the truth-conditions (8) can be achieved in a comparatively elegant fashion. There is no simple rule, akin to Fregean predicate abstraction, that would enable the semantic value of the constituent adjoined to *someone* in (16), namely,

(23)
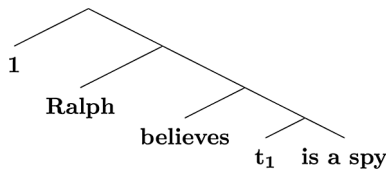
to be equivalent to

(24) $\lambda x. \exists m : R(m, x, \text{Ralph}) \wedge [\![\textbf{Ralph believes t}_1 \textbf{ is a spy}]\!]^{a^{m/1}}$

as (8) would require. Observe that in contrast to the relation M appealed to in our preferred truth-conditions, the relation R deployed in (24) requires a further argument—namely, Ralph, the semantic value of the subject of the ascription. But if you scrutinize (24), you will notice that it needs this further argument before the clause containing **Ralph** has even been interpreted. This is problematic. Given the syntax (23), the semantic value of **Ralph** will compose with that of the verb phrase headed by **believes**. The result of this composition will be the semantic value of the constituent [**Ralph** [**believes** [**t**₁ [**is a spy**]]]]. Formally speaking, this semantic value can be described as a function from variable assignments

to functions from worlds to truth values. The important thing to see is that this semantic value is not *Ralph*, and moreover there is no obvious way of "pulling Ralph out" of this semantic value. But unless we can do so, we need a special semantic rule that "reaches in" to the subconstituent [**Ralph** [**believes** [**t**₁ [is a spy]]]], accesses ⟦**Ralph**⟧, and uses it to determine (24). Such a rule would be construction specific and (hence) insufficiently general,³⁶ and would violate local compositionality.³⁷

    Local compositionality is not sacrosanct, but it has presumptive status in most contemporary semantic theorizing. The burden is on those who wish to suspend local compositionality in the service of (8) to show how it is done and to make it look plausible. Suffice it to say that this challenge of compositionality is one that the proponent of (7) does not face. Moreover, as we have already noted, the challenge is not well motivated in the first place, as plausibly it is a mistake to suppose that all *de re* ascriptions involve requirements of acquaintance.³⁸ I note once again a point made above: if the truth of some *de re* ascriptions requires external relations of acquaintance to obtain between the thinker and the *res*, a simple way for the Fregean to deliver this result compositionally is to suppose that in such cases the thinker is deploying acquaintance-requiring senses, and that the existential quantification over modes of presentation in the truth-conditions is restricted to such senses.

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    36. "Insufficiently general" because the subject of a *de re* attitude ascription can be a generalized quantifier or other logically complex object ('Bob and Alice'), and in such cases it is doubtful that something in the exact shape of (24) is what is wanted. (After all, without further comment, $R(m, x,$ Bob and Alice) doesn't make sense.) It would be insufficiently general also because, as already noted, expressions in various syntactic positions may be read *de re* within the context of an attitude verb, not merely the subject.

    37. The basic challenge here is familiar already in the literature on non-Fregean treatments of the *de re*. Some of these approaches (notably those building on Lewis 1979) embrace truth-conditions akin to (8) in that they make appeal to an acquaintance relation *R* connecting the subject of the ascription with the relevant *res*. The difficulty in vindicating such analyses compositionally is acknowledged; see, for example, the discussion and references in Maier 2009, 459; also Schlenker 2004, 190. For solutions in a possible worlds setting, see Percus and Sauerland 2003 and Ninan 2012.

    38. To be clear, the view I am advocating does not require the rejection of acquaintance relations. As I have noted, (7) is compatible with the idea that some senses are acquaintance requiring. Further, for all I have said, (8) may well be a useful regimentation of the truth-conditions of some *de re* ascriptions for certain nonsemantic purposes. The point here is just that explicit reference to acquaintance relations in the compositionally derived truth-conditions of *de re* ascriptions comes only at a high price. We do not have to pay this price in order to say that the truth of a *de re* ascription may require acquaintance.

S E T H   Y A L C I N

For a complete treatment of *de re* attitude ascriptions, it remains to address a familiar problem for the Fregean, the problem of modeling reference shift in indirect contexts. I hope it is clear that the analysis I have described can be made to work with various solutions to this problem, but see the appendix for one possible concrete implementation.

11. From *De Re* to *De Se*?

Let me now bring the preceding to bear on Stanley 2011's recent proposal that the Fregean should take *de se* ascription to be a certain variety of *de re* ascription.

Consider:

(25) Bekele expects to win.
(26) Bekele expects Bekele to win.

It is a familiar observation that certain attitude verbs that take infinitival complements (namely, obligatory subject control structures) are normally read as obligatorily *de se*: (25) is true only if Bekele has the *de se* expectation that he himself will win. (By "*de se* ascription," I have in mind these kinds of structures. With most of the literature, I take for granted that there is a distinctive category of *de se* mental states.) Not so (26): if Bekele is drunk and unknowingly watching himself on video, and he thinks, of that guy on the video, that he will win the race, then (26) is licensed, but not (25).[39] We focus now on the syntax and semantics of constructions like (25). A standard view about the syntax of (25) would be the following:

(27) **Bekele** [**expects** [PRO **to win**]],

(where PRO is a syntactically motivated phonologically null element).[40] The approaches to *de se* ascription based on Lewis 1979's model of *de se* attitudes generally assume this kind of syntax (see Ninan 2010 for an overview of recent work). The Lewisian model of these attitudes dominates in linguistic semantics, partly because of the way it dovetails with the received syntax (27).

Stanley aims for a Fregean alternative. He proposes that the truth-conditions for (25) be given along the following lines:

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39. We need not pursue here the question whether (26) has a *de se* reading separable from its *de re* reading. It is enough that (26) but not (25) can be read non–*de se*.

40. Motivated by, for example, the extended projection principle and the theta criterion (Chomsky 1984).

Quantifying In from a Fregean Perspective

> (28) Bekele is such that his first-person mode of presentation m is such that Bekele stands in the expectation relation to the Fregean thought $m \oplus$ WINS.

This gives (27) truth-conditions akin to a *de re* ascription.[41]

How are these truth-conditions supposed to be achieved compositionally? Stanley proposes that in the logical form of (25), PRO does three things: (i) it moves outside the scope of **expects** but stays within the scope (c-command domain of) the subject **Bekele**, (ii) it binds a variable over modes of presentation within the scope of **expects**, and (iii) it requires this mode of presentation to be Bekele's first-person mode of presentation. Thus while the Fregean thought expressed by (10) does not itself contain Bekele's first-person mode of presentation as a part, its truth-conditions are a function of this mode of presentation (compare Peacocke 1981). To get this result, Stanley hypothesizes that PRO contributes a certain "descriptive quantifier ranging over ways of thinking" (2011, 88). This quantifier gets a *de re* reading, appearing syntactically outside of (and binding into) **expects**. Stanley analogizes this to the *de re* reading of **his brother** in

> (29) John expects that his brother will win.
> **John [[his brother]$_1$ [expects t$_1$ will win]]**

(Imagine that John doesn't realize that the man he expects to win is his brother.) On this reading, **his brother** will appear outside the scope of **expects** and will bind a variable within it, and the genitive **his** will be anaphoric with **John**. Stanley tells a story like this for (25). He rejects the syntax (27) for (25), favoring instead:

> (30) Bekele expects to win.
> **Bekele [PRO$_1$ [expects t$_1$ to win]]**

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41. Why not say instead that (27) just relates Bekele to the thought SELF$_\text{Bekele}\oplus$WINS, where SELF$_\text{Bekele}$ is the first-person mode of presentation Bekele deploys in thinking about himself in the *de se* way? Because (according to the doctrine in Frege 1997c [1918]) only Bekele is in position to grasp the first-person mode of presentation that this thought is constructed from. We are therefore not in position to ascribe the expectation whose content is that proposition directly to Bekele. (Unless it is assumed that one can express and ascribe Fregean thoughts that one does not in fact grasp; but I set this idea aside.) It seems, then, that the best we can say is that he is in a state of expectation relating him to a thought built from some first-person mode of presentation of himself.

SETH YALCIN

Stanley requires PRO to raise out of the lower clause in subject control constructions such as (25), leaving a trace. PRO$_1$ is going to function in just the way that **his brother**$_1$ does in (29); you can think of it as though it meant something like *his*$_1$ *first-person mode of presentation*. This proposal precludes the possibility of the standard syntax (27). The idea that PRO can move in this way is (to my knowledge) unprecedented. The idea that PRO in fact *must* move out of the lower clause in this way is a correspondingly nonstandard proposal. Stanley does not independently motivate these syntactic departures. Moreover, although he suggests (25) is analogous to something like (29), he does not provide any specific Fregean semantics for *de re* ascriptions, preferring to remain noncommittal on the matter. This leaves it unclear how the semantics of (25) works in detail.

Fortunately, we have a Fregean semantics for *de re* readings ready to hand. Let me explain why this semantics gets the desired Fregean result for (29) but does not get the result Stanley would like for (25). The problem, I will suggest, is with Stanley's proposal. More generally, we will observe a difficulty with any Fregean account that (i) invokes nonpublicly accessible first-personal modes of presentation in the explanation of *de se* thought and *de se* ascription, and (ii) assimilates *de se* readings to *de re* readings.

Assuming our rule of Fregean predicate abstraction, (29) will receive the following truth-conditions:

> (31) John is such that his brother x is such that there is a mode of presentation m of x such that John stands in the expectation relation to the Fregean thought $m \oplus$ WILL-WIN.

It is worthwhile to note the ways that (31) is disanalogous to (28), Stanley's hypothesized truth-conditions for (25). In (28), the genitive construction *his first-person mode of presentation* directly binds a variable over modes of presentation in the scope of *expects*. By contrast, in (31), *his brother* does not bind a variable over modes of presentation; rather, it binds a variable over individuals, just as we would expect. The *de re* reading of *his brother* does semantically trigger quantification over modes of presentation, but according to the approach we have developed, this quantification is introduced separately, by the rule of Fregean predicate abstraction.

I submit that this is as it should be. After all, it would not be plausible to view *his brother*, or determiner phrases generally, as quantifiers over modes of presentation. That would make life difficult for determiner phrases as they occur in ordinary extensional contexts. We do better to

Quantifying In from a Fregean Perspective

generate this quantificational force separately, in just the *de re* constructions where we need it. This is what Fregean predicate abstraction does.

In a similar way, it is not plausible to view PRO generally as a quantifier over modes of presentation. This would make life difficult for PRO as it is hypothesized to occur in nonattitudinal environments (for example, 'The plant started PRO to die', 'John arrived PRO exhausted', and so forth). If the Fregean view requires that (25) involves quantification over modes of presentation, we do better to generate this quantificational force in another way.

Can we get it by assuming, with Stanley, that (25) is *de re* (with a syntax as in (30)), and by using Fregean predicate abstraction? Under these assumptions, the truth-conditions of (25) are predicted to be roughly:[42]

> (32) Bekele is such that he is an *x* such that there is a mode of presentation *m* of *x* such that Bekele stands in the expectation relation to the Fregean thought $m \oplus$ WINS.

This result is not correct (whether or not the quantification over senses is contextually restricted to acquaintance-requiring senses). These truth-conditions might be adequate for (26), but they are not adequate for (25), as they do not ensure that (25) is obligatorily *de se*. The crucial difference between (32) and Stanley's target truth-conditions (28) is, of course, the fact that in (28) the quantification is (and must be) restricted to *first-person* modes of presentation. This restriction is supposed to explain, along Fregean lines, why the ascription is distinctively *de se*. A minimal change to (32) that would be adequate to secure the *de se* character of (25) is:

> (33) Bekele is such that he is an *x* such that there is a **first-person** mode of presentation *m* of *x* such that Bekele stands in the expectation relation to the Fregean thought $m \oplus$ WINS.[43]

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42. I make the standard assumption that PRO is of type *e* and referentially dependent on the subject in subject-control constructions.

43. Note that (33) differs from Stanley's (28) in that (33) does not specifically require that the relevant first-person mode of presentation be Bekele's. But if we make the standard Fregean background assumption that the only first-person modes of presentation that may figure in an agent *x*'s thoughts are first-person modes of presentation of *x*, then (33) entails (28). The main point is that an obligatory restriction in the semantics to first-person modes of presentation would suffice to generate the desired semantic difference between (25) and (26).

S E T H Y A L C I N

The challenge for the Fregean is to derive these truth-conditions compositionally.[44] The rule of Fregean predication that we have independently motivated for *de re* readings does not get us there—even if we assume, rather implausibly, a *de re* syntax for PRO constructions as in (30).[45]

In response, Stanley could argue that our Fregean treatment of *de re* ascription is incorrect. The burden now falls upon him to supply a superior Fregean compositional semantics for these constructions. Meanwhile, it would seem odd to blame our theory of Fregean *de re* ascription for not applying to (25), by all appearances a syntactically quite different kind of construction. The facts appear to be as follows: (i) overtly *de re* constructions can be handled with Fregean predicate abstraction, (ii) the idea that obligatorily *de se* subject control constructions are syntactically *de re* (that is, with PRO raising out of the lower clause as in (30)) has little plausibility in the present state of understanding, and (iii) the assumption that these constructions are syntactically *de re* cannot, in any case, be used together with Fregean predicate abstraction to recover the correct *de se* truth-conditions for these constructions.

In light of all this, it seems that the Fregean does better not to embrace Stanley's thesis that obligatorily *de se* ascriptions are syntactically a species of *de re* ascription. But this does not mean that Stanley is incorrect about the ultimate truth-conditions of *de se* ascriptions. We must distinguish two ideas:

> DE SE SYNTACTIC THESIS. Obligatorily *de se* attitude ascriptions are syntactically much like *de re* attitude ascriptions: they involve a determiner phrase or operator located outside the scope of the attitude verb (for example, PRO$_1$ in (30)) binding a variable within the scope of that verb.

> DE SE TRUTH-CONDITIONS THESIS. The truth-conditions of *de se* ascriptions are in the general shape of the truth-conditions of *de re* ascriptions.

One can accept the second thesis without accepting the first. (For example, Lewis [1979] accepted the second idea while remaining agnostic on

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44. Note that we cannot leave it to context to optionally restrict the quantification to first-person modes of presentation. This restriction must be obligatory, because (25) has only the *de se* reading.

45. One logical possibility would be to suppose that the movement of PRO that Stanley postulates leaves a trace of a distinctive kind, one that could then be associated with an obligatory restriction to first-person modes of presentation in the contextual restriction on modes of presentation. This would require an extension of the Fregean predicate abstraction rule. Absent further comment, such an extension would seem ad hoc.

Quantifying In from a Fregean Perspective

the first idea.)[46] The DE SE SYNTACTIC THESIS should be dropped; but it remains open that (28) or (33) may supply the truth-conditions of (25). Indeed, I agree with Stanley that this seems to be the Fregean's best bet. The Fregean ideal would be to derive these truth-conditions compositionally assuming the received syntax (27). Plainly, this could be done by postulating a special composition rule; but it would be nice to deliver something more general and explanatory. We leave this as an open problem for the Fregean position on *de se* ascription. I do not suggest that this problem cannot be solved. I suggest only that it is not solved by the best Fregean theory of *de re* ascription.

12. An Open Problem: Scope-Paradoxical Readings

Before concluding, I wish to call attention to a serious nontrivial open problem for all Fregean views of *de re* attitude ascription, including the view described here. This is the problem of the analysis of so-called scope-paradoxical sentences (see Fodor 1970, Bäuerle 1983, Percus 2000, and Keshet 2008, among others), in particular scope-paradoxical attitude ascriptions. The kind of examples I have in mind are similar in key respects to the descriptive *de re* readings observed in section 6 above (as noted already in Fodor 1970). To use a variant of an example discussed by von Fintel and Heim (2011), consider:

> (34) Mary wanted to buy a hat like Kai's.

The indefinite phrase *a hat like Kai's* can take wide or narrow scope relative to *wants*, yielding the familiar *de re* and *de dicto* readings, respectively. But Fodor (1970) noticed that a third reading of this kind of sentence is possible. Suppose the scenario is this: Mary does not want to buy any particular hat; what she wants to buy is only some Red Sox hat or other; and (perhaps unbeknownst to Mary) Kai has a Red Sox hat. In this kind of scenario, (34) has a true reading. This reading is not the standard *de re* reading (since there is no particular hat such that Mary wants it), and neither is it the *de dicto* reading (since Mary has no particular preference

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46. On Lewis's view, an agent *a* believes *de re* of *b* that it is *F* just in case (i) *a* stands in an acquaintance relation *R* to *b*, and (ii) in all of the centered worlds $\langle x, w \rangle$ compatible with what *a* believes, the thing *x* stands in *R* to (in *w*) is *F* (in *w*). Lewis's account of the truth-conditions for *de se* ascriptions fits this schema: an attitude is *de se* just when *R* is the identity relation. Despite this, semanticists building on Lewis have generally vindicated the received syntax for (25), namely, (27), as noted above. Thus Lewisians tend to reject DE SE SYNTACTIC THESIS, but accept DE SE TRUTH-CONDITIONS THESIS.

per se to align with Kai in the kind of hat she wears). Fodor calls this the *nonspecific transparent* reading. On this reading, the truth-conditions of the proposition that Mary wants to be true are something like:[47]

(35) {w: Mary buys something in w that is a hat like Kai's in @}

(understanding @ as the world of evaluation for (34), the world where Mary's wanting takes place). This reading creates a puzzle (or "paradox") about the scope of *a hat like Kai's*. On the one hand, its quantificational force must be understood as within the scope of the intensional verb, since again, Mary does not want any particular hat. But on the other hand, the predicative material *hat like Kai's* is apparently evaluated outside of this intensional context and relative to the matrix context of the ascription.

   The proper treatment of this reading is currently a matter of active investigation. By far the most developed approaches to this problem are broadly within the setting of possible worlds semantics (see, for example, Bäuerle 1983; Percus 2000; Keshet 2008, 2010a, 2010b, 2010c; von Fintel and Heim 2011; and Schwarz 2012; also von Stechow 1984; Cresswell 1990; Abusch 1994; and Farkas 1997). One standard line within this approach is to introduce object-language world variables in such a way that the quantificational force of *a hat like Kai's* can be disentangled from its intensional status. On this kind of approach, (34) is true at a world w (on the nonspecific *de re* reading) just in case:

$$\forall w' \in D^w_{Mary} \; : \; \exists x \; : \; x \text{ is a hat like Kai's in } w \text{ and Mary buys } x \text{ in } w'$$

(where D^w_{Mary} is the set of worlds where Mary's relevant desires in w are realized). Observe that the existential force of *a hat like Kai's* is below the scope of the modal quantification introduced by *wants* (so we do not have the standard *de re* reading), but that its predicative material is evaluated at the matrix world ("transparently") rather than at Mary's desire worlds (so we do not have the *de dicto* reading). See von Fintel and Heim 2011 for one detailed compositional implementation.

   I mention this kind of analysis of nonspecific *de re* readings in order to highlight the point that our Fregean cannot say anything like this. First, our Fregean employs no notion of "belief worlds" or "desire

47. I abstract from the fact that desire ascriptions like (34) are obligatorily *de se*, since this is orthogonal to the present issue. I also abstract from the fact that on the target reading, Mary's desire would be fulfilled in a world where she buys a Red Sox hat that does not exist in the actual world.

Quantifying In from a Fregean Perspective

worlds" in the semantics of attitude ascriptions. Second, our Fregean cannot make sense of the idea of a generalized quantifier taking scope below an attitude verb while simultaneously being interpreted transparently. If a quantifier is within the scope of an attitude verb, it will semantically contribute a sense of the appropriate type. It will not function as an ordinary extensional quantifier. Correspondingly, the question of its intensional status cannot arise in the way that this question can arise in a possible worlds setting.

So the Fregean faces a difficulty here. The story we have told so far covers ordinary quantifying in, but not this kind of *de re* reading. Whether the Fregean can tell a compelling story about these sentences is a substantial open question, one that I will not try to settle. I will just mention one possible direction Fregeans might wish to explore in a note.[48]

While I am mentioning costs of the view, I will remind the reader of one mentioned earlier (note 33). The present Fregean view requires the possibility of movement of a DP outside of a finite clause environment (at least if the account is to extend to classic cases such as (1)). This is a potentially nontrivial cost, given the sort of data familiar since May 1977. The Fregean owes us an account of the conditions under which this movement is licensed. This concern is pressing in light of the existence of alternative, non-Fregean, non-movement-based views within possible world semantics. These competitor views can hold that the *de re* reading of (1) is not a "quantifying in" reading at all, but rather one where the indefinite takes its *de re* reading in situ. (Approaches exploiting situation variables can achieve this result, as can the split intensionality theory of Keshet [2010c].)

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48. An idea for the Fregean to consider, inspired by von Fintel and Heim (2011, sec. 8.3.2), is that on the nonspecific *de re* reading of (34), we do have movement (as on the ordinary *de re* reading), but it is not movement of the entire DP *a hat like Kai's* out of the attitude context. Rather, what moves is only the NP-complement of the quantificational determiner, namely, *hat like Kai's*. This expression denotes a property of individuals (namely, $\lambda x.x$ is a hat like Kai's). We would assume that movement of this expression leaves a trace of the appropriate type and triggers Fregean predicate abstraction of the appropriate kind, so that at the relevant level of composition we would have:

($\lambda x.x$ is a hat like Kai's) $\lambda f.\exists m \in C : M(m, f) \wedge$ Mary $W(\text{MARY} \oplus \text{BUYS} \oplus \text{A} \oplus m)$
"The property of being a hat like Kai's is such that there is a mode of presentation of it *m* such that Mary is want related to the Fregean thought MARY $\oplus$ BUYS $\oplus$ A $\oplus$ *m* "

(where A is the sense corresponding to the English indefinite article.) This would, of course, require extending the definition of Fregean predicate abstraction. Whether this kind of move would be syntactically plausible is unclear at best.

S E T H   Y A L C I N

All this suggests that the most serious challenge for Fregean views may not be "quantifying into" attitudes per se, but rather the possibility of *de re* readings of DPs that are nevertheless within the scope of intensional or hyperintensional operators.

13. Conclusion

What is the relation between a compositional semantics for natural language and a theory of mental content? Theorists have different conceptions of the relations between these projects. Elsewhere, building on Lewis (1980) and others, I have recommended a view of the matter according to which the connection between the two projects is rather indirect (Yalcin 2014). The technical notions of *compositional semantic value* and *content* are best understood, I suggested, as corresponding to different job descriptions, and as responsive to quite different, if related, explanatory aims.

In partial contrast to this general perspective, Fregeans have traditionally tended to assume a relatively tight interconnection between the project of giving a compositional semantics for a fragment of natural language and the theory of content. Though even Fregeans will surely want to distinguish linguistic meaning (compositional semantic value) from sense (see, by way of comparison, Burge 1979c), it is obvious that for them the two notions are deeply entangled. Certainly it was so for Frege. Frege introduced senses primarily in order to model distinctions between states of mind (epistemic states in particular), but he also pressed them into service in the meanings of attitude ascriptions, giving them a key semantic role there. Further, senses and thoughts play a fundamental role in Frege's conception of what it is to understand a language. He took senses to be crucial for explaining the productive character of language understanding and use, in much the way that contemporary semanticists expect compositional semantic values to assist in explaining the productive character of language understanding and use.[49]

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49. A representative quote: "It is astonishing what language can do. With a few syllables it can express an incalculable number of thoughts, so that even a thought grasped by a human being for the very first time can be put into a form of words which will be understood by someone to whom the thought is entirely new. This would be impossible, were we not able to distinguish parts in the thought corresponding to the parts of a sentence, so that the structure of the sentence serves as an image of the structure of the thought" (Frege 1963 [1923], 1).

Quantifying In from a Fregean Perspective

So in seeking to clarify the nature of senses, compositional semantics can, for the Fregean, serve as one indirect source of constraints. We can ask: what must senses be like if they are to play something like the semantic role in attitude ascriptions that Frege envisaged? On this question, the main suggestion that our analysis has recommended is one that is conditional in character. Again, it is this: if there are *de re* ascriptions that call for acquaintance, it is ill advised to hope to factor out this dimension of their truth-conditions in the style of (8). Rather, one does better to recognize a category of acquaintance-requiring senses. That is, one does better to be a Fregean externalist.

Even if one takes this path, the question as to what senses are is substantially left open. Plausibly, that is as it should be. We should not expect descriptive semantics to fully settle the nature of senses, or of Fregean contents. What we should expect is that our Fregean theory of content (senses, thoughts) will cooperate with a plausible compositional semantic theory (especially, a compositional semantic theory for the fragment of language whose role is, putatively, to assign Fregean thoughts to, inter alia, states of mind). By investigating a compositional semantics incorporating Frege's picture of content and of attitude states, we can begin to constrain the answer to the question as to what kind of senses a Fregean theory of content must deliver.

A. Appendix: Indirect Contexts

This appendix describes a basic Fregean extension of a standard model-theoretic semantics. We restrict to a fragment L of English containing names, intransitive extensional predicates, generalized quantifiers and quantificational determiners, and the attitude verb *believes*. The objective is to specify enough explicit formal structure to compositionally derive our Fregean's advertised truth-conditions for the *de dicto* and *de re* readings of a sentence like (1).

Assume a model structure supplying a domain D_e of individuals and a domain D_t of truth-values. To this structure, the Fregean adds, first, a domain D_m of modes of presentation and second, a *sense function s* mapping the primitive lexical items of L to their customary senses (elements of D_m). Semantic types and denotation domains are defined in the usual way in terms of the three primitive domains just specified. The interpretation function $[\![\,\cdot\,]\!]^{g,r}$ is relativized to a variable assignment function g (as usual) but also to a *reference function r*. The relativity to reference functions is another innovation we offer on behalf of the Fregean: as we will explain,

S E T H   Y A L C I N

expressions that create indirect contexts will serve semantically to shift this parameter. We stipulate that there are only two values that the r-parameter can take, given any language L. One value is r_s, the reference function determined by the sense function s given by the model for the language. (We assume that every sense determines a reference, so that any s induces a corresponding r_s.) The references of expressions determined by their customary senses will be the sorts of objects usually associated with those expressions in a textbook model-theoretic semantics: the references of names are individuals in D_e; the references of intransitive predicates are first-order properties in D_{et}; generalized quantifiers receive second-order properties as references; and so on. The second value the reference parameter can take is s itself. In that case, the expression is mapped directly to its sense.

In general, for any nonvariable lexical item α, its semantic value is supplied by the value of the r parameter:

$$[\![\alpha]\!]^{g,r} = r(\alpha).$$

Primitive lexical items are thus reference-function sensitive, analogous to the way variables are assignment function sensitive. (We assume variables receive their standard semantics, that is, that they are assignment function sensitive.) The "default" setting of the reference parameter is r_s. We encode this by defining truth for the sentences of L as follows:

Def. ϕ is **true** iff $[\![\phi]\!]^{g,r_s} = 1$, for all g.[50]

Now as noted, we assume the sense function for the language fragment will determine an r_s delivering semantic values of the standard sort. Thus:

$[\![\textbf{Ralph}]\!]^{g,r_s} = r_s(\textbf{Ralph}) = \text{Ralph}$
$[\![\textbf{is a spy}]\!]^{g,r_s} = r_s(\textbf{is a spy}) = \lambda x.x \text{ is a spy}$
$[\![\textbf{someone}]\!]^{g,r_s} = r_s(\textbf{someone}) = \lambda f.\exists x \in D_e : x \text{ is a person and } f(x) = 1$
$[\![\textbf{believes}]\!]^{g,r_s} = r_s(\textbf{believes}) = \lambda m^t.\lambda x.xBm$

The first three semantic values will look familiar, and will belong to the familiar domains (D_e, D_{et}, and $D_{et,t}$ respectively). The semantic value for *believes* (relative to r_s) is a function that takes modes of presentation of a truth value (a Fregean thought, and an element of D_m) to a function from

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50. If the present semantics were extended to model context-sensitivity, we might elect instead to define truth (at a context) in terms of a value for g supplied by the context, rather than by universally quantifying over assignments.

Quantifying In from a Fregean Perspective

individuals to truth-values. This function is defined on a subset of D_m—the thoughts—and we indicate this by superscripting the variable m with the characteristic type of the references of the modes of presentation the variable ranges over.

When the reference function parameter is s, expressions are mapped directly to their customary senses, elements of D_m:

$$[\![\mathbf{Ralph}]\!]^{g,s} = s\,(\mathbf{Ralph})\ =\ \text{RALPH}$$
$$[\![\mathbf{is\ a\ spy}]\!]^{g,s} = s\,(\mathbf{is\ a\ spy}) = \text{IS-A-SPY}$$
$$[\![\mathbf{someone}]\!]^{g,s} = s\,(\mathbf{someone})\ =\ \text{SOMEONE}$$
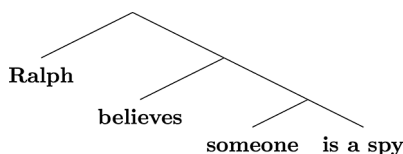$$[\![\mathbf{believes}]\!]^{g,s} = s\,(\mathbf{believes})\ =\ \text{BELIEVES}$$

It remains to state the nontrivial composition rules for the language, to extend the interpretation function to complex expressions. Besides Fregean predicate abstraction (FPA), we postulate a rule of functional application broad enough to allow verbs like *believes* to compose with the senses of their complements, and we include a rule that dictates how senses of the appropriate type compose.

1. **Functional application (FA).** If α is a branching node with β and γ as daughters, then for any g: (a) If $[\![\gamma]\!]^{g,r_s}$ is in the domain of $[\![\beta]\!]^{g,r_s}$, then $[\![\alpha]\!]^{g,r_s} = \beta^{g,r_s}([\![\gamma]\!]^{g,r_s})$; (b) If $[\![\gamma]\!]^{g,s}$ is in the domain of $[\![\beta]\!]^{g,r_s}$, then $[\![a]\!]^{g,r_s} = [\![\beta]\!]^{g,r_s}([\![\gamma]\!]^{g,s})$.

2. **Sense composition (SC).** If α is a branching node with β and γ as daughters, and $r_s(\beta)$ or $s(\beta)$ is in the domain of $r_s(\gamma)$, then for any g, $[\![\alpha]\!]^{g,s} = [\![\beta]\!]^{g,s} \oplus [\![\gamma]\!]^{g,s}$.

If senses were construed as functions and arguments, we could get by only with functional application; but we adopt SC to remain neutral.

Now assuming all of the above, we can derive our Fregean's target truth-conditions for the *de dicto* and *de re* readings of (1). Begin with the *de dicto* reading, where the structure dictating the compositional order is simply:

(36)

S E T H   Y A L C I N

Then, setting relativity to assignments functions aside, as it plays no role here, we have:

1. 'Ralph believes someone is a spy' is true iff
2. (by T) $[\![$**Ralph believes someone is a spy**$]\!]^{r_s} = 1$ iff
3. (by FA) $[\![$**believes someone is a spy**$]\!]^{r_s}$ ($[\![$**Ralph**$]\!]$) iff
4. (by lexicon) (Ralph) $[\![$**believes someone is a spy**$]\!]^{r_s}$ iff
5. (by FA, lexicon) Ralph B $[\![$**someone is a spy**$]\!]^{s}$ iff
6. (by SC) Ralph B ($[\![$**someone**$]\!]^{s} \oplus [\![$**is a spy**$]\!]^{s}$) iff
7. (by lexicon) Ralph B (SOMEONE $\oplus$ $[\![$**is a spy**$]\!]^{s}$) iff
8. (by lexicon) Ralph B (SOMEONE $\oplus$ IS-A-SPY) $\square$

It is also easy to see that the machinery does not require a Fregean hierarchy of senses as belief operators are stacked. For example, 'John believes that Ralph believes someone is a spy' is true iff John B (RALPH $\oplus$ (BELIEVES $\oplus$ (SOMEONE $\oplus$ IS-A-SPY)))—and so on for further iterations.

There has, of course, been much discussion on the question whether Frege commits himself to a hierarchy of senses, and if so, how it is to be erected (or avoided): see, for instance, Carnap 1947; Church 1951; Kaplan 1964; Davidson 1965, 1968; Dummett 1973; Burge 1979a; Parsons 1981; Peacocke 1996, 2009; Kripke 2008. I cannot hope to adequately engage all of this important work here, but I include an extended foot-note on the interpretative question.[51] In any case, the ultimate picture of

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51. It is a familiar point that Frege never explicitly endorsed the idea that there is a hierarchy of senses. Nevertheless, the standard view, going back to Carnap (1947), Church (1951), and Dummett (1973), is that Frege does commit himself to such a hierarchy. The remark most often cited in support of this idea is the following passage from Frege 1997b [1892], 154: "In indirect speech one talks about the sense, e.g., of another person's remarks. It is quite clear that in this way of speaking words do not have their customary *Bedeutung* but designate [*bedeuten*] what is usually their sense. In order to have a short expression, we will say: in indirect speech, words are used *indirectly* or have their *indirect Bedeutung*. We distinguish accordingly the *customary* from the *indirect Bedeutung* of a word; and its *customary* sense from its *indirect* sense." It is the very last remark that is puzzling. In the present theoretical context, we might write the customary sense of a lexical item α as $s(\alpha)$, the customary reference (*Bedeutung*) of α as $r_s(\alpha)$, and the indirect reference of α as α^s (which, of course, is just $s(\alpha)$). Metaphysically speaking, there is nothing beyond these objects that could serve as the special "indirect sense" of α. But Frege is usually read as committing himself to some such further object here, and this leads to the idea that each expression must therefore have a sense, an indirect sense, a doubly indirect sense, and so on.

Must we read Frege as introducing some kind of third entity here, an expression's indirect sense? While that reading is not unnatural, there is room to resist the idea that the terminology is really supposed to map onto some hitherto unacknowledged kind of

Quantifying In from a Fregean Perspective

the situation is basically the one that Dummett (1973) advocates: the sense of an expression as it occurs in indirect contexts is not different than its sense as it occurs in direct contexts.

Turning to the *de re* reading of (1) and assuming a syntax as in (16), we have:

1. 'Someone 1 Ralph believes t_1 is a spy' is true iff

2. (by T) $\forall g : [\![\textbf{someone 1 Ralph believes } t_1 \textbf{ is a spy}]\!]^{g,r_s}$ iff

3. (by FA) $\forall g : [\![\textbf{someone}]\!]^{g,r_s}([\![\textbf{1Ralph believes } t_1 \textbf{ is a spy}]\!]^{g,r_s})$ iff

4. (by FPA) $\forall g : [\![\textbf{someone}]\!]^{g,r_s} \ (\lambda x.\exists m : M(m, x) \wedge [\![\textbf{Ralph believes } t_1 \textbf{ is a spy}]\!]^{g^{m/1},r_s} = 1)$ iff

5. (by FA, lexicon) $\forall g : [\![\textbf{someone}]\!]^{g,r_s} \ (\lambda x.\exists m : M(m, x) \wedge \text{Ralph } B [\![t_1 \textbf{ is a spy}]\!]^{g^{m/1},s})$ iff

6. (by SC) $\forall g : [\![\textbf{someone}]\!]^{g,r_s} \ (\lambda x.\exists m : M(m,x) \wedge \text{Ralph } B \ ([\![t_1]\!]^{g^{m/1},s} \oplus [\![\textbf{is a spy}]\!]^{g^{m/1},s}))$ iff

7. (by lexicon) $\forall g : [\![\textbf{someone}]\!]^{g,r_s} \ (\lambda x.\exists m : M(m, x) \wedge \text{Ralph } B \ (m \oplus \text{IS-A-SPY}))$ iff

8. (by lexicon, and simplifying) $\exists x : \exists m : M(m, x) \wedge \text{Ralph } B \ (m \oplus \text{IS-A-SPY})\square$

We close by noting a subtlety required to deal with a *de re* ascription that is wholly in the scope of another attitude verb, which is a possible reading of:

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object. After all, as is evident even in the last sentence quoted above, Frege is clearly prepared to use multiple terms for the same object—witness that the indirect *Bedeutung* of a word just is its customary sense. These two terms—'indirect Bedeutung' and 'customary sense'—do not (given a word) pick out distinct objects; rather, they highlight the same object relative to two distinct functional roles it plays in Frege's theory. To speak of the 'indirect Bedeutung' of a word is to speak of what the word contributes, when it appears in an indirect context, toward the determination of the reference of the whole expression in which it occurs. We might similarly consider taking a functional reading of 'indirect sense'. To speak of the 'indirect sense' of a word, on this idea, is to speak of the semantic role the sense of the expression plays when the word appears in an indirect context. The sense of a word in a given embedded context can be characterized as *indirect* just when it does *not* contribute the referent it (customarily) determines for the calculation of the reference of the complex expression in which it occurs.

Given Frege's evident failure to take up the idea of a hierarchy of senses, I am inclined toward this more deflationary reading of the passage (at least when I don't just shrug off entirely Frege's brief mention of indirect senses). This reading still renders Frege overly brief and cryptic in the passage quoted above, but it has the merit of not saddling him with an extravagant hierarchy that he nowhere mentions, let alone argues for.

S E T H Y A L C I N

(37)

John believes Ralph believes someone is a spy.
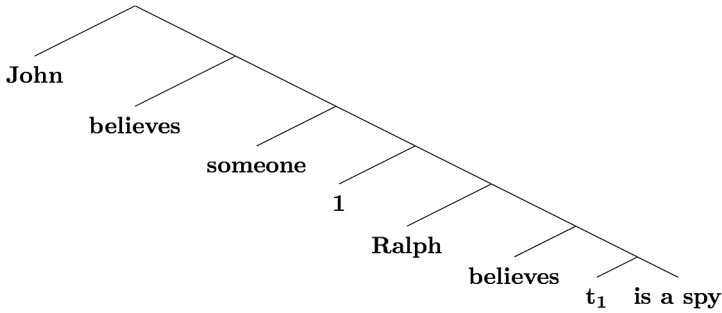
As it stands, our definition of the interpretation function does not settle what the sense of a constituent headed by a numeral is, but this information is required to cope with sentences such as (37). To deal with this, we can elaborate FPA:

Fregean predicate abstraction (revised)

If α is a branching node with β and γ as daughters and β dominates only a numerical index i, then for any variable assignment g,

(i) $[\![\alpha]\!]^g = \lambda x.[\![\gamma]\!]^{g^{x/i}}$, if defined; else

(ii) $[\![\alpha]\!]^{g,r_s} = \lambda x.\exists m : M(m, x) \wedge [\![\gamma]\!]^{g^{m/i},r_s}$, and

$[\![\alpha]\!]^{g,s} = \text{LAMBDA-I} \oplus [\![\gamma]\!]^{g^{1/i},s}$

We assume senses in D_m corresponding to lambda binders and their variables—the former are denoted by replacing 'I' in the schema 'LAMBDA-I' with a numeral (so that D_m contains LAMBDA-1, LAMBDA-2, . . .), and the latter are denoted by numerals. The reader can confirm that this rule, together with our other assumptions, has the result that

(37) The sentence (26) is true iff $\forall a$: John B (SOMEONE $\oplus$ (LAMBDA-1 $\oplus$ (RALPH $\oplus$ (BELIEVES $\oplus$ (1 $\oplus$ IS-A-SPY)))))).

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To a certain extent, Frege's view was, as Kaplan puts it, that "obliquity indicates ambiguity" (Kaplan 1968, 184). But the heirs of Frege would do better not to leave it at that, since the kind of ambiguity in question is obviously not of the ordinary variety. Certainly it is not supposed to double the work needed to acquire the language. On the above system,

the dual role of each lexical item is fully incorporated into the semantics. The analogy to the semantics of variables is useful here. If we are generally not inclined to say that variables are ambiguous, merely because of their ability to take very different values as their assignment functions are shifted, neither should we be inclined to say that nonvariable lexical items are ambiguous in the system just described.

This helps to clarify the sense in which the Fregean need not, in the end, appeal to lexical ambiguity in analyzing the *de re/de dicto* distinction. The Fregean does not pun on *someone* across the *de dicto* and *de re* readings of (1); on the contrary, a single semantic value for this expression plays a role in the determination of both truth-conditions. Although the Fregean's view is certainly not free of complexities, it can, like the simple view, treat the ambiguity as a structural one.

References

Abusch, Dorit. 1994. "The Scope of Indefinites." *Natural Language Semantics* 2: 83–135.

Aloni, Maria. 2005. "Individual Concepts in Modal Predicate Logic." *Journal of Philosophical Logic* 34: 1–64.

Anand, Pranav. 2006. "De De Se." PhD diss., Massachusetts Institute of Technology.

Barwise, Jon, and Robin Cooper. 1981. "Generalized Quantifiers and Natural Language." *Linguistics and Philosophy* 4: 159–219.

Bäuerle, Rainer. 1983. "Pragmatisch-semantische Aspekte der NP-Interpretation." In *Allgemeine Sprachwissenschaft, Sprachtypologie und Textlinguistik*. Vol. 121, ed. M. Faust, R. Harweg, W. Lehfeldt, and G. Wienold, 121–31. Tübingen, Germany: Gunter Narr.

Bonomi, Andrea. 1995. "Transparency and Specificity in Intentional Contexts." In *On Quine: New Essays*, ed. Paolo Leonardi and Marco Santambrogio, 165–85. New York: Cambridge University Press.

Burge, Tyler. 1977. "Belief De Re." *Journal of Philosophy* 74: 338–62.

———. 1979a. "Frege and the Hierarchy." *Synthese* 40: 265–81.

———. 1979b. "Individualism and the Mental." In *Midwest Studies in Philosophy*. Vol. 4, ed. P. A. French, T. Euling, and H. Wettstein, 73–121. Minneapolis: University of Minnesota Press.

———. 1979c. "Sinning against Frege." *Philosophical Review* 88: 398–432.

———. 1992. "Frege on Knowing the Third Realm." *Mind* 101: 633–50.

Carnap, Rudolf. 1947. *Meaning and Necessity: A Study in Semantics and Modal Logic*. Chicago: University of Chicago Press.

Chalmers, David J. 2011. "Propositions and Attitude Ascriptions: A Fregean Account." *Noûs* 45: 595–639.

Chierchia, Gennaro. 1989. "Anaphora and Attitudes De Se." In *Semantics and Contextual Expression*. Vol. 11, ed. R. Bartsch, J. van Benthem, and P. van Emde Boas, 1–31. Dordrecht: Foris.

Chomsky, Noam. 1984. *Lectures on Government and Binding*. 3rd rev. ed. Berlin: Mouton de Gruyter.

Church, Alonzo. 1951. "A Formulation of the Logic of Sense and Denotation." In *Structure, Method, and Meaning: Essays in Honor of Henry M. Sheffer*, ed. H. Kallen, P. Henle, and S. Langer, 3–24. New York: Liberal Arts Press.

Cresswell, Max. 1990. *Entities and Indices*. Dordrecht: Kluwer Academic Publishers.

Cresswell, Max, and Arnim von Stechow. 1982. "De Re Belief Generalized." *Linguistics and Philosophy* 5: 503–35.

Crimmins, Mark. 1992. *Talk about Beliefs*. Cambridge, MA: MIT Press.

Crimmins, Mark, and John Perry. 1989. "The Prince and the Phone Booth: Reporting Puzzling Beliefs." *Journal of Philosophy* 86: 685–711.

Davidson, Donald. 1965. "Theories of Meaning and Learnable Languages." In *Proceedings of the Third International Congress for Logic, Methodology and Philosophy of Science*. Vol. 3, ed. Y. Bar-Hillel, 3–17. Amsterdam: North-Holland.

———. 1968. "On Saying That." *Synthese* 19: 130–46.

Donnellan, Keith. 1966. "Reference and Definite Descriptions." *Philosophical Review* 75: 281–304.

Dummett, Michael. 1973. *Frege: Philosophy of Language*. 2nd ed. Cambridge, MA: Harvard University Press.

Evans, Gareth. 1981. "Understanding Demonstratives." In *Meaning and Understanding*, ed. H. Parret and Jacques Bouveresse, 280–303. Berlin: W. de Gruyter.

———. 1982. *The Varieties of Reference*. Oxford: Oxford University Press.

Farkas, Donka. 1997. "Evaluation Indices and Scope." In *Ways of Scope Taking*, ed. Anna Szabolcsi, 183–215. Dordrecht: Kluwer.

von Fintel, Kai, and Irene Heim. 2011. "Intensional Semantics Lecture Notes." MIT. Unpublished manuscript.

Fodor, Janet Dean. 1970. "The Linguistic Description of Opaque Contents." PhD diss., Massachusetts Institute of Technology.

Frege, Gottlob. 1963 [1923]. "Compound Thoughts." *Mind* 72: 1–17, with translation by M. Black (originally published in *Beitrage zür Philosophie des deutschen Idealismus* 3: 36–51). Pagination is to the article in *Mind*.

———. 1997a [1892]. "On Concept and Object." In *The Frege Reader*, ed. M. Beaney, trans. P. Geach, 181–93. Malden, MA: Blackwell (originally published in the *Vierteljahrsschrift für wissenschaftliche Philosophie* 16: 192–205).

———. 1997b [1892]. "*On Sinn and Bedeutung*." In *The Frege Reader*, ed. M. Beaney, trans. P. Geach, 151–71. Malden, MA: Blackwell (originally published in *Zeitschrift für Philosophie und philosophische Kritik* 100: 25–50). Pagination is to the Blackwell edition.

———. 1997c [1918]. "Thought." In *The Frege Reader*, ed. M. Beaney, trans. P. Geach and R. H. Stoothoff, 325–45. Malden, MA: Blackwell (originally published in *Beitrage zür Philosophie des deutschen Idealismus* 1: 58–77).

Hawthorne, John, and David Manley. 2012. *The Reference Book*. Oxford: Oxford University Press.

Heck, Richard, and Robert May. 2011. "The Composition of Thoughts." *Noûs* 45: 126–66.

Heim, Irene, and Angelika Kratzer. 1998. *Semantics in Generative Grammar*. Malden, MA: Blackwell.

Hintikka, Jaakko. 1962. *Knowledge and Belief: An Introduction to the Logic of Two Notions*. Ithaca: Cornell University Press.

Holliday, Wesley, and John Perry. 2014. "Roles, Rigidity, and Quantification in Epistemic Logic." In *Trends in Logic, Outstanding Contributions: Johan F.A.K. van Benthem on Logical and Informational Dynamics*, ed. A. Baltag and S. Smets, 591–629. Switzerland: Springer.

Kaplan, David. 1964. "Foundations of Intensional Logic." PhD diss., University of California, Los Angeles.

———. 1968. "Quantifying In." *Synthese* 19: 178–214.

Keshet, Ezra. 2008. "Good Intensions: Paving Two Roads to a Theory of the De Re/De Dicto Distinction." PhD diss., Massachusetts Institute of Technology.

———. 2010a. "Possible Worlds and Wide Scope Indefinites: A Reply to Bäuerle 1983." *Linguistic Inquiry* 41: 692–701.

———. 2010b. "Situation Economy." *Natural Language Semantics* 18: 385–434.

———. 2010c. "Split Intensionality: A New Scope Theory of De Re and De Dicto." *Linguistics and Philosophy* 33: 251–83.

Kneale, William. 1962. "Modality De Dicto and De Re." In *Logic, Methodology and Philosophy of Science: Proceedings of the 1960 International Congress*, ed. Ernest Nagel, Patrick Suppes, and Alfred Tarski, 622–33. Stanford: Stanford University Press.

Kripke, Saul. 1979. "A Puzzle about Belief." In *Meaning and Use*, ed. A. Margalit, 239–83. Dordrecht: D. Reidel.

———. 2005. "Russell's Notion of Scope." *Mind* 114: 1005–37.

———. 2008. "Frege's Theory of Sense and Reference: Some Exegetical Notes." *Theoria* 74: 181–218.

———. 2011. "Unrestricted Exportation and Some Morals for the Philosophy of Language." In *Philosophical Troubles: Collected Papers*, vol. 1, 322–50. Oxford: Oxford University Press.

Lewis, David K. 1970. "General Semantics." *Synthese* 22: 18–67.

———. 1979. "Attitudes De Dicto and De Se." *Philosophical Review* 88: 513–43.

———. 1980. "Index, Context, and Content." In *Philosophy and Grammar*, ed. S. Kanger and S. Ohman, 79–100. Dordrecht: D. Reidel.

Maier, Emar. 2009. "Presupposing Acquaintance: A Unified Semantics for De Dicto, De Re and De Se Belief Reports." *Linguistics and Philosophy* 32: 429–74.

May, Robert. 1977. "The Grammar of Quantification." PhD diss., Massachusetts Institute of Technology.

Montague, Richard. 1973. "The Proper Treatment of Quantification in Ordinary English." In *Approaches to Natural Language: Proceedings of the 1970 Stanford Workshop on Grammar and Semantics*, ed. J. Hintikka, J. Moravcsik, and P. Suppes, 221–42. Dordrecht: D. Reidel.

Ninan, Dilip. 2010. "De Se Attitudes: Ascription and Communication." *Philosophy Compass* 5: 551–67.

———. 2012. "Counterfactual Attitudes and Multi-centered Worlds." *Semantics and Pragmatics* 5: 1–57.

Parsons, Terry. 1981. "Frege's Hierarchies of Indirect Senses and the Paradox of Analysis." *Midwest Studies in Philosophy* 6: 37–58.

Partee, Barbara. 1970. "Opacity, Coreference, and Pronouns." *Synthese* 21: 359–85.

Peacocke, Christopher. 1981. "Demonstrative Thought and Psychological Explanation." *Synthese* 49: 187–217.

———. 1996. "Entitlement, Self-knowledge and Conceptual Redeployment." *Proceedings of the Aristotelian Society* 96: 117–58.

———. 2009. "Frege's Hierarchy: A Puzzle." In *The Philosophy of David Kaplan*, ed. J. Almog and P. Leonardi, 159–86. Oxford: Oxford University Press.

Percus, Orin. 2000. "Constraints on Some Other Variables in Syntax." *Natural Language Semantics* 8: 173–229.

Percus, Orin, and Uli Sauerland. 2003. "On the LFs of Attitude Reports." In *Proceedings of Sinn und Bedeutung*. Vol. 7: 228–42.

Perry, John. 2000. "Afterword to 'Frege on Demonstratives'." In *The Problem of the Essential Indexical and Other Essays*, 21–26. Expanded ed. Stanford: CSLI Publications.

Plantinga, Alvin. 1983. "On Existentialism." *Philosophical Studies* 44: 1–20.

Quine, Willard V. 1956. "Quantifiers and Propositional Attitudes." *Journal of Philosophy* 53: 177–87.

———. 1977. "Intensions Revisited." *Midwest Studies in Philosophy* 2: 5–11.

Rabern, Brian. 2012. "Monsters and Communication: The Semantics of Contextual Shifting and Sensitivity." PhD diss., Australian National University.

Reinhart, Tanya. 1997. "Quantifier Scope: How Labor Is Divided between QR and Choice Functions." *Linguistics and Philosophy* 20: 335–97.

Richard, Mark. 1983. "Direct Reference and Ascriptions of Belief." *Journal of Philosophical Logic* 12: 425–52.

———. 1990. *Propositional Attitudes: An Essay on Thoughts and How We Ascribe Them.* New York: Cambridge University Press.

Russell, Bertrand. 1905. "On Denoting." *Mind* 14: 479–93.

———. 1910. "Knowledge by Acquaintance and Knowledge by Description." In *Proceedings of the Aristotelian Society* 11: 108–28.

Quantifying In from a Fregean Perspective

Schiffer, Stephen. 1977. "Naming and Knowing." *Midwest Studies in Philosophy* 2: 28–41.

———. 1987. "The 'Fido'-Fido Theory of Belief." *Philosophical Perspectives* 1: 455–80.

———. 1992. "Belief Ascription." *Journal of Philosophy* 89: 499–521.

Schlenker, Philippe. 2004. "Person and Binding (A Partial Survey)." *Italian Journal of Linguistics/Rivista di Linguistica* 16: 155–218.

Schwarz, Florian. 2012. "Situation Pronouns in Determiner Phrases." *Natural Language Semantics* 20: 431–75.

Sellars, Wilfrid. 1968. "Some Problems about Belief." *Synthese* 19: 158–77.

Sleigh, Robert. 1967. "On Quantifying into Epistemic Contexts." *Noûs* 1: 23–31.

Sosa, Ernest. 1970. "Propositional Attitudes De Dicto and De Re." *Journal of Philosophy* 67: 883–96.

Stalnaker, Robert. 1977. "Complex Predicates." *Monist* 60: 327–39.

———. 1988. "Belief Attribution and Context." In *Contents of Thought*, ed. Robert Grimm and Daniel Merrill, 140–56. Tucson: University of Arizona Press.

———. 2009. "What Is De Re Belief?" In *The Philosophy of David Kaplan*, ed. Joseph Almog and Paolo Leonardi, 233–45. Oxford: Oxford University Press.

———. 2012. "Intellectualism and the Objects of Knowledge." *Philosophy and Phenomenological Research* 85: 754–61.

Stanley, Jason. 2011. *Know How.* Oxford: Oxford University Press.

Szabolcsi, Anna. 2010. *Quantification.* New York: Cambridge University Press.

von Stechow, Arnim. 1984. "Comparing Semantic Theories of Comparison." *Journal of Semantics* 3: 1–77.

Yalcin, Seth. 2011. "Nonfactualism about Epistemic Modality." In *Epistemic Modality*, ed. Andy Egan and Brian Weatherson, 295–332. Oxford: Oxford University Press.

———. 2014. "Semantics and Metasemantics in the Context of Generative Grammar." In *Metasemantics*, ed. Alexis Burgess and Brett Sherman, 17–46. Oxford: Oxford University Press.