

Demonstratives as Individual Concepts*

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Abstract. Using a version of situation semantics, this article argues that bare and complex demonstratives are interpreted as individual concepts.

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1. Introduction

This article attempts to give a unified semantics for the English demonstrative determiners *that* and *this*. In particular, it will argue that they are both definite articles of a certain kind, where definite articles will be assumed to introduce existence and uniqueness presuppositions in the manner described by Frege (1893) and Strawson (1950). DPs headed by demonstrative determiners will be interpreted as individual concepts.

By a unified semantics I mean an account that is capable of handling all the uses to which *this* and *that* seem to be put. The classic theory of Kaplan 1989a can handle only a proper subset of the uses of these words. As is well-known, Kaplan focused on occurrences of demonstratives like the one in (1), that is to say on utterances in which the speaker demonstrates and intends to talk about some perceptually salient object.

(1) That [GESTURE AT VENUS] is a planet.

The resulting doctrine was that demonstratives in these uses are *directly referential*, where a singular term is directly referential if and

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only if the only contribution it makes to the content of an utterance containing it is its referent. The referent is determined by the context of utterance and the expression's *character*, an aspect of its meaning consisting of a function from contexts of utterance to contents. Since only single referents are able to be contributed, there is no way that this theory is able to handle occasions where demonstratives appear to have covarying uses, as Kaplan himself freely acknowledges (1989a: 489–490, 1989b: 592). It cannot handle (2), for example, where on one natural reading *that senator* is a covarying expression, giving the approximate truth conditions in (3).

- (2) Mary talked to no senator before that senator was lobbied.
- (3) There is no individual x such that x is a senator and Mary talked to x before x was lobbied.

A survey of the basic data, including various kinds of covarying uses of demonstratives, will be undertaken in section 3. But for now, since Kaplan's theory and close variants of it cannot handle all the data thrown up when we look at how demonstrative determiners are used, there is a strong case for saying that this approach is inadequate, as King (2001: 147–161) has already emphasized. In order to account for (2) and the examples we will see in section 3, Kaplan has to say either that these words are systematically ambiguous, or, still more drastically, that they have homonyms in which he is not interested (Kaplan 1989a: 489). But since we are dealing with cases that plausibly have some intuitive common core (unlike, say, the case of *bank* and *bank*), Occam's Razor dictates that theories that have all the uses follow from one lexical entry per word are superior to those which posit polysemy or homonymy.

I know of only two theories that attempt to give a unified semantics for the English demonstrative determiners, those of King (2001), who argues that DPs introduced by *this* and *that* are quantifier phrases, and Roberts (2002), who treats them as definites in a dynamic semantics. Accordingly, the present paper will have the following structure: section 2 introduces the semantic framework in which I will be couching my discussion; section 3 sets out my theory of demonstrative determiners, including a survey of what I take to be the basic data in this field; section 4 summarizes the theories of King (2001) and Roberts (2002) and compares them to the one advocated here; and section 5 concludes.

2. Framework

2.1. SITUATION SEMANTICS

This paper will use a version of situation semantics (Barwise and Perry 1983). The particular version I will use is based closely on the system in Elbourne 2005b, which I will here summarize for the sake of convenience.

The system in Elbourne 2005b is based most directly on the work of Kratzer (1989), Berman (1987), Heim (1990), von Stechow (1994) and Heim and Kratzer (1998). It is based on the notion of a *situation*, where, as in Barwise and Perry 1983, a situation is a part of a possible world. (The *part-of* relation is understood reflexively, so that possible worlds count as big situations.) A situation consists of one or more individuals having one or more properties or standing in one or more relations at a particular spatiotemporal location (Barwise and Perry 1983: 7).

Unlike in some versions of situation semantics, lexical items in Elbourne 2005b are not accompanied by situation variables in the syntax. So for the simple sentence *Mary laughs* we would just have the (simplified) structure in (4).

$$(4) \text{ [Mary laughs]}$$

For the purposes of this section, I will make the simplifying assumption that proper names are syntactically simplex lexical items whose denotations are individual concepts of a certain kind, those that map situations directly to individuals, as it were, without the mediation of a descriptive condition. (This view will be revised slightly in section 2.2.) So we will have the lexical entry in (5) for *Mary*.

$$(5) \llbracket \text{Mary} \rrbracket = \lambda s. \text{Mary}$$

Intransitive verbs will be functions that take individual concepts and map them to functions from situations to truth values. For example, we have (6) for *laughs*.

$$(6) \llbracket \text{laughs} \rrbracket = \lambda u_{(s,e)}. \lambda s. u(s) \text{ laughs in } s$$

I follow a notational convention from Heim and Kratzer 1998. For any expressions M and N and any variable x , let $[N/x]M$ be the result of substituting N for every free occurrence of x in M , and changing bound variables to avoid clashes.¹ A λ -term consisting of a λ and a variable x and a period followed by a constituent M is a function mapping

¹ For the exact definition, see Hindley and Seldin 1986:7, from which the summary in the text is also taken.

an argument N to $[N/x]M$ if M is not an expression of propositional type in the metalanguage; but if M is an expression of propositional type in the metalanguage, the whole expression is a function mapping an argument N to 1 if $[N/x]M$ is true and to 0 otherwise. Thus the denotation of *laughs* in (6) takes an individual concept u and maps it to a function that takes a situation s and maps it to 1 if $u(s)$ laughs in s and to 0 otherwise.

We will need the following basic rule (Heim and Kratzer 1998):

(7) *Functional Application*

If α is a branching node and $\{\beta, \gamma\}$ the set of its daughters, then, for any assignment g , α is in the domain of $\llbracket \cdot \rrbracket^g$ if both β and γ are, and $\llbracket \beta \rrbracket^g$ is a function whose domain contains $\llbracket \gamma \rrbracket^g$. In that case, $\llbracket \alpha \rrbracket^g = \llbracket \beta \rrbracket^g(\llbracket \gamma \rrbracket^g)$.

I assume that all nodes in syntactic trees are at most binary branching (Kayne 1984).

Given this simple setup, the denotation of the sentence in (4) turns out to be (8).

(8) λs . Mary laughs in s

Similarly, the sentence in (9), given the treatment of names just described and the lexical entry in (10), will have the denotation in (11).

(9) [Mary [greet John]]

(10) $\llbracket \text{greet} \rrbracket = \lambda u_{\langle s, e \rangle} \cdot \lambda v_{\langle s, e \rangle} \cdot \lambda s$. $v(s)$ greets $u(s)$ in s

(11) λs . Mary greets John in s

I take the content of a speech act of assertion to be an Austinian proposition, that is a pair of a topic situation about which the speaker intends to say something and a set of situations like the ones characterized in (8) and (11). If the topic situation is a member of the set, the speaker has spoken truly (Austin 1961, Barwise and Perry 1983: 160, Kratzer 2004, 2006).²

² An anonymous *Linguistics and Philosophy* reviewer asks how the framework used here can be modified to yield structured propositions, following the attempt by Soames (1987) to demonstrate that no sets of circumstances of any kind are adequate to play the role of propositions. But Soames's argument relies crucially on the premise that certain singular terms, such as names, pronouns and demonstratives, must be directly referential in the examples he uses, which are of the *Hesperus is Phosphorus* type. This premise I take to be undermined by considerations like the ones given in the current article, and also by arguments in Elbourne 2005b. Edelberg 1994 contains independent criticism of Soames 1987. But if structured propositions do turn out to be necessary, for example as the objects of propositional attitudes,

2.2. DEFINITE DESCRIPTIONS AND NAMES

In this article, I will be arguing that bare and complex demonstratives are very similar to definite descriptions. In Elbourne 2005b, Chapter 3, I argued that definite descriptions are individual concepts. For the sake of comparison, I will briefly recapitulate this position here.

Based on some remarks in Frege 1893, the meaning in (12) has been suggested for sentences involving definite descriptions (Heim 1991: 495–496, Elbourne 2001b, 2005b, von Stechow 2004: 318).

- (12) Regardless of the utterance context, $[[\text{the } \zeta] \xi]$ expresses that proposition which is
- true at an index i , if there is exactly one ζ at i , and it is ξ at i ,
 - false at an index i , if there is exactly one ζ at i , and it is not ξ at i ,
 - truth-valueless at an index i , if there is not exactly one ζ at i .

We can capture this by giving the definite article the meaning in (13).

$$(13) \llbracket \text{the} \rrbracket = \lambda f_{\langle \text{se}, \text{st} \rangle} \cdot \lambda s. \iota x f(\lambda s'.x)(s) = 1$$

I will be using the metalanguage operator $\ulcorner \iota \urcorner$ as follows: for any situation s and function f of type $\langle \text{se}, \text{st} \rangle$, the denotation of an expression $\ulcorner \iota x f(\lambda s'.x)(s) = 1 \urcorner$ will be of type e , if it is defined; if there is exactly one entity x such that $f(\lambda s'.x)(s) = 1$, the denotation of $\ulcorner \iota x f(\lambda s'.x)(s) = 1 \urcorner$ will be that very individual; if there is no such individual, or more than one such individual, the whole expression will have no semantic value. (So the expression in effect introduces a presupposition that there is exactly one such individual, since an utterance containing it will not be felicitous otherwise.) The individual that is the value of the expression will naturally vary from situation to situation. For example, let f be $[\lambda u_{\langle \text{s}, \text{e} \rangle} \cdot \lambda s. u(s) \text{ has been President of the USA in } s]$. Then $\ulcorner \iota x f(\lambda s'.x)(s) = 1 \urcorner$ is equivalent to $\ulcorner \iota x x \text{ has been President of the USA in } s \urcorner$. Assume that we are talking about situations that are part of the real world at the beginning of 2007, when George H. W. Bush and Bill Clinton have been President of the USA, but Henry Kissinger, Arnold Schwarzenegger and Al Gore have not. If s contains

they could easily be created from intensional semantic systems like the present one. A natural starting point would be interpreted syntactic trees, that is syntactic tree structures with the meanings of the lexical items replacing the lexical items at each node. Further structures could be created on the basis of these if necessary. See Cresswell 1985 for a system of structured propositions along these lines.

only Bill Clinton, Henry Kissinger and Arnold Schwarzenegger, then the denotation of $\ulcorner \iota x x \text{ has been President of the USA in } s \urcorner$ is Clinton; if s contains only George H. W. Bush, Henry Kissinger and Arnold Schwarzenegger, the value of the same expression will be Bush; and if s contains only Al Gore, Henry Kissinger and Arnold Schwarzenegger, the expression will have no value. This, simply put, is how definite descriptions differ from constants.

(14) will have the simplified LF in (15).

(14) The cat laughs.

(15) $\llbracket \text{the cat} \rrbracket$ laughs

Our lexical entry for *the*, in conjunction with the lexical entries in (16) and the rule of functional application, gives us the truth conditions in (17) for (14).

- (16) a. $\llbracket \text{cat} \rrbracket = \lambda u_{\langle s,e \rangle} . \lambda s . u(s)$ is a cat in s
 b. $\llbracket \text{laughs} \rrbracket = \lambda u_{\langle s,e \rangle} . \lambda s . u(s)$ laughs in s

(17) $\lambda s . \iota x x$ is a cat in s laughs in s

Imagine that a speech act is performed whereby a topic situation s^* is claimed to be a member of the set of which (17) is the characteristic function. If s^* contains exactly one cat, then the ι -term in the metalanguage will have a denotation, and the utterance will be true or false according as that cat laughs or not. But if s^* does not contain exactly one cat, the ι -term will not have a denotation, and the proposition will be unable to be evaluated for truth or falsity. So we have produced the kind of proposition described in (12). In effect, then, use of a definite description introduces a presupposition that there is exactly one entity that satisfies the NP content, just as Strawson (1950) claimed.³

All this, of course, contrasts with Russell's well-known (1905) theory of definite descriptions, according to which the existence and uniqueness of the thing satisfying the NP descriptive content are asserted, not presupposed. According to Russell (1905), a sentence of the form *the F is G* has the truth conditions in (18). This implies that *the* would have the lexical entry in (19) in an extensional semantics.

(18) $\exists x (Fx \ \& \ \forall y (Fy \rightarrow y = x) \ \& \ Gx)$

(19) $\lambda f_{\langle e,t \rangle} . \lambda g_{\langle e,t \rangle} . \exists x (f(x) = 1 \ \& \ \forall y (f(y) = 1 \rightarrow y = x) \ \& \ g(x) = 1)$

³ I wish to remain neutral on the issue of how to deal with improper or incomplete definite descriptions. It is possible that the answer lies in situation semantics, including the judicious choice of topic situations, as claimed by Recanati (2004) and Kratzer (2004). But I will not attempt to adjudicate on this matter here.

In my opinion, there are considerations favoring the Frege-Strawson theory of the definite article over the Russellian theory, but I will not go into them here, since they have been detailed elsewhere: see Heim 1991, von Stechow 2004, and Elbourne 2005b.

We are now in a position to contemplate a slight revision to the view of names set out in the last section. As described in Elbourne 2005b, Chapter 6, I believe that names should quite generally be analyzed as syntactic and semantic definite descriptions of a certain kind (Burge 1973, Larson and Segal 1995, Elugardo 2002). We see this overtly in languages such as German (*der Hans*, dialectally), Italian (*la Maria*) and Classical and Modern Greek. But the descriptive condition will generally involve identity to a particular object, thus ensuring that names in general behave as rigid designators (Kripke 1972). I will assume that names come with a phonologically null definite article, as in (20):

(20) THE Mary

THE will have the same meaning as overt *the*. For the purposes of this article, I will assume that names just have meanings like (21):

(21) $\llbracket \text{Mary} \rrbracket = \lambda u_{\langle s,e \rangle} . \lambda s . u(s) = \text{Mary}$

So the meaning of the complex in (20) will still be (5), repeated here as (22).

(22) $\llbracket \text{THE Mary} \rrbracket = \lambda s . \text{Mary}$

Most of what I say will not depend on this particular theory of names, and I will not always bother to write the null definite article shown in (20); but this theory will be relevant in the discussion of referential pronouns in section 2.4.8.

2.3. *De re* AND *de dicto* READINGS

I will now describe the method by which the current theory handles *de re* and *de dicto* readings of definite descriptions (Elbourne 2005b: 99–106), since it introduces a technical device that will be useful later on. The Russellian theory of definite descriptions is supposed to be able to handle the distinction between *de re* and *de dicto* readings by means of scope (Russell 1905: 52). To take an example involving a propositional attitude predicate, we can analyze the *de re* and *de dicto* readings of (23) as in (24) and (25) (Neale 1990: 121):

(23) Mary believes that the Pope is an alien.

- (24) *De dicto*
 “Mary believes that there is an individual x such that x is a Pope and there are no Popes but x and x is an alien.”
- (25) *De re*
 “There is an individual x such that x is a Pope and there are no Popes but x and Mary believes that x is an alien.”

This result, in fact, is sometimes claimed to be one of the main virtues of the Russellian theory of descriptions.

Semantic systems based on situations can reproduce this result by directly manipulating the situations with respect to which certain predicates are evaluated (Bäuerle 1983, Heim 1991, Farkas 1997, Heim, Kratzer and von Stechow 1998, Percus 2000, Elbourne 2005b). The idea is that we can account for the two readings in question by means of the following paraphrases, where w_0 is the actual world:

- (26) *De dicto*
 All worlds w compatible with Mary’s beliefs in w_0 are such that the Pope in w is an alien in w .
- (27) *De re*
 All worlds w compatible with Mary’s beliefs in w_0 are such that the Pope in w_0 is an alien in w .

Imagine that Mary has no particular beliefs about who the Pope is; she just thinks that the present Pope, whoever he is, is an alien. We could describe this state of affairs by means of (26). Now imagine that she has seen a figure dressed in white behaving suspiciously in Vatican City; the person she saw was in fact the current Pope, Benedict XVI, but she does not know this; she just forms a belief concerning the person she saw to the effect that he is an alien. We could describe this state of affairs by means of (27). But this, of course, is just the distinction between *de dicto* and *de re* readings.

Some theorists have advocated systems in which every predicate takes a situation variable as its first argument (Heim 1990, Percus 2000, Büring 2004). This would allow us to say that the situation variable associated with the noun *Pope* in (23) refers to w_0 in the case of the *de re* reading, and is bound by the propositional attitude verb in the case of the *de dicto* reading. See Elbourne 2005b: 100–102 for further details.

It is not necessary to introduce so many situation variables into the syntax, however, in order to deal with the data at hand. In Elbourne 2005b: 103–104, I propose the following theory, which is in a certain respect more economical. We posit one additional operator in the syntax, which is shown in (28).

$$(28) \llbracket s_0 \rrbracket^g = \lambda f_{\langle se, st \rangle} . \lambda u_{\langle s, e \rangle} . \lambda s . f(u)(g(0)) = 1$$

This is designed to take a noun or NP as argument⁴ and give back the denotation of this nominal modified so as to take as its second argument a contextually salient situation. Here, for example, is the meaning of the noun *Pope*, with and without an accompanying s_0 operator, with the operator introducing the actual world when it appears:

$$(29) \llbracket \text{Pope} \rrbracket = \lambda u_{\langle s, e \rangle} . \lambda s . u(s) \text{ is a Pope in } s$$

$$(30) \llbracket \text{Pope } s_0 \rrbracket^{[0 \rightarrow w_0]} = \lambda u_{\langle s, e \rangle} . \lambda s . u(w_0) \text{ is a Pope in } w_0$$

I take it that only actual situations can be salient.

Given the lexical entry in (13) for the definite article, repeated here as (31), we arrive at two possible meanings for *the Pope*, shown in (32) and (33).

$$(31) \llbracket \text{the} \rrbracket = \lambda f_{\langle se, st \rangle} . \lambda s . \iota x f(\lambda s' . x)(s) = 1$$

$$(32) \llbracket \text{the Pope} \rrbracket = \lambda s . \iota x x \text{ is a Pope in } s$$

$$(33) \llbracket \text{the [Pope } s_0 \rrbracket \rrbracket^{[0 \rightarrow w_0]} = \lambda s . \iota x x \text{ is a Pope in } w_0$$

For the sake of convenience, we can assume that *is an alien* has the denotation in (34), like any other predicate.

$$(34) \llbracket \text{is an alien} \rrbracket = \lambda u_{\langle s, e \rangle} . \lambda s . u(s) \text{ is an alien in } s$$

This means that *the Pope is an alien*, in our example, will have the denotation in (35) if s_0 is used and the denotation in (36) if it is not.

$$(35) \lambda s . \iota x x \text{ is a Pope in } w_0 \text{ is an alien in } s$$

$$(36) \lambda s . \iota x x \text{ is a Pope in } s \text{ is an alien in } s$$

By means of the lexical entry in (37) for *believes*, we arrive at the following LFs and meanings for the *de dicto* and *de re* readings of our example.

$$(37) \llbracket \text{believes} \rrbracket = \lambda p_{\langle s, t \rangle} . \lambda u_{\langle s, e \rangle} . \lambda s . \text{all worlds } w \text{ compatible with the beliefs of } u(s) \text{ in } s \text{ are such that } p(w) = 1$$

$$(38) \textit{De dicto}:$$

- a. [Mary believes [the Pope is an alien]]
- b. The proposition true of world w_0 iff all worlds w compatible with Mary's beliefs in w_0 are such that the unique x such that x is a Pope w is an alien in w .

⁴ It must not be able to be associated with Verb Phrases, however, as Percus 2000 makes clear. We can deal with this restriction by means of syntactic subcategorization.

- (39) *De re*:
- a. [Mary believes [the Pope s_0 is an alien]]
 - b. The proposition true of world w_0 iff all worlds w compatible with Mary's beliefs in w_0 are such that the unique x such that x is the Pope in w_0 is an alien in w .

It can be seen that we have produced intuitively adequate renderings of the *de dicto* and *de re* readings of a representative example.

Moreover, there are powerful arguments to the effect that the treatment of *de dicto* and *de re* readings just described is actually empirically superior to the theory that uses scope. See Bäuerle 1983 and Elbourne 2005b: 104–106 for details.

2.4. PRONOUNS AND BINDING

It will be useful at this point to examine the treatment of third-person pronouns in our fragment, since they will form a useful point of comparison to demonstratives.

2.4.1. *Pronouns as definite descriptions*

There is a substantial amount of evidence to indicate that pronouns are interpreted as definite descriptions.⁵ I will here mention three pieces of evidence. The first relevant phenomenon is that of donkey anaphora; I have argued at length elsewhere (Elbourne 2005b) that the approach to donkey anaphora that treats donkey pronouns as definite descriptions (Cooper 1979, Heim 1990, Neale 1990, Elbourne 2001a) is the correct one.

Secondly, there is an argument by Heim (1993) to the effect that treating pronouns as descriptions helps to explain some otherwise puzzling apparent violations of Chomsky's (1981) Binding Theory. (See also Büring 2005:156–157 for further discussion.) Imagine a scenario in which two people are looking at a political candidate speaking on a soapbox. They cannot see the person clearly and are wondering who it is. They might speak as follows (Heim 1993):

- (40) A: Is that Zelda?
 B: She's praising her to the skies. It must be Zelda.

⁵ To be exact, all of the phenomena I cite here constitute evidence to the effect that pronouns are *sometimes* interpreted as definite descriptions; the final step of concluding that they are always definite descriptions, with referential uses employing descriptive conditions like "identical to John" (Elbourne 2001b, 2005b), is made on the basis of Occam's Razor. There seems to be something more than an accidental homonymy going on here, especially when we look at other languages and see that their pronouns too seem to be ambiguous, for example, between referential, bound and donkey anaphoric uses.

B is convinced that the speaker is Zelda. We can also suppose, if we think it makes a difference, that B is correct in this conviction. We might expect, therefore, that the first sentence of B's utterance would be a violation of Chomsky's (1981) Principle B, which (among other things) prevents non-reflexive pronouns in object position from having the same referent as a subject singular term. Compare the last sentence of (41), which cannot mean "Zelda is praising herself to the skies."

- (41) A: What's Zelda doing?
 B: *She_i is praising her_i to the skies.

The last sentence of (41), on the given interpretation, is correctly ruled out by Principle B. There is no Principle B violation in the same sentence when it occurs in B's utterance in (40), however. Intuitively, what seems to be going on is the following (Heim 1993): even though the two pronouns in this utterance end up referring to the same person, they get there by different routes, as it were; the first one uses the property of being the speaker on the soapbox over there, whose identity is in question, whereas the second one refers directly to Zelda. Heim (1993) suggests that we spell out this intuition by means of individual concepts. The meaning of the first pronoun will be something like (42a) (where *SB* is a name of the soapbox in question), and the meaning of the second will be something like (42b).

- (42) a. $\lambda s. \iota x x$ is a speaker on SB in *s*
 b. $\lambda s. \text{Zelda}$

We can now explain the lack of a Principle B violation in (40) by saying that Principle B is computed over individual concepts. We might say that a Principle B violation will occur when a pronoun and another singular term in the relevant configuration are interpreted by means of the same individual concept, but will not occur when they stand for different individual concepts. The two pronouns stand for different individual concepts in (40) but this is plausibly not the case in (41), where $[\lambda s. \text{Zelda}]$ will presumably be the value each time. Hence the difference in status. One could of course object that one could avoid a Principle B violation even in a context like (41) by imagining different individual concepts that would yield Zelda in the current evaluation situation and employing them for the two pronouns in question. In order to avoid this, we can add a natural prohibition against two singular terms standing for distinct individual concepts that are presupposed in the common ground to be coreferential when evaluated with respect to the current evaluation situation (Heim 1982, Heim 1993, Buring 2005:157). Note that in (40) there is a debate about the identity of the

political candidate, and so the common ground does not entail that *she* and *her* end up picking out the same person, given that *her* refers to Zelda. Interestingly, it has been argued that some of the difficulties that small children display with Binding Theory are due not to any lack of knowledge of the Binding Principles but to a lack of knowledge of this supplementary principle (Thornton and Wexler 1999).⁶

The third reason for thinking that pronouns are definite descriptions is the existence of the cases sometimes called descriptive indexicals (Nunberg 1993, Recanati 1993, Nunberg 2004, Recanati 2005—the term is Recanati’s, but the pioneering work in this area was done by Nunberg). To adapt an example from Recanati 2005, credited to Nunberg, suppose I point at Benedict XVI and say (43):

(43) He is usually an Italian.

It is obvious that I will be interpreted as saying that *the Pope* is usually an Italian; I will not be interpreted as saying that Benedict XVI is usually an Italian. Note that we cannot explain this example by claiming that *he* has Benedict XVI as its semantic value and that the meaning “The Pope is usually an Italian” is derived from this by some kind of pragmatic process; if that were the case, we would expect an utterance of (44) to have the same reading:

(44) Benedict XVI is usually an Italian.

The name *Benedict XVI* will presumably introduce Benedict XVI into the proposition expressed, on which basis the putative pragmatic process that is supposed to produce the meaning of (43) should surely be able to operate; but (44) cannot have the meaning of (43), causing a grave difficulty for any attempt to explain away descriptive indexicals on the basis of direct reference and pragmatics (Nunberg 1993, 2004).

2.4.2. *The theory of Nunberg 1993*

My strategy in this section will be to produce a formalization of the theory of Nunberg 1993 in the current version of situation semantics, and to show that it can account for the three phenomena just introduced, as well as the referential and bound variable uses of pronouns. Nunberg (1993) claims that the semantics of pronouns and other indexicals involves the following four elements:

1. A *deictic component*, which picks out a contextually salient object called an *index*, on the basis of which the actual interpretation of the indexical will be computed.

⁶ But see Elbourne 2005a and Takahashi et al. 2006 for critical discussion.

2. A *relational component*, which constrains the relation that must hold between the index and the interpretation.
3. A *classificatory component*, including things like ϕ -features, which adds further information about the interpretation.
4. An *interpretation*, which is an individual or definite description⁷ contributed to the proposition expressed.

Following Nunberg's strategy in his 1993 article, I will first illustrate the theory with the example of the first-person plural pronoun *we*, before going on to the third-person pronouns that are my main concern.

In the case of *we*, then, the deictic component picks out the speaker. (The deictic component of *we* is identical to the deictic component of *I*.) The classificatory component ensures that the interpretation is plural and animate. (I cannot refer to myself and my laptop as *we*, unless I wish to personify the computer.) The relational component specifies that the interpretation must be either a plural individual of which the index is a part or a definite description whose actual instantiation is such that the index is a part of it.⁸ For example, if Nunberg says (45), referring to himself and his wife, *we* presumably refers to the plural individual whose parts are Nunberg and his wife (Nunberg 1993: 12, Link 1983):

(45) We can't come to dinner that night.

On the other hand, suppose that John has just been elected to the Kansas State Board of Education, a body known for changing hands between advocates of Intelligent Design and advocates of Darwinian evolution. It so happens that after this election all of the members of the Board are advocates of Intelligent Design. If John says (46) to the other members of the Board, his utterance will be ambiguous.

(46) We might have been evolutionists.

On one reading, he is saying of the actual members of the Board that they might have been evolutionists. On another reading, however, he is

⁷ Nunberg (1993) frequently talks about indexical contributing either individuals or properties, but the properties generally turn up as part of definite descriptions, as in example (43) where we have "the Pope." Nunberg also points out (1993: 12) that pronouns sometimes seem to have the interpretation of bare plurals, as when a woman says *We are less likely to contract the disease than men are*, meaning "Women are less likely to contract the disease than men are." I follow Carlson 1977 in supposing that bare plurals refer to kinds, which are a complex sort of individual.

⁸ This is my own summary of the relational component of *we*, based on examples given by Nunberg (1993). I follow Link 1983 in supposing that plural pronouns often refer to plural individuals, that is individuals that have other individuals as parts.

saying that there might have been other, more Darwin-friendly, people elected to the Board. This last reading, at least, seems to require *we* to be synonymous with the definite description *the current members of the Kansas State Board of Education* (Nunberg 1993: 13–14). Compare the two readings of (47):

(47) The members of the Board might have been evolutionists.

There is evidence, then, in favor of the contention that *we* can have readings equivalent to those of definite descriptions.

Third-person pronouns work similarly to *we* in Nunberg’s (1993) theory. The differences are that the index can be any salient object, instead of having to be the speaker, and that the relational component can fix on any salient relation, within certain limits (Nunberg 1979, 1993). If I point to Benedict XVI and say *he*, then the index is going to be Benedict XVI.⁹ If I mean to refer to Benedict XVI, that is if I wish Benedict XVI to be the interpretation of the pronoun, the relation in play is going to be identity. If I wish to contribute to the proposition expressed a definite description synonymous with *the Pope*, as in example (43), the relation is going to be something like the relation that maps people to the offices they hold.

2.4.3. *A formalization of Nunberg 1993*

I will formalize this theory in a straightforward way, positing items in the syntax corresponding to the deictic component and the relational component. The pronoun *it*, for example, will be as in (48):

(48) [it [R₁ i₂]]

In this structure, *i* is a variable of type *e* constituting the deictic component; its value will be the index, in Nunberg’s terms. *R* is a variable of type $\langle e, \langle se, st \rangle \rangle$ constituting the relational component. These will be the only types of variable in the current system. The value of *R* will, of course, map the value of *i* to a function of type $\langle se, st \rangle$; note that this is the type of Noun Phrases in the current framework. The pronoun *it*, then, will be a definite article (Postal 1966, Stockwell, Schachter and Partee 1973, Abney 1987, Longobardi 1994, Uriagereka 1995, Elbourne 2001a, 2001b, 2005b, Neale 2005b). Abstracting away from ϕ -features, which would be written into the denotation as presuppositions in complete treatment, perhaps in the manner advocated in Heim and Kratzer

⁹ We can suppose, with Neale 2005b, that the speaker’s intentions are ultimately what determine the index and the relation selected by the relational component, but that cooperative speakers will not intend to pick out entities whose identities they think their audience would not be able to work out.

1998, *it* and other third-person singular pronouns will mean the same as *the*:

$$(49) \llbracket \text{it} \rrbracket = \lambda f_{\langle \text{se}, \text{st} \rangle} . \lambda s . \iota x f(\lambda s' . x)(s) = 1$$

Pronouns with their accompanying variables, then, will be definite descriptions.

2.4.4. *Descriptive Indexicals*

Let us return to our descriptive indexical example (43), repeated here as (50):

(50) He is usually an Italian.

We can now deal with (50) as follows. The pronoun *he* will take indexed variables as shown in (51); these variables will be interpreted by means of the rule in (52).

(51) [he [R₁ i₂]]

(52) *Variable Interpretation*

For all natural numbers n and assignment functions g , if i_n is a variable with subscript n , then

$$\llbracket i_n \rrbracket^g = g(n)$$

provided n is in the domain of g ; $\llbracket i_n \rrbracket^g$ is undefined otherwise.

The individual variable i will have Benedict XVI as its semantic value. Suppose the utterance is made in world w_0 at time t_0 . The relation variable R would then have as its value the relation in (53):

(53) $\lambda x . \lambda u_{\langle s, e \rangle} . \lambda s . u(s)$ holds in s the office held in w_0 at t_0 by x

The word *he*, as mentioned, will be interpreted as a definite article. This means that the semantic value of the DP as a whole will be as follows:

(54) $\lambda s . \iota x x$ holds in s the office held in w_0 at t_0 by Benedict XVI

Since Benedict XVI is, we can assume, the Pope in w_0 at t_0 , this formula is equivalent to the following:

(55) $\lambda s . \iota x x$ is the Pope in s

The sentence *He is an Italian*, with the pronoun interpreted in the way just indicated, will have the semantic value in (56):

(56) $\lambda s . \iota x x$ is the Pope in s is an Italian in s

We can now follow Berman 1987, Heim 1990 and Elbourne 2005b in supposing that quantificational adverbs like *usually* quantify over situations. The idea is that *usually* says that most situations of a certain kind are members of the set of situations that is the denotation of the matrix clause. We can further assume that, when no restrictor is given explicitly by means of an *if*-clause or *when*-clause, the restrictor is tacitly formulated by the speaker and constructed on the fly by the audience, in their best guess at the speaker's intentions. Let us assume for the present example that the speaker intends to quantify over papal reigns. The speaker of (43) would be claiming, then, that for most situations s such that s is a papal reign, *the unique Pope in s* is an Italian in s . This seems to be intuitively adequate.

2.4.5. Referential pronouns

Let us now turn to the referential case, in which I point to Benedict XVI and mean to contribute him, not the property of being Pope, to the proposition expressed. The variables i and R will have the values in (57). This gives the value in (58) for the combination of pronoun and variables.

- (57) a. $\llbracket i \rrbracket = \text{Benedict XVI}$
 b. $\llbracket R \rrbracket = \lambda x. \lambda u_{\langle s, e \rangle}. \lambda s. u(s) = x$

- (58) $\lambda s. \text{Benedict XVI}$

We could take it that wishing to talk about the actual index is so universal and natural that the relation of identity is generally salient in such cases. There is also, in fact, a certain amount of evidence to the effect that the language faculty contains a type-shifting procedure that takes individuals and returns, for each individual, the property of being identical to it (Partee and Rooth 1983, von Stechow 1993, van Benthem 1995); in other words, it may well be the case that the function postulated as the value of R in (57b) is actually a built-in part of the language faculty and hence always available. See section 3.5 for further discussion.

2.4.6. Bound pronouns and traces

In order to analyze bound pronouns, we will need to have a theory about the basics of binding, which I will introduce with an example that does not use pronouns. Consider (59):

- (59) John, Mary likes.

And suppose, as is plausible, that this sentence results from *John* moving from object position and leaving a trace. Then the LF of this example will be approximately as in (60):

(60) [John λ_2 [Mary [likes [THE R₂ i₁]]]]

I follow Heim 1993 and Heim and Kratzer 1998 in positing a λ -abstractor in the syntax. The idea is that every movement inserts a λ -abstractor just below the landing-site of the moved item and obligatorily coindexes it with the trace. In the current theory, traces are complexes consisting of a phonologically null definite article, represented by THE, and indexed variables of type we have seen before. THE has the same meaning as overt *the*.¹⁰

We now need some help in interpreting this structure. The following rule, based distantly on the corresponding one in Heim and Kratzer 1998, will do the job:

(61) *Predicate Abstraction*

For all indices i and assignments g ,

$$\llbracket \lambda_i \alpha \rrbracket^g = \lambda u_{\langle s, e \rangle} . \llbracket \alpha \rrbracket^{g^{\text{ident}(u)/i}}$$

(62) $\text{ident}(u) =_{\text{def}} \lambda x . \lambda v_{\langle s, e \rangle} . \lambda s . v(s) = u(s)$

$g^{\text{ident}(u)/i}$ is the variable assignment that is exactly like g except that it maps i to $\text{ident}(u)$.

Note that the relation variable R is bound, not the individual variable. (The reasons for this will be given below.) The individual variable, in fact, will never be bound in this system. Predicate Abstraction will be the only rule that allows anything to be bound. When there is no obvious index to be the semantic value of the deictic component i , we could assume that it takes on a default value \perp , where \perp is a specially designated individual whose only role in life is to be manipulated by external forces and then quietly vanish. Another possibility, however, is that, when R is bound by a binder λ , i refers to the individual referred to (or the group of individuals quantified over) by the DP that has moved and created λ . See section 3.7 for evidence in favor of this latter possibility.

The combination of THE and [R i] in the trace will have the following meaning:

(63) $[\lambda f_{\langle se, st \rangle} . \lambda s . \iota x f(\lambda s' . x)(s) = 1](\lambda v . \lambda s . v(s) = u(s))$

This reduces down to (64), which in turn is equivalent to (65):

¹⁰ This treatment of traces is in fact only a simplified version of what research has shown to be advisable. If Chomsky's (1993) copy theory of movement is correct, we will ultimately want something like Fox's (2002) theory of "trace conversion." In the terms used above, this would mean that a copy of the moved item is left in the trace position, its determiner is replaced by THE and [R i] is adjoined to the predicate material.

$$(64) \lambda s. \iota x x = u(s)$$

$$(65) u$$

So, informally speaking, the combination of λ -abstractor and coindexed trace sets up a structure of the form $\lceil \lambda u \dots u \rceil$ in the semantics. The somewhat baroque way of achieving this is motivated by the advisability of having the same types of variables in pronouns and traces, and by the desire for ultimate compatibility with an empirically adequate theory of traces, as described in note 10.

Given the above rule and the lexical entry in (66), we achieve the result in (67), as desired.

$$(66) \llbracket \text{likes} \rrbracket = \lambda u_{\langle s,e \rangle}. \lambda v_{\langle s,e \rangle}. \lambda s. v(s) \text{ likes } u(s) \text{ in } s$$

$$(67) \llbracket \text{John } \lambda_2 [\text{Mary } \llbracket \text{likes THE } R_2 i_1 \rrbracket] \rrbracket^\emptyset = \lambda s. \text{Mary likes John in } s$$

\emptyset is the empty set, the assignment that does not map anything to anything.

Let us move on now to binding involving pronouns. For the purposes of this article, I will follow the hypothesis advanced in Heim and Kratzer 1998, to the effect that all binding is accomplished by means of λ -abstractors in the syntax and that λ -abstractors in the syntax are created only by movement.¹¹ Arguably, there is nothing to prevent us coindexing the variable in a pronoun with the variable in a trace left by movement. This means that for an example like (68) we might have an LF something like (69):

$$(68) \text{Every diver attacked the shark next to him.}$$

$$(69) [\text{every diver } \lambda_2 [\llbracket \text{THE } R_2 i_3 \rrbracket \text{ attacked the shark next to } \llbracket \text{him } R_2 i_3 \rrbracket]]$$

In (69), the constituent $\llbracket \text{THE } R_2 i_3 \rrbracket$ is the trace left by the raised subject. The subject could have been raised either by Quantifier Raising (May 1977, 1985) or by movement to the canonical subject position from a VP- (or vP-)internal subject position (Kitagawa 1986). Be that as it may, the constituent below the moved subject will end up with the denotation in (70) by means of the rules of Variable Interpretation and Predicate Abstraction given in (52) and (61).

$$(70) \lambda u. \lambda s. u(s) \text{ attacked the shark next to } u(s)$$

Thus the pronoun ends up as a bound individual concept variable, as desired.

¹¹ I do not, however, mean to be seen as opposing proposals like that in Buring 2004, where there are separate syntactic binders for pronouns and traces.

2.4.7. *Donkey pronouns*

Let us move on to analyze donkey anaphora in the current framework. The classic example (71), will involve a pronoun and variable assignment as in (72) and (73). The semantic value of *it* with its accompanying variables will be (74).

(71) Every man who owns a donkey beats it.

(72) [it [R₂ i₁]]

(73) $\left[\begin{array}{l} 1 \rightarrow donkey \\ 2 \rightarrow \llbracket \ \rrbracket \end{array} \right]$

(74) $\lambda s. \iota x x$ is a donkey in s

In (73), *donkey* is either an occurrence of the word *donkey* or the word *donkey* itself, whatever it is that the interpretation function works on. $\llbracket \ \rrbracket$ is the normal interpretation function, which, in the case of nouns, takes individuals (nouns or their occurrences) and maps them to functions of type $\langle se, st \rangle$; it is of type $\langle e, sest \rangle$, then, as required. Since it is hard-wired into the language faculty, the interpretation function will always be available for use in resolving anaphora.¹²

The expression in (74) is also the denotation of *it* (in a donkey sentence) in Elbourne 2005b. The rest of the current account of donkey sentences is identical to the one in this earlier work, then; I will summarize it here briefly for the sake of convenience.¹³ How does (71) come to have a covarying reading? The answer is by situation variables being bound. Situations are viewed as being composed of individuals and of properties and relations predicated of them; not all of an individual's properties need enter into a situation of which that individual is a part (Kratzer 1989). We introduce the notion of a *minimal situation* of a certain kind, which, informally, is a situation in which certain specified

¹² This use of the interpretation function is reminiscent of the *discourse deixis* of Roberts 2002, 2003, where provision is made for something very similar. See section 4.2.2 for details. But note that the current use of the interpretation function is situated within a larger framework justifying the use of relations at this point in the theory, whereas in Roberts 2002, 2003, it is more like a separate stipulation.

¹³ In fact all the argumentation in Elbourne 2005b that does not relate to the details of how (74) is arrived at still stands, as far as I concerned. In Elbourne 2001a, 2005b, I show that the recovery conditions on the descriptive content in donkey anaphora are the same as those on NP-deletion and suggest that donkey anaphora actually involves NP-deletion; but I now think that the similar recovery conditions might come about not because there has literally been NP-deletion in cases of donkey anaphora, but because in both NP-deletion and donkey anaphora the task is basically to recover descriptive material of the semantic type of a Noun Phrase. Note how the deictic and relational components in the current theory lead one inexorably to functions of type $\langle se, st \rangle$, the type of nouns. So the current theory is in a way only a minor variant of my previous one.

conditions are fulfilled, but in which nothing else goes on (Kratzer 1989). And we introduce an ordering on the set of situations, such that a situation s is *part of* a situation s' ($s \leq s'$) if and only if s' contains all the individuals and predications of properties and relations that are in s , and possibly some others too; we also say in such circumstances that s' is an *extension* of s (Kratzer 1989). We then define the word *every* as in (75):

$$(75) \llbracket \text{every} \rrbracket = \lambda f_{\langle \langle s, e \rangle, \langle s, t \rangle \rangle} \cdot \lambda g_{\langle \langle s, e \rangle, \langle s, t \rangle \rangle} \cdot \lambda s. \text{for every individual } x: \\ \text{for every minimal situation } s' \text{ such that } s' \leq s \text{ and} \\ f(\lambda s.x)(s') = 1, \text{ there is a situation } s'' \text{ such that} \\ s'' \leq s \text{ and } s'' \text{ is a minimal situation such that } s' \leq s'' \\ \text{and } g(\lambda s.x)(s'') = 1$$

(In this definition, *every* on the right hand side of the equation is to be understood as logical \forall or the subset relation, so there is no circularity.) Skipping the compositional details, which are given in Elbourne 2005b, Chapter 2, we posit (76) and (77) as the meanings of *man who owns a donkey* and *beats the donkey* respectively:

$$(76) \lambda u_{\langle s, e \rangle} \cdot \lambda s. u(s) \text{ is a man who owns a donkey in } s$$

$$(77) \lambda u_{\langle s, e \rangle} \cdot \lambda s. u(s) \text{ beats in } s \text{ the unique donkey in } s$$

Given the definition of *every* in (75), this means that (71) has the truth conditions in (78):

$$(78) \lambda s. \text{for every individual } x: \text{for every minimal situation } s' \text{ such} \\ \text{that } s' \leq s \text{ and } x \text{ is a man who owns a donkey in } s', \text{ there is a} \\ \text{situation } s'' \text{ such that } s'' \leq s \text{ and } s'' \text{ is a minimal situation such} \\ \text{that } s' \leq s'' \text{ and } x \text{ beats in } s'' \text{ the unique donkey in } s''$$

These truth conditions are intuitively adequate. In a less formal paraphrase, they state that our example is true if and only if, for every pair of an individual x and a minimal situation s' in which x is a man who owns a donkey, there is an extended situation s'' in which x beats the donkey in s'' . Since the situations s'' are extensions of the situations s' , which already contain donkeys, “the donkey” in s'' in each case must be identical to the donkey in the smaller situation s' , since if it were different there would be two donkeys in s'' and the uniqueness presuppositions of the definite article (or the ι -operator) would not be fulfilled. So each man beats his own donkey, as desired. See Elbourne 2005b, Chapter 2, for extensive discussion.

This completes the discussion of the basics of the theory of pronouns and binding that I will adopt in this article. Demonstrative determiners, to look ahead briefly, will turn out to be extremely similar to pronouns;

in fact one might call them pronouns that also take Noun Phrases as arguments.

2.4.8. *Some loose ends*

But there are a couple of loose ends to tie up. In the remainder of this section, I will describe the following: an additional mechanism that might be at work sometimes in what we would normally analyze as referential pronouns; and the reason why the rule of Predicate Abstraction binds the relation variable and not the individual variable.

An observation underlies the first suggestion just referred to. It involves the traditional notion of *anaphora*. Let us use the term *anaphora* for cases where a pronoun or demonstrative is associated with a linguistic antecedent that plays a semantic role in its interpretation.¹⁴ By this definition, bound variable pronouns and donkey pronouns involve anaphora on the theory just sketched. In the bound variable case, the most directly involved antecedent is the λ -abstractor that binds the pronoun; the DP that moves and creates the λ -abstractor can also be seen as the binder or antecedent in an extended sense (Heim and Kratzer 1998). In donkey anaphora, on the current theory, the antecedent would be the noun *donkey* that directly provides the interpretation of the donkey pronoun. Traditionally, referential pronouns too have been said to involve anaphora. In a case like (79), *he* would be said to be anaphoric on *Bill*.

(79) Everyone who has met Bill_{*i*} thinks he_{*i*} is smart.

It is not certain that such a case involves anaphora, however. It seems perfectly possible to say that the mention of *Bill* makes Bill salient, and that *he* then just refers directly to Bill, without any further role for the word *Bill*. We might say in a case like this that *Bill* plays a pragmatic rather than a semantic role in the interpretation of *he*.

Now for the observation. The observation is that the literature on the processing of anaphora, using lexical decision tasks, eye-tracking experiments and other methods, makes an overwhelming case for the mental representation of the antecedent becoming activated during the parsing of the anaphoric element (Shillcock 1982, McElree and Beaver 1989, Garnham et al. 1995, Cacciari et al. 1997, Carminati et al. 2002, van Gompel et al. 2004). For example, processing a pronoun anaphoric to a DP significantly quickens reaction times on the task of deciding whether or not an adjective that had appeared in the DP is a word (McElree and Beaver 1989). The reactivation effect obtains in cases

¹⁴ Antecedents need not literally come before the pronouns with which they are associated. I am not, that is to say, making the traditional distinction between anaphora and cataphora. A linguistic antecedent is just some item in the syntax.

where the pronoun could be referential as well as in cases that are certainly bound variable anaphora.¹⁵

For the case of pronouns that we would normally analyze as referential, this suggests the following. Recall the theory of proper names outlined in (22), repeated here as (80).

$$(80) \llbracket \text{THE Mary} \rrbracket = \lambda s. \text{Mary}$$

If proper names in fact involve a definite description structure, as in (80), an example like (79), where a name is followed by a coreferential pronoun, could possibly involve the same mechanism as that which obtains in donkey anaphora according to the above theory. In (79), that is, we could have the pronoun in (81) and the variable assignment in (82). This would give the value in (83) for pronoun plus variables.

$$(81) \text{THE Bill} \dots [\text{he } [R_2 \ i_1]]$$

$$(82) \left[\begin{array}{l} 1 \rightarrow \text{Bill} \\ 2 \rightarrow \llbracket \] \end{array} \right]$$

$$(83) \lambda s. \text{Bill}$$

Since the mechanism in (83) is already available for donkey anaphora, it would take an undesirable stipulation to prevent it being available for pronouns coreferential with proper names, given the independently fruitful theory that names are definite descriptions. It will naturally also be available for pronouns anaphoric to overt definite descriptions. It is also one way of making sense of the finding in the processing literature that people pay renewed attention to the antecedent even when processing a pronoun that might be referential.

I will now turn to the reasons why the Predicate Abstraction rule in (61) binds the relation variable in pronouns and not the individual variable. This might strike some as a strange way to go about things. After all, one might think that one could have a neater theory by having the rule of Predicate Abstraction bind the individual variable and having the relation in such cases be identity, as in the case of the referential pronoun illustrated in (57). Why not do this?

Firstly, we should note a technical difficulty. The current system is set up in such a way that predicates take individual concepts as their arguments, not individuals.¹⁶ This means that Predicate Abstraction

¹⁵ Most of the processing literature seems to deal with cases that are assumed to be referential. Carminati et al. 2002 is the only study known to me that sets out to test bound variable anaphora.

¹⁶ This in turn is necessitated by the need to have a situation structure rich enough to support a lexical entry like (75) for *every*, which in turn is necessary for analyzing donkey anaphora in terms of situations and definite descriptions, which in turn is arguably necessary because of the reasons reviewed in Elbourne 2005b.

has to bind individual concept variables, not individual variables. So altering the current system so as to bind the individual variable but leave everything else the same would not work. The only alternative that suggests itself is to alter the system to make the deictic component pick out an individual concept. But then we would be faced with the unnatural scenario of the index in a scenario where a speaker refers to Benedict XVI being not Benedict XVI but $[\lambda s. \text{Benedict XVI}]$. We might even need $[\lambda s. \perp]$. Such a system would not be impossible, but any alleged gain in naturalness that would come from directly binding the individual concept variable associated with the deictic component would be counterbalanced by the new system of individual concept indexes.

Secondly, there are also more substantive reasons to avoid a system in which pronouns contain bindable individual variables (or individual concept variables) paired with relation variables. Such a system would presumably be one in which it was possible to have the individual variable bound and the relation variable free. In fact Cooper (1979) advocates a system like this for the analysis of donkey anaphora. And, as discussed in detail in Elbourne 2005b, Chapter 2, such a system encounters difficulties with examples like (84) and (85).

- (84) a. In this town, every farmer who owns a donkey beats it, and the priest *beats it* too.
 b. In this town, every farmer who owns a donkey beats the donkey he owns, and the priest *beats the donkey he owns* too.
- (85) a. Every man who has a wife is sitting next to her.
 b. ??Every married man is sitting next to her.

A system like the one we are considering would allow *it* in (84a) to be analyzed “the donkey-owned-by x ,” with x an individual variable bound by the subject and “donkey-owned by” the value, informally speaking, of the free relation variable (Cooper 1979, Heim and Kratzer 1998). In idiomatic English, the nearest thing would be *the donkey he owns*, with *he* bound, as in (84b). But then we would predict that (84a) would have a sloppy reading, in which the priest beats his own donkey, as (84b) does, and this is emphatically not the case (Elbourne 2001a, 2005b). In (85), meanwhile, a system in which we have to look for a salient relation has difficulty explaining the difference in acceptability between (85a) and (85b), since the potential antecedents *wife* and *married* are about equally far from providing a suitable relation (Kadmon 1987, Heim 1990): they are arguably both two-place relations that are being forced by syntactic circumstances in our examples into behaving as one-place predicates.

So a system that would allow a bindable individual variable combined with a free relation variable encounters empirical difficulties with some examples of donkey anaphora. The system advocated in this article, however, does better with these examples. The advocated analysis of donkey anaphora brings it about that we end up with descriptive material of the type of a Noun Phrase in the donkey pronoun. For (85a) we arrive at the following paraphrase: for every pair of an individual x and a minimal situation s' such that x is a man in s' and there is an individual y such that y is a wife of x in s' (treating a as an existential quantifier, as is traditional), there is an extended situation s'' in which x sits next to the unique wife in s'' (i.e. the unique wife in s' , since the situations s' already contain wives and the ones in the situations s'' have to be unique there). For (85b), however, the best we could arrive at would be the following paraphrase: for every pair of an individual x and a minimal situation s' such that x is a married man in s' , there is an extended situation s'' in which x sits next to the unique married person in s'' (i.e. in s'). The married men end up sitting next to themselves then, and also being presupposed to be female.

As for (84), (74), the denotation of a donkey pronoun on the current theory, repeated here as (86), is also the denotation of the overt definite description *the donkey*. The prediction, then, is that the basic donkey sentence (71) will mean the same as (87) and that (84a) will behave the same as (88):

(86) $\lambda s. \iota x x$ is a donkey in s

(87) Every man who owns a donkey beats the donkey.

(88) In this town, every farmer who owns a donkey beats the donkey, and the priest *beats donkey* too.

Both of these predictions are fulfilled. (87) seems to have the same truth conditions as (71), and (88) lacks a sloppy reading, just like (84a). See Elbourne 2005b, Chapter 2, for more detailed discussion.

This might seem like a lot of material on pronouns for an article ostensibly about demonstratives. But I hope to show that, once pronouns are correctly understood, demonstratives are just pronouns provided with some extra descriptive content in the form of Noun Phrases.¹⁷

¹⁷ More precisely, demonstratives in English are pronouns with the addition of NPs and proximal or distal features. But some demonstratives in other languages, like French *ce*, do not have proximal or distal features, and are hence plausibly just pronouns with nouns stuck on them.

3. A Theory of Demonstrative Determiners

3.1. LEXICAL ENTRIES FOR THE DEMONSTRATIVE DETERMINERS

Without further ado, let me set out the lexical entries that I assume for the English demonstrative determiners:

- (89) $\llbracket \text{that} \rrbracket^{w,h,a,t} = \lambda x. \lambda f_{\langle e, \text{sest} \rangle}. \lambda g_{\langle \text{se}, \text{st} \rangle}. \lambda s. \iota z (f(x)(\lambda s'. z)(s) = 1 \ \& \ g(\lambda s'. z)(s) = 1 \ \& \ \text{distal}(x, w, a, t))$
- (90) $\llbracket \text{this} \rrbracket^{w,h,a,t} = \lambda x. \lambda f_{\langle e, \text{sest} \rangle}. \lambda g_{\langle \text{se}, \text{st} \rangle}. \lambda s. \iota z (f(x)(\lambda s'. z)(s) = 1 \ \& \ g(\lambda s'. z)(s) = 1 \ \& \ \text{proximal}(x, w, a, t))$

Since these are slightly complicated formulas, I will explain them in a number of steps. First note that the first and second arguments of each of these determiners are to be understood to be individual and relation variables of the kind that we have already seen in connection with pronouns—Nunberg’s (1993) deictic and relational components. The third argument is the following NP. So we will have configurations like (91).

- (91) $[_{\text{DP}} [_{\text{that i}}] \text{R}] \text{NP}$

We can assume that *that* and *this* syntactically subcategorize for the relevant variables and NPs in these positions. Note that R and i do not form a constituent in the case of demonstratives, unlike in the case of pronouns; this is because it will be useful to have direct access to the index in order to deal with proximal and distal features, as described below.

LFs in this system are officially interpreted with respect to a possible world w (the world in which the speech act in question occurs), an agent a (the originator of the speech act in question), a time t (the time at which the speech act occurs) and a variable assignment h .¹⁸ At a first pass, then, we see that the determiner *this*, for example, takes as arguments an individual (the index), a relation (the relational component) and a property (the value of the NP), and maps them to an individual concept of a particular kind, which will be the value of the whole DP. To be precise, the individual concept is the smallest function that takes a situation s and maps it to the unique individual z (if there is such an individual) such that z satisfies the NP-property

¹⁸ I follow Kripke 1972 in assuming, at least for the purposes of linguistic analysis, that entities in the actual world can show up in other possible worlds. On the other hand, if Lewis’s (1968) counterpart theory is correct for semantics, identifying an agent is *ipso facto* identifying a world, and we would be able to dispense with the parameter w .

in s and also satisfies in s the property obtained by composing the relational component with the index, and which is also such that a yet to be explained condition about being proximal is fulfilled; if there is no such unique individual at the circumstance of evaluation, the whole DP will receive no denotation there, as explained earlier in section 2.2. Overall, then, complex demonstratives are individual concepts, just like definite descriptions and pronouns. In fact demonstratives turn out to be combinations, as it were, of definite descriptions and pronouns, in that they take both an NP, like a definite description, and a pair of an index and a relational component, like a pronoun.

This leaves the treatment of proximal and distal features to be explained. To a first approximation, adopted from traditional grammar, the proximal and distal features of *this* and *that* are the features that indicate that the referent of *this* is near the speaker and the referent of *that* is, at least comparatively, distant from the speaker. This is only a first approximation for a couple of reasons. If bare and complex demonstratives are indeed individual concepts (as I maintain) or quantifiers (as King (2001) maintains), then there will not always be anything that can be called the *referent* of these phrases anyway. (Strictly speaking, in fact, there will not ever be such a thing.) But in the current system it will frequently happen (to look ahead slightly) that the property derived from i and R will be the property of being identical to a particular person or thing, so that the same person or thing will be the value of the demonstrative (when it has a value) whatever evaluation situation is considered. In these circumstances, we could speak loosely of the “referent” of the demonstrative, meaning the entity so contributed. For example, if I point at Flossy the donkey I can refer to her with the phrase *that donkey*, where, if the current theory is on the right lines, the variables i and R jointly contribute the property of being identical to Flossy and the noun contributes the property of being a donkey; simplifying slightly, the whole phrase will then have as its semantic value the function from situations to the unique entity in them that is identical to Flossy and is a donkey. Whenever this function is given an evaluation situation that allows it to return an individual at all, that individual is going to be Flossy. In a case like this, then we might be tempted to say that Flossy has a privileged status, just explicated, that we can dignify with the term *referent*, and that *this* or *that* will be chosen by speakers according as they conceive of Flossy as being near to them or far from them, respectively. In other words, we might be tempted to link the choice of proximal and distal features with the status of the referent, when there is such a thing.

This is on the wrong track, however, as Nunberg (1993) has shown. In his terms, it is not the *interpretation* (the referent, in special cases)

but the *index* that determines the choice of proximal and distal features. Imagine the following scenario. Immediately in front of us is Field A, and beyond that, at some considerable distance, is Field B. We know that one donkey is kept in A and another donkey is kept in B, but it so happens that neither donkey is in its field today. Perhaps they are at the vet. Nevertheless, despite the total absence of donkeys, I can point at Fields A and B in turn and say (92):

- (92) This donkey [GESTURE AT FIELD A] is healthier than that donkey [GESTURE AT FIELD B].

The choice of *this* versus *that* seems to be determined by the fact that Field A is close to us and Field B is far away. The donkeys themselves do not come into it; we do not have to have any idea about *their* relative distances from us in order for (92) to be felicitous. Field A is the index, in Nunberg's terminology, that brings to mind the donkey that resides in it; and likewise Field B for its regular inhabitant. It is even possible to engineer scenarios where the positions of indexes and interpretations impose conflicting requirements on proximal and distal features. In these cases, as Nunberg (1993: 23) says, the index always wins. In Nunberg's own example, we are to imagine him pointing in turn at two sample plates in his china shop. The first one is right in front of him, but the second is across the room. He says the following:

- (93) These [GESTURE AT THE NEARBY PLATE] are over at the warehouse, but those [GESTURE AT THE DISTANT PLATE] I have in stock here.

As Nunberg says, if he had "really" been pointing at the referents of *these* and *those*, it would have made more sense to have reversed them (Nunberg 1993: 24).

For this reason, the demonstrative determiners in (89) and (90) take the index as a separate argument, and it appears in the final conditions " $\text{distal}(x, a, t, w)$ " and " $\text{proximal}(x, a, t, w)$." These are to be read " x is distal with respect to a at t in w " and " x is proximal with respect to a at t in w ," where *distal* and *proximal* boil down to "distant" and "near." Some work remains to be done on the explication of the terms *distal* and *proximal*. It is evident that what a speaker counts as being near to them, in the relevant sense, can be influenced by all kinds of things, including their emotional attitudes to the objects in question and how recently the objects were mentioned. I will offer occasional commentary on this question in the discussion of examples below, but I will not attempt to come up with a comprehensive theory.

Before we leave the subject of proximal and distal features, however, I would like to comment on one more characteristic of them, which is

theoretically quite interesting. An interesting quirk of these features is that they seem to be justified not only with respect to the point of view of the speaker but also with respect to the point of view of subjects of propositional attitude reports. For example, we have the contrasts in (94).

- (94) a. Mary talked to no senator without declaring afterwards that that senator (?this senator) was the one who would cosponsor her bill.
 b. Mary talked to no senator without thinking at the time that this senator (?that senator) was the one who would cosponsor her bill.

One might have expected distal features to be justified only by distance of the relevant entities from the speaker, that is to say the utterer of the whole token that contains the demonstrative and the propositional attitude report or reported speech act (and similarly with proximal features). But (94) surely shows us that these features can refer back to the point of view of an agent of a speech act reported by the speaker of the whole token. Mary's discussions with senators can be equally far away from the speaker in (94a) and (94b); instead, *that* and *this* indicate relative proximity (in temporal terms, in these examples) to Mary, the reported thinker. Of course, *that senator* and *this senator* in these examples can also receive readings in which the distal and proximal features are evaluated with respect to the speaker of the whole token; the sentences are ambiguous in this respect.¹⁹ These examples, then, are reminiscent of the following example from Schlenker 2003 (slightly adapted from his (44b)):

- (95) John has told me repeatedly that he was sick two days ago.

In (95), *two days ago* can be understood either with respect to the context of the utterance of the whole token, which would perhaps require John to have repeated his message several times within the last few hours, or with respect to various speech acts of John's, possibly spread out over a number of years. The parallel with the interpretation of the distal and proximal features in (94) is striking. Schlenker uses (95) and similar examples to argue for the existence of monsters, that is operators which operate on contexts, making indexicals be interpreted with respect to contexts introduced within the sentence; and he argues

¹⁹ In (94b), the question mark in front of *that senator* refers only to the reading whereby the distal feature is justified from Mary's point of view. The index in these examples is evidently the group of senators that Mary spoke to, as suggested in section 2.4.6. See section 3.7 for further discussion.

that propositional attitude verbs quite generally are monsters. Note that it is much harder to use *this* in a similar example in which the demonstrative is not in the scope of a propositional attitude verb:

- (96) a. ??Mary talked to no senator without this senator thinking she was crazy.
 b. Mary talked to no senator without that senator thinking she was crazy.

The *that* in (96b) is evidently justified from the perspective of the speaker of the whole token. It is plausible, then, that (94) is another example of Schlenker's monstrousness.

Having explained the elements that appear in the lexical entries of the demonstrative determiners, I will now review the data thrown up when we ask how demonstratives are actually used and show how these lexical entries deal with them.

3.2. CANONICALLY REFERRING COMPLEX DEMONSTRATIVES

Let us start with sentences in which the determiners take overt NP complements, and the DPs in question can be taken to refer (loosely speaking) to a perceptible referent in the environment. I will refer to DPs like this as *canonically referring complex demonstratives*. Some simple examples are in (97).

- (97) a. That cat [GESTURE AT FELIX] laughs.
 b. This cat [GESTURE AT FELIX] laughs.

On the current theory, one simplified LF available for (97a) is that in (98):

- (98) [[[[that i_1] R_2] cat] laughs]

In this case, the index will be Felix himself, and the relational component will be identity, as illustrated in (99).

- (99) a. $\llbracket i \rrbracket = \text{Felix}$
 b. $\llbracket R \rrbracket = \lambda x. \lambda u_{(s,e)}. \lambda s. u(s) = x$

This is exactly as in (57), the case of the referential pronoun.

Given this value for i and R , and the rules and lexical entries we have previously introduced (see (100) for a reminder of some relevant lexical entries), it can be seen that the denotation of the complex demonstrative in (98) is predicted to be (101), when it is interpreted with respect to a world w , an agent a and a time t ; and the denotation of (98) as a whole is (102).

- (100) a. $\llbracket \text{cat} \rrbracket = \lambda u_{\langle s, e \rangle} . \lambda s . u(s)$ is a cat in s
 b. $\llbracket \text{laughs} \rrbracket = \lambda u_{\langle s, e \rangle} . \lambda s . u(s)$ laughs in s
- (101) $\lambda s . \iota z (z = \text{Felix} \ \& \ z \text{ is a cat in } s \ \& \ \text{distal}(\text{Felix}, a, t, w))$
- (102) $\lambda s . \iota z (z = \text{Felix} \ \& \ z \text{ is a cat in } s \ \& \ \text{distal}(\text{Felix}, a, t, w))$ laughs in s

Given the iota notation, this latter function divides up the set of possible situations into three. Given a topic situation s^* , the utterance will be true if there is exactly one distal cat identical to Felix in s^* and this cat laughs in s^* ; it will be false if there is exactly one distal cat identical to Felix in s^* and this cat does not laugh in s^* ; and it will receive no truth value if there is not exactly one distal cat identical to Felix in s^* . Recall the discussion in section 2.2.

In (102), the predicates are all relativized to the same situation variable s , the one abstracted over at the start of the formula. This meant that Felix had to be a cat in the evaluation situation s^* . No problems were caused by this, since we took s^* to be a situation in which Felix was, in fact, a cat. But it is conceivable that there should be examples in which we would not want the descriptive content in the NP to have to characterize the referent in the evaluation situation. One good candidate, suggested by an anonymous reviewer, is the following. Suppose I point at a man crossing the street, Glenn, and say:

- (103) That man crossing the street is six feet tall.

Now suppose that we want to evaluate the proposition I expressed with respect to a situation s^{**} that contains Glenn doing something else—having dinner in a nice restaurant, for example. It seems quite possible to do so, and the result is pretty clearly that what I said is true with respect to s^{**} if and only if Glenn is six feet tall in s^{**} . Glenn does not have to be crossing the street in the evaluation situation in order to be picked out by the complex demonstrative in that situation.²⁰ This means that it must not be the case that the semantic value of (103) has to be (104).

- (104) $\lambda s . \iota x (x = \text{Glenn} \ \& \ x \text{ is a man crossing the street in } s \ \& \ \text{distal}(\text{Glenn}, a, t, w))$ is crossing the street in s

For in s^{**} there is no unique appropriately distal individual identical to Glenn who is a man crossing the street. So it seems that the complex demonstrative should not be able to pick out anything when we evaluate

²⁰ I take this claim to be supported by the fact that I could say (103), wait a while, ask someone “Is what I said true now that Glenn is in a restaurant?” and receive a positive response.

it at s^{**} , and that the proposition expressed should be neither true nor false at s^{**} . But this is not the case, as we have seen.

This sounds like a job for the operator s_0 that we have already met in section 2.3 in connection with *de re* and *de dicto* readings of definite descriptions. Recall the semantics of the operator:

$$(105) \llbracket s_0 \rrbracket^h = \lambda f_{\langle se, st \rangle} . \lambda u_{\langle s, e \rangle} . \lambda s . f(u)(h(0)) = 1$$

One LF available for (103) will be the following, in which s_0 is adjoined to the NP *man crossing the street*:

$$(106) \llbracket [\text{that } i_1 \text{ R}_2] \llbracket [\text{man crossing the street}] s_0 \rrbracket \llbracket [\text{is six feet tall}] \rrbracket$$

Suppose that I say (103) in a spatially and temporally delimited situation s^{***} that contains me speaking and Glenn crossing the road and not much else. Then I can mean something like “man crossing the street in s^{***} ” by the NP *man crossing the street*.²¹ In current theoretical terms, the index 0 is mapped to s^{***} in the variable assignment h , and the operator s_0 modifies the semantic value of *man crossing the street* so as to produce the desired result. Let us allow ourselves the results in (107):

$$(107) \text{ a. } \llbracket [\text{man crossing the street}] \rrbracket^{w, h, a, t} = \lambda u_{\langle s, e \rangle} . \lambda s . u(s) \text{ is a man} \\ \text{crossing the street in } s \\ \text{ b. } \llbracket [\text{is six feet tall}] \rrbracket^{w, h, a, t} = \lambda u_{\langle s, e \rangle} . \lambda s . u(s) \text{ is six feet tall in } s$$

The variable assignment h will be as follows:

$$(108) \left[\begin{array}{l} 0 \rightarrow s^{***} \\ 1 \rightarrow \text{Glenn} \\ 2 \rightarrow [\lambda x . \lambda u_{\langle s, e \rangle} . \lambda s . u(s) = x] \end{array} \right]$$

Given this assignment, the value of the whole NP with s_0 adjoined is as follows:

$$(109) \llbracket [\text{man crossing the street}] s_0 \rrbracket^{w, h, a, t} = \lambda u_{\langle s, e \rangle} . \lambda s . u(s^{***}) \text{ is a man} \\ \text{crossing the street in } s^{***}$$

This means that the semantic value of the whole sentence on this occasion is the following:

$$(110) \lambda s . \iota x (x = \text{Glenn} \ \& \ x \text{ is a man crossing the street in } s^{***} \ \& \\ \text{distal}(\text{Glenn}, a, t, w)) \text{ is six feet tall in } s$$

²¹ There will of course be a certain amount of vagueness about what exactly I take s^{***} to encompass. I do not think this is problematic. See Buchanan and Ostertag 2005 for one attractive way of dealing with such cases.

This is the result we needed. If we evaluate this proposition at a situation s^{**} in which Glenn is having dinner in a nice restaurant we will not have to find him crossing the street in s^{**} in order to get a verdict of truth or falsity, since the property of being a man crossing the street is now relativized to s^{***} . The proposition will be true or false at s^{**} according as Glenn is six feet tall or not in s^{**} .

The current analysis of canonically referring complex demonstratives is also relevant to the question of whether or not a proposition is expressed if the object demonstrated does not satisfy the NP descriptive content. For example, is a proposition expressed by the utterance described in (111)?

(111) That knife [GESTURE AT THE SPEAKER'S FORK] is dirty.

Braun (1994), Borg (2000) and Glanzberg and Siegel (2006) have argued that no proposition is expressed in cases like this, while Larson and Segal (1995: 210–213) have argued that a proposition is in fact expressed. The basic issue, of course, is that in these cases, although the object demonstrated is misdescribed, we do nevertheless pick up propositional information quite easily, to the effect that the object demonstrated has the property contributed by the Verb Phrase. Should we say that therefore the sentence has a semantic value that is a proposition, in the normal way? Or should we rather say that the sentence does not have a proposition as a semantic value and we manage to extract propositional information from the utterance in a different way?

It is a consequence of the view I advocate that a proposition is indeed expressed in cases like this. But the exact details of what takes place will depend on whether or not the speaker actually thinks the fork in the scenario in (111) is a knife. If the speaker does think the fork is a knife (because the tines are covered by a napkin, say, or because of some defect of vision), then things are comparatively straightforward. We might have an LF like (112). The variables i and R would contribute the property of being identical to a , where a is a name of the fork in question.

(112) [[[that i_1 R_2] knife] [is dirty]]

This LF, in these circumstances, will produce a proposition that can be characterized as follows:

(113) The function that:

- maps situations s to 1 if there is exactly one appropriately distal knife identical to a in s and this entity is dirty in s ;
- maps situations s to 0 if there is exactly one appropriately distal knife identical to a in s and this entity is not dirty in s ;

- does not map situations s to anything if there is not exactly one appropriately distal knife identical to a in s .

Since a is in fact a fork, we can imagine that on the occasion we are imagining the proposition would not map the topic situation to any truth value.

It seems to me that this prediction is entirely compatible with the facts. When we hear an utterance like (111), in circumstances like those described, we have a clear intuition that the utterance is defective in some serious way. Conversation can continue after such an utterance, if the interlocutor corrects the first speaker or just plays along; but, as Glanzberg and Siegel (2006) point out, this does not mean that the original utterance is acceptable after all. The sense of serious deficiency we feel would be well explained by the current theory, which says, in effect, that the speaker intended to make a truth-evaluable claim but failed to do so. This leaves the fact that people who hear such utterances do extract propositional information from them. But we can explain this easily by appeal to the manifest intentions of the speakers in such cases, who do, after all, wish to say something about the object they demonstrate. The charitable hearer presumably just overlooks the incorrect NP descriptive content and treats the utterance as if it just contained a demonstrative with no associated NP.

Let us move on to consider cases in which the speaker does not actually think the fork in the scenario in (111) is a knife. In this kind of case, the word *knife* has been used instead of *fork* due to a speech error. It will clarify our thinking on this possibility if we are explicit about some of the stages of speech production. Abstracting away from many details, virtually all models of speech production assume that there is a stage of conceptualization, in which a thought is formulated in some non-linguistic medium (a conceptual system or language of thought), followed by a stage of formulation of the thought in language, followed by the actual utterance of the sentence (Fromkin 1971, 1973; Garrett 1975, 1984; Dell 1986; Levelt 1989). The utterance of the sentence is accompanied by self-monitoring, a stage in which we check that our utterance matches our previous intentions (Levelt 1989). Some speech errors seem to involve a failure to select words in the linguistic formulation stage that accurately express the thought to be verbalized. For example, some errors involve uttering a semantically related word in place of the word that would accurately express the thought in question (Fromkin 1973, 1988; Garrett 1988). Example (111), if it were taken from real life, would be a typical example of this. We can imagine that the speaker is trying to talk about forks, but mistakenly chooses the semantically related word *knife* in order to do so. The choice of the

wrong word results from something going wrong in an unconscious search process that normally takes just a fraction of a second; the speech production literature just cited proposes that words with similar meanings are stored in some sense “near” to each other in the mental lexicon.

Given all this, should we say that a proposition is expressed by an utterance of (111) in which the wrong word has been chosen due to a speech error? And, if so, what proposition is expressed?

In my view, this kind of case points up a certain kind of crudity in the notion of *proposition expressed* (or *what is said*). We have no difficulty describing what is going on in this scenario. I have just done so. But we have difficulty in saying what proposition, if any, was expressed. The reason, presumably, is that the notion of the proposition expressed was formulated without recognizing that there might be a discrepancy between the proposition formulated in the conceptual system or language of thought that someone tries to verbalize and the proposition yielded (via the same person’s language faculty, with suitable supplementation by speaker intentions) by the LF that is used to verbalize it. But speech errors show that these two things can come apart.

I propose, therefore, that *proposition expressed* and *what is said* should no longer be terms in our theory, at least when we are considering things at this fine level. We should replace these terms with a distinction between the proposition formulated in the language of thought that we try to verbalize and the proposition yielded (via the same language faculty) by the LF constructed as a result of this effort, with accompanying speaker intentions where necessary, but using the regular lexical entries for the words used. When these two things happen to coincide, we can talk loosely of the proposition expressed or what is said. So the question of whether a proposition is expressed in the speech error version of examples like (111) cannot receive a straightforward answer, since it is based on a false presupposition. Instead, we should say that there is a proposition yielded by the LF uttered, given supplementation by speaker intentions, and that in the case under consideration it is the proposition in (113); but this proposition, we should go on to say, does not fulfill the communicative intentions of the speaker, which were presumably characterized by a different proposition formulated in the language of thought.

3.3. CANONICALLY REFERRING BARE DEMONSTRATIVES

Let us move on to consider cases where a demonstrative is used “bare,” without any overt NP complement, to refer (roughly speaking) to some

perceptually salient entity. I will refer to cases like this as *canonically referring bare demonstratives*. They are exemplified in (114).

- (114) a. That [GESTURE AT FLOSSY] is a donkey.
 b. This [GESTURE AT FLOSSY] is a donkey.

The issue raised is naturally that of unifying bare demonstratives with complex ones.

This unification can be achieved quite naturally if we suppose that a truth-conditionally trivial property is contributed to the semantics as the second argument of *that* in cases of bare demonstratives. A version of this idea was first suggested, I believe, by Taylor (1980: 197): within a formal language that translates *That F is G* as $\lceil \text{that } x(Fx; Gx) \rceil$, Taylor translates *That is G* as $\lceil \text{that } x(x = x; Gx) \rceil$. Since everything is identical with itself, this formulation does not add anything to the overt material that is not truth-conditionally trivial. Similarly, King (2001: 141–143) suggests that the NP node might not host lexical material in these cases, and that a bare NP node might contribute the property ‘being a thing’ to the semantics.²² And in Elbourne 2005b I argue that there is a phonologically null noun ONE with a meaning ‘is an individual, is of type e’ which can be taken as an argument by demonstrative determiners. For present purposes, I will simply assume that something along these lines is correct, and will not attempt to distinguish between the views just mentioned.

3.4. DESCRIPTIVE INDEXICALS AND DEFERRED OSTENSION

Nunberg (1993: 28) has already provided examples of demonstratives being used as descriptive indexicals. Here is one, with slight elaborations in the background scenario. We are in the offices of a very hierarchical company that prescribes different kinds of office furniture for employees of different ranks, with low-quality accoutrements being prescribed for low-ranked workers. Pointing at the desk of a particularly lowly employee, I say:

- (115) According to the regulations, that must always be made of metal.

Here, as Nunberg (1993: 28) says, it seems that *that* is interpreted as an attributively used definite description, something like “the desk used by an employee of grade 10 or below.”

²² One should note, however, that King’s proposal is not compatible with all conceptions of phrase structure. In particular, bare phrasal nodes are impossible according to the conception of phrase structure employed in contemporary Minimalist syntax (Chomsky 1995: 241–249).

Since we have enough to do without being distracted by pile-ups of intensional operators (*must always*), I will analyze the slightly simpler variant in (116):

(116) According to the regulations, that is always made of metal.

Assuming the phonologically null noun ONE from Elbourne 2005b to handle bare demonstratives, *that* here will look like this:

(117) [[that i_1 R_2] ONE]

The index will be the desk I point to, and the relational component will be the function that will map an object to the property of having that object's function and status in the company's hierarchy of implements. This is shown in (118), where d is a name of the desk in question.

(118) a. $\llbracket i \rrbracket = d$
 b. $\llbracket R \rrbracket = \lambda x. \lambda u_{(s,e)}. u(s)$ is characterized in s by the actual function and hierarchical status of x

The null noun ONE will contribute the property of being an individual, henceforth ignored. So the semantic value of the demonstrative in this case will be (119). Since d is actually a desk for employees of grade 10 or below, this is equivalent to (120).

(119) $\lambda s. \iota z (z$ is characterized in s by the actual function and hierarchical status of d & $\text{distal}(d, a, w, t)$)

(120) $\lambda s. \iota z (z$ is a desk for employees of grade 10 or lower in s & $\text{distal}(d, a, w, t)$)

The quantificational adverb *always* will, as before, quantify over situations of a certain kind, the exact kind depending on the intentions of the speaker. Here there is a clue in the phrase *according to the regulations*; we can take *always* to be quantifying over minimal situations that contain exactly one desk used by an employee of grade 10 or under, and in which all relevant regulations regarding the choice of the desk have been observed. In saying (116), then, I am claiming that all situations of that kind are such that the unique desk used by an employee of grade 10 or below in them is made of metal. This seems to be intuitively adequate.

This kind of account will suffice to analyze a group of related examples, King's (2001) cases of demonstratives being used with "no demonstration, no speaker reference." King (2001: 2) introduces the relevant class of uses as follows:

there are uses of ‘that’ phrases in which they are not accompanied by any demonstration, need not be used to talk about something present in the physical context of utterance, and in which the speaker has no particular individual in mind as “the thing she intends to talk about by means of the ‘that’ phrase.”

Some examples, based closely on King’s, are the following.

- (121) a. (*We heard a while ago that exactly one student scored 100 on the exam, but we do not know who it is.*) That student who scored 100 on the exam is a genius.
 b. (*We heard a few seconds ago that exactly one student scored 100 on the exam, but we do not know who it is.*) This student who scored 100 on the exam is a genius.

In my judgment, and according to the judgments of those I have consulted, both *this* and *that* are possible in these cases, and are intuitively justified with reference to how distant the event of our hearing about the brilliant student was.

This suggests that in each case we can use the utterance announcing the existence of the student who scored 100 as the index. To take an example, the complex demonstrative in (121a) would have the following form at LF:

- (122) [[that i_1 R₂] [student who scored 100 on the exam]]

Let b be a name of the utterance in which we heard about this student. The utterance b , then, will be the index. R will take on as its value the function mapping utterances to the property of having one’s existence announced in them. So the two variables jointly contribute the property of having one’s existence announced in b . Assume that (121a) is spoken in w at t . The semantic value of the complex demonstrative is then the function from situations s to the unique x such that x ’s existence is announced in b in s and x is a student who scored 100 on the exam in s and b is distal with respect to the speaker in w at t . The whole utterance will be true of an evaluation situation s^* , such as a relevant chunk of the real world, if and only if the semantic value of the complex demonstrative maps s^* to an individual, and that individual is a genius in s^* . This seems intuitively adequate.

The presence of the deictic and relational components also accounts straightforwardly for cases of *deferred ostension* (Quine 1969, Nunberg 1979, 1993). These are traditionally defined as cases in which the speaker demonstrates one thing in order to refer to another; the speaker does have an object in mind to which the index and relational component are supposed to lead the hearer. We have already seen an example of this in (92) in section 3.1, repeated here as (123):

- (123) This donkey [GESTURE AT FIELD A] is healthier than that donkey [GESTURE AT FIELD B].

The indexes are the two fields—recall that the donkeys themselves need not even be present—and the relational component in each case is the relation “is kept in.” The first occurrence of *this donkey*, then, will mean “the unique individual x such that x is kept in Field A and x is a donkey and Field A is suitably proximal.” If we imagine that the speaker and hearer are personally acquainted with the donkeys in question, and that the speaker wishes the hearer to identify the donkeys in question by means of the occurrences of *this donkey* and *that donkey*, we would have a case of deferred ostension. But note that the actual semantics given by the current system is really no different in this case from the cases of descriptive indexicals and cases of “no demonstration, no speaker reference.” We could imagine a use of (123) in which the speaker had no personal acquaintance with the two donkeys in question, and simply deduced their state of health from the state of the fields in which they were kept. The same definite description would be the immediate semantic value of the complex demonstrative in each scenario. The difference, as in the classic essay by Kripke (1979), would be that in one scenario the speaker has a particular thing in mind that the definite description is supposed to pick out, whereas in the other scenario this is not the case.

3.5. CANONICALLY REFERRING DEMONSTRATIVES—A REPRISÉ

Kaplan (1989a) in his classic essay used contrasts like the following to argue that demonstratives were directly referential and that definite descriptions were not:

- (124) (*Charles is from Charleston, West Virginia. Paul is from St. Paul, Minnesota. δ is a pointing by the speaker in the direction of Paul, who is seated on a chair in front of the speaker.*)
 Look over here. [THE GESTURE δ IS INITIATED NOW AND HELD THROUGHOUT THE NEXT SENTENCE.] If Charles and Paul had changed chairs, then
- a. the man being pointed at would be from Charleston.
 - b. this man being pointed at would be from Charleston.

It is clear, as Kaplan says, that in the circumstances indicated (124a) is true and (124b) is false. And there is great plausibility in his contention that this indicates that demonstratives are directly referential while definite descriptions are not: Paul himself would be contributed by the complex demonstrative to the proposition expressed by the utterance

of (124b), and no amount of chair-switching will make it the case that he is from Charleston.

The doctrine that demonstratives are directly referential cannot, of course, account for the examples of demonstratives as descriptive indexicals (section 3.4). Nor can it account for examples where demonstratives have covarying readings (sections 3.6–3.8). So we should not feel tempted to revert to it. But on the other hand it does seem that the devices we have introduced to deal with the cases of descriptive indexicals and deferred ostension might have the unwelcome effect of making the current theory predict that (124b) will have a true reading in the given scenario. In the complex demonstrative *this man being pointed at* in (124b), the index must presumably be Paul, since he is, after all, being pointed at. But what is to prevent the relational component being something like “has swapped chairs with,” which would presumably be a salient relation given the antecedent of the conditional? Then the complex demonstrative would presumably mean something like “the unique x such that x has swapped chairs with Paul and x is a man being pointed at and Paul is near the speaker.” In other words, it looks like the complex demonstrative should be able to be a definite description picking out Charles in the counterfactual circumstances introduced in the antecedent, just like the regular definite description in (124a).

We must ask, then, why the complex demonstrative in (124b) must be canonically referring and cannot have a deferred use, where by *deferred use* I mean a use other than canonically referring without being covarying, such as a use as a descriptive indexical or for purposes of deferred ostension. As a first step towards answering this question, let me propose the following descriptive generalization for cases involving complex demonstratives:

- (125) When the index satisfies the NP descriptive content, the index (or rather the constant individual concept mapping situations to it) must be the interpretation. Stated otherwise, when the index satisfies the NP descriptive content, the relational component must be identity.

Deferred uses of complex demonstratives, like (123), typically involve demonstrating something that does not satisfy the NP descriptive content. If we try to come up with a minimal variant of (123) where the indexes do satisfy the NP descriptive content, we find that the demonstratives in it no longer have deferred uses. Suppose that we both know that Flossy always shares a field with Esmerelda, and Rupert always shares a field with Aloysius, and that we can distinguish these four donkeys infallibly by sight. Suppose further that Esmerelda and

Aloysius are absent, being attended to by a vet, but we can see Flossy and Rupert in a farmyard.²³ I then say (126):

- (126) This donkey [GESTURE AT FLOSSY] is healthier than that donkey [GESTURE AT RUPERT].

As long as it is clear that I am gesturing at Flossy and Rupert, I absolutely cannot mean by this that Esmerelda is healthier than Aloysius. This is so even if I have just explicitly drawn attention to the necessary relational component by saying something like *You know that Flossy always shares a field with Esmerelda, and Rupert always shares a field with Aloysius*. I must mean that Flossy is healthier than Rupert, even though the health of Esmerelda and Aloysius is arguably more salient, given that they are receiving veterinary care.

I know of only one type of apparent counterexample to the generalization in (125), and the examples in question are in fact exceptions that prove the rule. Consider (127), a variant of Kaplan's (124b):

- (127) If Charles and Paul were disguising themselves as each other, this man [GESTURE AT PAUL] would be from Charleston.

Unlike (124b), this has both a true and a false reading. We can account for the true reading by supposing that the mention of disguise has made salient what we might think of as the outer shell or appearance of people. We obtain a true reading, then, by interpreting the index not as being Paul but as being the outer shell or appearance of Paul, which we can call *a*. The complex demonstrative, on the true reading, then means something like "the unique individual *x* such that *x* has appearance *a* and *x* is a man and *a* is near the speaker." Provided that we imagine the disguises to be good ones, this would indeed pick out Charles in the counterfactual circumstances introduced by the antecedent. Since the outer shell or appearance of Paul is not in itself a man, there is no transgression of the principle in (125).

We can account for Kaplan's datum in (124b), then, by pointing out that the index satisfies the NP descriptive content and hence, by (125), the relational component has to be identity. But we would ideally like to go deeper into the matter than this. Why should (125) hold? As it happens, Nunberg (1979) has already provided a plausible answer. Using *demonstratum* for his later term *index*, and *referring function* or *RF* for the relation between demonstrata and interpretations carried out partly by the relational component in the current system, he writes as follows (1979: 160):

²³ I stipulate this latter detail in order to prevent the gestures at Flossy and Rupert in the example being reinterpreted as gestures towards the fields where they live or the general space that they inhabit.

Allow me to borrow the psychologists' notion of 'cue-validity' to refer to the probability with which a given referent b can be identified as being the value of a certain function f at a demonstratum a , or more generally, to the relative usefulness of a given description for purposes of identification. All things being equal, we will assume that given an array of possible RF's which take a demonstratum into a range of reference, a rational speaker will intend that his hearer should select that function that has the highest cue-validity for its referent. In other words, when a demonstratum stands uniquely in several different relations to several members of a range of reference, and there is no reason for assuming that any one of these members is a more likely candidate for reference than another, we will assume that the intended referent is that member which is most easily identified in terms of its relation to the demonstratum. [...] [T]he reader may have noticed that we did not define the range of reference above in such a way as to exclude the possibility that the demonstratum was itself a member of the range. Thus, if I point at a hat and say, 'That is a derby,' we would normally understand the range of possible referents as including the hat itself. And under these circumstances, the hat itself would be the only thing that I could actually be referring to, if I am being rational. The general point is this: when the demonstratum could be the referent, it must be the referent. [...] [T]his principle follows from the more general observation about cue-validity that we made above. The identity is a function too, after all, and it is the only function whose value is trivially computable for all arguments in all domains. So where the identity could be the referring function, its cue-validity must be higher than that of any other possible RF, and it must be chosen.

The identity function that Nunberg had in mind was of course $[\lambda x.x]$. In the system in the current article, the same effect is achieved by having the relational component be (128), as in (57) and (99):

$$(128) \lambda x.\lambda u_{(s,e)}.\lambda s.u(s) = x$$

This combines with the index and an iota-operator, whether in a pronoun or a demonstrative, to give the index back as the interpretation—or, strictly speaking, the constant function mapping situations to the index. Exactly the same rationale envisaged by Nunberg in 1979, then, can apply to the system in the present article. Basically, the kind of constant function just mentioned is always going to be trivially derivable from any index by means of a trivial and universally available relational component. (This relational component may even be an in-built type-shifting mechanism in the language faculty, as I pointed out below (57).) This kind of constant function is, in a sense, going to be the

easiest thing to arrive at. Since a cooperative speaker will intend that the interpretation be the one that is “most easily identified in terms of its relation to the demonstratum,” this kind of interpretation will always win out, unless there are obvious reasons to make it impossible, such as the NP-descriptive content being incompatible with the index.

Note that Nunberg’s (1979) reasoning here has very much the flavor of Relevance Theory (Sperber and Wilson 1986) and could easily be recast explicitly in terms of that theory.

3.6. QUANTIFYING IN

One of the central planks in King’s (2001) argument against a direct reference account of complex demonstratives is the existence of examples of *quantifying in*. These examples involve a pronoun in the matrix of a complex demonstrative being bound by a quantifier phrase outside, generally producing covarying readings.²⁴ King (2001: 10, 74, 173) gives the examples in (129); (129a) occurred first in Neale 1993, where it is attributed to Jamie Tappenden.

- (129) a. Every man eagerly looks forward to that day when he retires.
 b. Every father dreads that moment when his eldest child leaves home.
 c. Most avid snow skiers remember that first black diamond run they attempted to ski.
 d. Every professor cherishes that publication of his.

In the case of (129d), which might seem awkward in isolation, King (2001: 74) suggests that we imagine it to be spoken while the speaker nods in the direction of a screen showing a scene from a film in which a professor is fondly perusing his finest piece of published work; it is supposed to mean something like “Every professor cherishes his finest publication.”

I think it is evident that the current theory will face no particular problems with this kind of sentence. In the case of (129d), for example, we can imagine that the index is the scene towards which the speaker gestures, which we can call *s*, and the relational component is something like “has the qualities depicted in.” Translating into extensional terms

²⁴ I believe it is possible to have quantifying in without a covarying reading, however. Suppose that all the boys in a Scout troupe were told to clean the floor of a cabin were they were staying, but all of them forgot. We could say *Every boy forgot to clean that floor he was supposed to clean*. We have quantifying in, but the floor that was supposed to be cleaned is the same for every boy, and hence there is no covariation. The deictic and relational components would work as they do in canonically referring examples in this case.

for the sake of simplicity, we obtain the truth conditions in (130) for (129d):

- (130) Every professor x cherishes the unique individual y such that y is a publication of x and y has the qualities depicted in s and s is suitably distal.

Since the piece of work in s is depicted as the finest publication of the professor in question, this is equivalent to saying that every professor cherishes his finest publication, as desired.

It is notable that the other three examples of quantifying in in King (2001), (129a)–(129c), all involve intensional transitive verbs and all seem to introduce a presupposition to the effect that the kind of event or object they talk about (retiring, eldest children leaving home, black diamond runs skied for the first time) is somehow familiar. I speculate that the reason for this is as follows. Since we are presented with these examples out of the blue, as it were, with no scenario provided in which we are to imagine them being said, the deictic component cannot zero in on any obvious visual clue, as it does in the case of (129d); and since we are dealing with covariation, the index cannot be the interpretation, as it is in the case of referential readings. This leaves the deictic and relational components with limited room to maneuver, and we hence settle on something like the *concept or idea* of retiring, or having one's eldest child leave home, for the index; the relational component is then something like “exemplified by.” The rough truth conditions for (129b), then, are something like those in (131):

- (131) Every father x dreads the unique individual y such that y is a day when x 's eldest child leaves home and y exemplifies the idea of eldest children leaving home and the idea of eldest children leaving home is suitably distal.

This explains the feeling we get when we hear examples like (129b) that the speaker is making reference to a kind of event with which we are expected to be familiar.

3.7. BOUND DEMONSTRATIVES

As already noted in (94), repeated here as (132), complex demonstratives seem to be able to be bound themselves. Simple ones do too, although they are perhaps slightly more awkward in bound readings than complex ones. Witness the following examples.

- (132) a. Mary talked to no senator without declaring afterwards that that senator was the one who would cosponsor her bill.

- b. Mary talked to no senator without thinking at the time that this senator was the one who would cosponsor her bill.
- (133) a. Mary talked to no senator without declaring afterwards that that was the one who would cosponsor her bill.
- b. Mary talked to no senator without thinking at the time that this was the one who would cosponsor her bill.

On the current system, of course, these demonstratives too will be bound into. In particular, their relation variable will be bound, as with the case of bound variable pronouns in section 2.4.6. So, for example, (134) will have the simplified LF in (135), in which *no senator* has moved by Quantifier Raising and left a trace.²⁵

- (134) Mary talked to no senator before that senator was lobbied.
- (135) [no senator] [λ_2 [Mary talked to THE R_2 i_1 before that i_1 R_2 senator was lobbied]]

On the current theory, parallel to the denotation of *every* in (75), *no* will have meaning in (136):

- (136) $\llbracket \text{no} \rrbracket = \lambda f_{\langle \langle s,e \rangle, \langle s,t \rangle \rangle} \cdot \lambda g_{\langle \langle s,e \rangle, \langle s,t \rangle \rangle} \cdot \lambda s$. for no individual x is it the case that there exists a minimal situation s' such that $s' \leq s$ and $f(\lambda s.x)(s') = 1$, such that there is a situation s'' such that $s'' \leq s$ and s'' is a minimal situation such that $s' \leq s''$ and $g(\lambda s.x)(s'') = 1$

If the intuitions reported in (94) reflect what is really going on in cases of bound demonstratives, then proximal and distal features make reference in these cases to the group of individuals quantified over. Glancing back to the possibilities aired in section 2.4.6, below (61), this supplies evidence for the index in cases of binding being this group, as opposed to a special default individual. As already noted in footnote 19, this means that in this case the index is the group of senators talked to by Mary, which we can call g . Using the rule of Predicate Abstraction in (61), we can work out that the meaning of the second argument of *no* in (135) is (137). With the help of the lexical entries in (136) and (138), we arrive at (139) as the denotation of (135).

- (137) $\lambda u_{\langle s,e \rangle} \cdot \lambda s$. Mary talked in s to $u(s)$ before $\iota z(z = u(s)$ and z is a senator in s and g is suitably distal) was lobbied in s

²⁵ Examples like (134) will presumably have implications for our views on Principle C of the Binding Theory, since the LF configuration in (135) should be a violation of this principle. There is a *prima facie* conflict between (134), which seems to indicate that Principle C does not apply at LF, and the arguments in Fox 2000 that seem to indicate that Principle C must apply at LF.

- (138) $\llbracket \text{senator} \rrbracket = \lambda u_{\langle s, e \rangle} . \lambda s . u(s)$ is a senator in s
- (139) $\lambda s . \text{for no individual } x \text{ is it the case that there exists a minimal situation } s' \text{ such that } s' \leq s \text{ and } x \text{ is a senator in } s', \text{ such that there is a situation } s'' \text{ such that } s'' \leq s \text{ and } s'' \text{ is a minimal situation such that } s' \leq s'' \text{ and Mary talked in } s'' \text{ to } x \text{ before } \iota z (z = x \text{ and } z \text{ is a senator in } s'' \text{ and } g \text{ is suitably distal}) \text{ was lobbied in } s''$

This is intuitively satisfactory. Being suitably distal in this case means being distant from the speaker, since no monsters seem to be involved; but in the examples in (132) and (133), as noted in section 3.1, the proximal and distal features can be justified with respect to the point of view of the agent of the reported propositional attitude.

3.8. DONKEY ANAPHORIC DEMONSTRATIVES

Both bare and complex demonstratives can be donkey anaphoric, as we see in the following examples:

- (140) Every man who owns a donkey beats that and nothing else.
- (141) Every man who owns a donkey beats that donkey.

We have already seen in some detail how the current system analyzes sentences very like these, back in section 2.4.7. Recall that (71), repeated here as (142), involved the pronoun (143) and the variable assignment (144), giving the meaning (145) for the pronoun.

- (142) Every man who owns a donkey beats it.
- (143) $[\text{it } [R_2 \text{ } i_1]]$
- (144) $\left[\begin{array}{l} 1 \rightarrow \text{donkey} \\ 2 \rightarrow \llbracket \rrbracket \end{array} \right]$
- (145) $\lambda s . \iota x x \text{ is a donkey in } s$

Similarly, *that* in (140) will involve a deictic and a relational component that will be interpreted exactly as in (144). Instead of a regular NP, it will be associated with a null component contributing a truth-conditionally trivial property, as described in section 3.3. The only semantic difference between (140) and (142), then, is that in (140) the index, the previous occurrence of the word *donkey*, will be presupposed to be distal. It is unclear whether this means that the occurrence of the word itself is being presupposed to be distant, or whether (perhaps more naturally) the occurrence can be distal because the relevant

entities that fit its descriptive content are being presupposed to be distant.²⁶

I propose that (141) works in exactly the same way as (140), with the exception, obviously, that there is an overt NP. That is, the deictic and relational component will work exactly as in (144) and contribute the property “donkey,” redundantly in this case.

4. Two Previous Theories

4.1. A COMPARISON WITH KING 2001

4.1.1. *Introduction*

So much for the basic data and their treatment by the theory advocated in this article. I now move on to the examination of the only two other theories known to me that also set out to account for a broad range of data. I will begin with King 2001. Before examining the details of King’s (2001) theory of *that*, I will make a few remarks on the more general argumentation in Chapter 1 of his monograph to the effect that complex demonstratives must be quantificational. Readers are referred to Johnson and Lepore 2002 for further discussion of King’s approach.

4.1.2. *Arguments that complex demonstratives are quantificational*

Chapter 1 of King 2001 is devoted to making it plausible that complex demonstratives are generalized quantifiers. In the first part of the chapter, King points out uses of complex demonstratives that mean they cannot possibly be directly referential, such as the NDNS uses and quantifying-in cases; he then suggests that these cases could be dealt with by a theory according to which complex demonstratives were generalized quantifiers. This kind of consideration does not, of course, rule out the possibility that another kind of theory, such as the one given in the present article, could account for the data at least as well.

King also, however, points to three constructions that he claims provide more direct evidence that demonstratives are quantificational. He

²⁶ Note that *else* in (140) is also functioning as a donkey anaphor. That is, *nothing else* means something like “nothing other than that donkey.” If the hypothesis behind the current paper is correct, the fact that *else* can be used as a donkey anaphor means that it should also be able to be used in all the other ways that pronouns can be used, since the same machinery is put into service for all these uses. This seems to be correct. Here, for instance, is an example of *else* being used as a descriptive indexical: we see Benedict XVI ordaining a cardinal, gesture towards him, and say *No-one else is allowed to do that*. This could mean “Only Benedict XVI, at the moment, is allowed to do that.” But it could also mean “Only the Pope, in general, is allowed to do that.”

notes, firstly, that complex demonstratives can embed the problematic pronouns in Bach-Peters sentences, so that parallel to the classic (146) (Bach 1970) we also have (147).

- (146) Every fighter who shot at it hit the MiG that was chasing him.
 (147) Every friend of yours who studied for it passed that math exam she was dreading.

(Note that there have to be different math exams for each friend in order to ensure that we have a genuine Bach-Peters reading here.) King says (2001: 12), “The most plausible explanations of the acceptability and semantics of such sentences assume that the phrases containing the anaphoric pronouns are both quantifier phrases.” We are thus supposed to draw the conclusion that complex demonstratives are quantifier phrases. Although he does not cite them, it is plausible to suppose that King here has in mind the accounts of Bach-Peters sentences of Keenan 1972, Higginbotham and May 1981, and May 1989, which involve quantification over pairs, and which do indeed require that the two DPs embedding the pronouns be quantificational. Note, however, that the most empirically adequate of these accounts, Higginbotham and May 1981, requires that the two quantifier phrases merge to form a complex quantifier, and that this requires a special mechanism. There has always been another tradition in the analysis of Bach-Peters sentences that does not require this mechanism, and does not involve quantification over pairs, but which says instead that the first of the pronouns is a D-type pronoun (Karttunen 1971, Jacobson 1977, 1991, 2000, Elbourne 2001a). This tradition, which is arguably more satisfactory than the other one since it does not require any special mechanism, does not require that the DPs embedding the pronouns be quantificational. I do not think, then, that much weight can be placed on this argument for complex demonstratives being quantificational.

A second construction that King suggests might afford some evidence for the view that complex demonstratives are quantifier phrases (QPs) is antecedent-contained deletion (ACD) (King 2001: 17). He cites May 1985 for the claim that QPs undergo movement at LF and referring expressions do not. One environment where QR is arguably obligatory in order to produce a well-formed structure is ACD. So (148) is not interpretable unless the QP moves to create a structure like (149). (Angle brackets indicate elided material.)

- (148) Tiger birdied every hole that Michael did.
 (149) [every hole that λ_2 Michael did <birdy t_2 >] λ_2 [Tiger did birdy t_2]

Now we note that ACD is possible with *that*-phrases too:

(150) Tiger birdied that hole that Michael did.

This might give us reason to believe that *that*-phrases are QPs.

However, as King notes himself in a long endnote (2001: 175, note 16), May's (1985) claim that referring expressions never undergo QR has been challenged. In addition to the sources cited by King himself on this point, I would draw attention to Sag's 1976 doctoral thesis, where it is pointed out that bare argument ellipsis can be naturally analyzed if we assume that (151) has an LF (152):

(151) I called John, and the teacher too.

(152) [John λ_2 [I called t_2]] and [the teacher $< \lambda_2$ [I called t_2] $>$]

For further relevant discussion, see Heim 1993, where it is argued convincingly that even bound pronouns must sometimes QR. For present purposes we can note that ACD provides evidence in favor of a quantificational view of complex demonstratives only if the now controversial view of May 1985 is correct.

The last construction discussed by King in this regard is weak crossover (WCO) (King 2001: 18–19). Following much previous literature on WCO, he claims that WCO effects arise when the lower DP in sentences like (153)–(158) is a QP but not when it is a referring expression. He cites the following examples where he alleges we experience WCO effects:

(153) His mother loves every man.

(154) His mother loves some man.

(155) His mother loves the man with the goatee.

(156) His mother loves no man.

By contrast, King claims we do not experience WCO effects in the following sentences, where the lower DPs are plausibly referential:

(157) His mother loves John.

(158) His mother loves him [GESTURE].

We now observe, according to King, that there is WCO with *that*-phrases:

(159) His mother loves that man with the goatee.

So we conclude that *that*-phrases must be QPs since they pattern with QPs according to this test.

At this point I must raise a question about King's data. (159) does not seem ungrammatical to me on the relevant reading, or to any of several native speakers whom I have asked about it. The same goes for (155). The judgments I have elicited, then, would tend to make one suspect that complex demonstratives and definite descriptions were not quantificational. In the previous and subsequent literature on WCO, too, it is assumed, as far as I know, that complex demonstratives and definite descriptions do not cause WCO. Lasnik and Stowell (1991) cite the following example as involving no WCO violation:

(160) This book I would never ask its author to read, but that book I would.

We should also note the judgments given on the following example of Jacobson's (2000: 93):

(161) The man who loves her saw Mary/the woman with red hair/*every woman with red hair.

Harley (2002: 661) says that (162) involves no WCO violation on the relevant reading:²⁷

(162) His mother loves the boy that Sue dislikes.

And King himself (2001: 176, note 20) reports judgments on slightly different examples that are compatible with the ones I have encountered from informants and in the literature: he reports that (163) and (164) do not give rise to WCO effects, whereas (165) does.

(163) Someone who liked her asked that woman wearing a red jacket to the dance.

(164) Someone who liked her asked the woman wearing a red jacket to the dance.

(165) Someone who liked her asked every woman wearing a red jacket to the dance.

King does not have an account of why (163) and (164) should be different from (155) and (159). I think the best we can say here, according full respect to King's judgments on (155) and (159), is that a confused

²⁷ Harley comments (2002: 661) that proper names and definite descriptions in object position must not have to undergo QR, for if they did WCO violations would result. Furthermore, "The self-evident reason that they do not undergo QR is that definite DPs are not, in fact, quantificational, and hence do not need to move to be appropriately interpreted." As far as I can see, this position is widespread in the literature on WCO.

and variable picture is presented by the data regarding possible WCO caused by definite descriptions and complex demonstratives. But that would mean that it would be unwise to base any conclusions on these data concerning the semantic type of these kinds of DPs.²⁸

4.1.3. *King's theory of complex demonstratives*

King assigns great importance to speaker intentions in the semantics of complex demonstratives. He postulates that there are two types of relevant speaker intentions (2001: 27–31):

1. Perceptual intentions. A speaker can intend to talk about a particular object that they are perceiving or have perceived. This will give rise to supplied properties like being identical to b (abbreviated ' $=b$ '), where b is the object in question.
2. Descriptive intentions. A speaker can intend to talk about whoever or whatever fits a certain descriptive condition; there is no perception of the object.

Speakers with these intentions will supply the corresponding properties at strategic points in the expansion of sentences involving complex demonstratives.

King's favored theory of complex demonstratives²⁹ is called T2. According to T2, the basic contribution of *that* to the semantics of a sentence is the following (2001: 43):

(166) ___ and ___ are uniquely ___ in an object x and x is ___

The first and last slots are to be filled in by the properties denoted by the NP and VP respectively; *that* is thus like other quantifiers, in that it takes the NP and VP sets and contributes a relation between them.

²⁸ Before leaving this topic, however, we should note that it would be theoretically rather mysterious if definite descriptions and complex demonstratives were to give rise to WCO effects. Accounts of WCO assume that the pronoun in question is syntactically or semantically bound by the relevant DP. As Jacobson (2000: 93) observes in connection with (161), there is no obvious reason why this should be the case for the relevant reading of *The man who loves her saw the woman with red hair*, even assuming that definite descriptions are quantifier phrases, because the pronoun *her* could just be a referential pronoun that referred to the red-headed woman in question. It would not have to be bound, syntactically or semantically, in order for the relevant interpretation to be obtained: it could have an index separate from that on, or bound by, *the woman with red hair* that just happened to pick out the same woman. Like reasoning applies to complex demonstratives. See Harley 2002: 661, footnote 2, for further discussion.

²⁹ See section 3.3 for discussion of his views on unifying bare and complex demonstratives.

When a speaker at w, t has a perceptual intention whose object is b , the middle slots are filled in as follows:

- (167) ___ and = b are uniquely jointly instantiated in w, t in an object x and x is ___

This semantics is appropriate, then, for traditional examples like (168). The sentence turns out to mean the same as (169), if it is spoken in w at t .

- (168) That animal [GESTURE AT FLOSSY] is a donkey.
 (169) *animal* and = *Flossy* are uniquely jointly instantiated in w, t in an object x and x is *a donkey*.

Note how the properties supplied by perceptual intentions on King's theory resemble the contributions of the indices R and i on my theory.

When a speaker has a descriptive intention, the intention determines some property O^* , and the middle slots are filled in as follows:

- (170) ___ and O^* are uniquely jointly instantiated in an object x and x is ___

For example, T2 deals with the NDNS case (171) as in (172). The speaker has a descriptive intention, the relevant descriptive condition being already expressed in the NP; the second slot merely repeats the first, therefore, in this case.

- (171) That hominid who discovered how to start fires was a genius.
 (172) *Being a hominid who discovered how to start fires* and *being a hominid who discovered how to start fires* were uniquely jointly instantiated in an object x and x was a genius.

And here is how T2 handles a case of quantifying in:

- (173) Most avid snow skiers remember that first black diamond run they attempted to ski.
 (174) For most avid snow skiers x : *first black diamond run x attempted to ski* and *first black diamond run x attempted to ski* are uniquely jointly instantiated in an object y and y is such that x remembers y .

T2 can, then, go a long way towards handling cases that are outside the grasp of the traditional direct reference approaches.

One might ask why the instantiation of properties is limited to being in the world of the utterance in cases of complex demonstratives used with perceptual intentions. That is, why are we limited to schemata like (175), as opposed to (176), especially since the restriction to w, t does not appear in the cases of descriptive intentions?

- (175) ___ and = *b* are uniquely jointly instantiated in *w, t* in an object *x* and *x* is ___
- (176) ___ and = *b* are uniquely jointly instantiated in an object *x* and *x* is ___

King maintains that this restriction is necessary because of cases like the following (King 2001: 59):³⁰

- (177) (*At w, t I look at b and say:*)
That senator from California could be a crook.

The argument goes as follows. We expect a reading of (177) that has reconstruction of the subject, as in the following LF:

- (178) [could [that senator from California be a crook]]

T2 gives us the truth conditions in (179), which seem roughly correct.

- (179) For some possible world *w'*: *senator from California* and = *b* are uniquely jointly instantiated in *w, t* in an object *x* and *x* is a crook in *w'*

Note that if the restriction to the first two properties' being jointly instantiated in the world and time of utterance were removed, one would presumably be able to obtain truth conditions like the following from a theory in the spirit of King's:

- (180) For some possible world *w'*: *senator from California* and = *b* are uniquely jointly instantiated in *w'* in an object *x* and *x* is a crook in *w'*

But this is the wrong result. It incorrectly predicts that the sentence will share a reading with (181):

- (181) *b* could be a crooked senator from California.

The restriction to the world and time of utterance seems to be necessary, then, in cases of perceptual intentions.

³⁰ I change the example slightly to provide a clearer instance of the kind of scope ambiguity claimed by King. His own example, *It is possible that that senator from California is a crook*, has the complex demonstrative embedded in a position where it is arguably unable to take scope over *possible*. Compare *It is possible that no senator from California is a crook*, which does not have a reading "No senator from California can be a crook," as it would if the subject of the embedded sentence could scope out.

4.1.4. *Possible problems for King's theory*

Thus King's theory. I now move on to raising some possible problems for this approach.

The first problem concerns occurrences of complex demonstratives that appear to be bound. How would T2 handle an example like (134), repeated here as (182)?

(182) Mary talked to no senator before that senator was lobbied.

It is hard to see how this could be done. A perceptual intention would not do, since *that senator* in this example does not refer to any one senator. And no general descriptive intention of the sort envisaged in King 2001 will help us out. What we need, sticking as closely as possible to T2, is something like the following:

(183) There is no senator x such that Mary talked to x before: *senator* and $= x$ were uniquely jointly instantiated in w, t in an object y and y was lobbied.

In other words, contrary to T2 as it stands, we need something like a bindable index within the semantics and probably the syntax of complex demonstratives, as provided by the theory advocated in the current article.

It will presumably be possible to emend T2 so as to incorporate something like this. Indeed an anonymous reviewer for *Linguistics and Philosophy*, commenting on an early draft of the current article, suggested changing (184), the relation expressed by *that* in T2, to (185):

(184) ___ and ___ are uniquely ___ in an object x and x is ___

(185) ___ and ___ are uniquely ___ in an object x and $x = y$ and x is ___

The new variable y , the reviewer suggests, could be assigned the demonstrated object in referential uses and bound in bound uses. In cases of NDNS and quantifying in, y could be made identical to x , providing a truth-conditionally trivial property:

(186) ___ and ___ are uniquely ___ in an object x and $x = x$ and x is ___

There will presumably have to be some special rule or procedure to accomplish this last effect, leaving this revised theory open to the charge of being slightly *ad hoc*, but it would at least deal with bound demonstratives as well as with the cases dealt with by T2. It might very well be possible to devise other treatments along these lines.

A second area in which T2 might require extension or modification is its treatment of contrasts like the one in Kaplan 1989a given above as (124), repeated here as (187). I have changed *this man being pointed at* to *that man being pointed at*, since T2 is formulated to deal with *that*.

(187) (*Charles is from Charleston, West Virginia. Paul is from St. Paul, Minnesota. δ is a pointing by the speaker in the direction of Paul, who is seated on a chair in front of the speaker.*)

Look over here. [THE GESTURE δ IS INITIATED NOW AND HELD THROUGHOUT THE NEXT SENTENCE.] If Charles and Paul had changed chairs, then

- a. the man being pointed at would be from Charleston.
- b. that man being pointed at would be from Charleston.

As far as I can see, T2 as it stands leaves open the possibility of filling in the second slot in (166) by means of a descriptive intention that would contribute a property identical to the one expressed by the NP, as is the case with the NDNS example in (172). So the following analysis should be available for (187b):

(188) If Charles and Paul had switched chairs, then *being a man being pointed at* and *being a man being pointed at* would be uniquely jointly instantiated in an object x and x would be from Charleston.

In other words, T2 seems to predict that there will be a true reading of (187b) parallel to the reading available for (187a).

What could be done to overcome this problem? The only way I can think of to make the correct prediction about (187b) while also dealing with examples like (123), (126) and (127), is, as I explained in section 3.5, to make use of Nunberg's (1993) apparatus of deictic and relational components and his (1979) theory of the permitted relations between indexes and interpretations. It would be possible, I presume, to take T2 and insert all of this apparatus, but it would be a rather radical change. Indeed, it would presumably yield a theory very much like the one in the current article, the only difference being that in this new theory complex demonstratives would be generalized quantifiers and not individual concepts. I would welcome the emergence of such a theory; the question would then be whether there was any reason to prefer the version with individual concepts over the version with generalized quantifiers.

This last question is an extremely difficult one, and I fear I cannot address it adequately within the confines of the current article. The

phrase *an object* in (184) suggests that T2 analyzes complex demonstratives as existential quantifiers of a certain kind. The theory is, then, very reminiscent of Russell's (1905) analysis of the definite article. Now there are arguments against analyzing definite descriptions as existential quantifiers. If the majority of the judgments on WCO that we surveyed in section 4.1.2 are to be trusted, the lack of WCO violations by definite descriptions in object position indicates that they are not quantifiers at all; but then again, King (2001) disagrees with those judgments. There is also another argument, made by Heim (1991), Elbourne (2005b: 109–112) and Kripke (2005: 1023), to the effect that the Russellian theory of definite descriptions predicts that (189) will have a reading equivalent to (190), which is not the case:

- (189) If the ghost in my attic starts to make scary moaning noises, my boring guests will leave.
- (190) If there is exactly one ghost in my attic and it starts to make scary moaning noises, my boring guests will leave.

(189) can only be read as presupposing that there is exactly one ghost in my attic, whereas (190) leaves the possibility open. The analogous criticism of T2 would point out that, on the face of it, T2 predicts that (191) will have a reading (192), exactly equivalent to (190), and that this does not seem to be the case.

- (191) If that ghost in my attic starts to make scary moaning noises, my boring guests will leave.
- (192) If *ghost in my attic* and *ghost in my attic* are uniquely jointly instantiated in an object x and x starts to make scary moaning noises, my boring guests will leave.

Neale (2005a: 846) has briefly argued against this objection, but it is still the focus of ongoing research by people on both sides of the argument. For current purposes, we should note that these attempted criticisms of the Russellian theory of definite descriptions transfer over quite naturally to King's (2001) theory of complex demonstratives. If they are ultimately successful in the one area, it is likely that analogous arguments will be able to be made in the other. The argument is basically the one between the Russellian and Fregean theories of definite descriptions, and I am not about to resolve it here. See section 2.2 above and, in more detail, Elbourne 2005b: 98–112 for my view.

To summarize, King's (2001) T2 is an elegant theory that deals with a large amount of the data concerning complex demonstratives. I hope to have shown, however, that it could profitably be altered in directions that would assimilate it to the theory defended in the current

article, in order to deal with cases of bound complex demonstratives and Kaplan's (1989a) classic data concerning direct reference effects. I have not tried to pronounce on whether a quantificational theory of complex demonstratives will ultimately be possible, but have noted that ongoing work on the existence entailments of definite descriptions will probably shed light on this question.

4.2. A COMPARISON WITH ROBERTS 2002

4.2.1. *Introduction*

Roberts (2002) has already set out a theory within a dynamic framework that is in some respects similar to the one defended in the present paper. She too argues that complex demonstratives are basically species of definite descriptions and come with presuppositions about existence, uniqueness and proximal/distal features. To a certain extent, then, the present paper is merely to illustrate that the basic idea can be cast within a situation-semantic framework at least as well as within a dynamic one, rounding out the comparison between these theories begun by Heim 1990 and continued by Elbourne 2005b. That said, I do think that the theory in the current article is preferable in certain respects to the theory in Roberts 2002.

4.2.2. *Roberts's theory of demonstratives*

Roberts (2002, 2003) assumes the basic theoretical framework of Heim 1982, which I will assume to be at least broadly familiar to my readers. Briefly, in Heim 1982 the semantic value of an expression is its Context Change Potential, a function that takes a state of the context and returns another one. The context is a set of propositions that speaker and hearer hold in common, the *common ground*, combined with a domain of familiar discourse referents. A discourse referent is not an actual thing in the world, but, roughly speaking, a mental entity, represented by a natural number, that can be introduced to stand for one. Roberts (2002: 112, 2003: 297–306) introduces a taxonomy of ways in which discourse referents might be familiar: strong familiarity obtains when a discourse referent has been introduced by the utterance of a preceding DP, typically an indefinite; and weak familiarity obtains when the existence of the entity referred to is evident to the participants in the discourse, for example by direct perception or deduction from things that have been said, even though it has not been mentioned.

Roberts concentrates on the presuppositions of demonstratives, which in the framework she is using are the conditions that the context must fulfill in order for the Context Change Potential to be defined. There are in fact two sets of presuppositions for demonstratives; if either set

of conditions applies, the use a demonstrative is licit. The first set, in an informal version, reads as follows (Roberts 2002: 117):³¹

(193) *Presuppositions of Demonstrative DPs*

Given a context C , use of a (non-)proximal demonstrative DP_i presupposes (a) that there is an accompanying demonstration δ whose unique demonstratum, correlated with a weakly familiar discourse referent by virtue of being demonstrated, lies in the direction indicated by the speaker at a (non-)proximal distance to the speaker, and (b) that the weakly familiar discourse referent for the demonstratum is the unique familiar discourse referent contextually entailed to satisfy the (possibly liberalized) descriptive content of DP_i .

These, then, are the presuppositions associated with demonstratives in what I have been calling their canonically referring use. If these conditions are fulfilled, the semantic contribution of the demonstrative is just the weakly familiar discourse referent in question, handled in a Heimian dynamic system. The second set of presuppositions are those associated with what Roberts (2002: 122–123) calls discourse deictic demonstratives:³²

(194) *Presuppositions of Discourse Deictic Demonstrative DPs*

Given a context C , use of a (non-)proximal demonstrative DP_i presupposes (a) that there is an accompanying linguistic constituent δ that is (non-)proximal to the occurrence of DP_i ,³³ and (b) that the discourse referent introduced into the semantics by

³¹ I have changed Roberts's 'NP' to 'DP' for the sake of consistency with the rest of the current article.

³² Unlike (193), which is a quotation, (194) is my summary of the passage in question, adhering as closely as possible to the format of (193). The footnotes in (194) give the quotations from Roberts's text upon which I have based the corresponding parts of my summary. Roberts does give a formal version of the presuppositions of discourse deictic demonstratives in her (58^d) (Roberts 2002: 123). But (58^d) seems to be self-contradictory: $g(j)$ is supposed to fit the descriptive content Desc of the demonstrative NP_i , according to condition (ii), which makes it sound like the ultimate referent of the demonstrative; but then in condition (iii) the definition of the function **discourse-referent** makes it necessary for $g(j)$ to be a linguistic constituent. So the definition would work only in cases where the speaker is trying to refer to a linguistic constituent. For this reason, I have not tried to base my summary directly on (58^d), but on the summary and discussion in the preceding text, which seems clear.

³³ Roberts 2002: 122–123: "The proximity associated with the pronoun may be helpful in picking out an antecedent NP, based on its relative proximity in the text to the time of utterance of the demonstrative [...] That is, we use the proximity presupposition in the demonstrative to pick out (demonstrate) a maximally salient NP or other constituent."

δ is the unique familiar discourse referent contextually entailed to satisfy the (possibly liberalized) descriptive content of DP_i .³⁴

If these conditions are fulfilled, the semantic contribution of the demonstrative is just the discourse referent in question, the discourse referent contributed to the semantics by the antecedent linguistic constituent δ . Although she does not go through examples in detail, Roberts (2002: 122) evidently intends this formulation to deal with all examples where demonstratives are used anaphorically to a preceding DP or as bound variables.

4.2.3. Possible problems for Roberts's theory

I believe there are two kinds of problems with Roberts's theory, those that stem from details of her particular formulation, and those that would affect any attempt to treat demonstratives as definites within a contemporary dynamic semantics of the kind she uses.

As it is formulated, at least, it is difficult to see how Roberts's theory could deal with cases of descriptive indexicals and deferred ostension, like the ones analyzed in section 3.4. The only case apart from canonically referring demonstratives that Roberts explicitly provides for is the case of discourse deixis. But descriptive indexicals and deferred ostension fall into neither of these two categories.³⁵ It is not obvious how Roberts's theory should be changed so as to include a provision for these cases; adding the whole apparatus of Nunberg 1993, as recommended in the current article, would be a major revision.

A second interesting quirk of Roberts's formulation is that her semantics seems to have difficulty dealing with (195), a variant of the well-known example (196).

(195) If a bishop meets a bishop, he blesses that bishop.

³⁴ Roberts 2002: 123: "there is a slippage of the relationship between the demonstrative and its demonstratum, so that instead of presupposing the equation of the discourse referent for the demonstrative with that for the demonstratum itself, as in ([193]), it is equated with the discourse referent introduced by the demonstratum, its 'referent'." Note that in this passage "discourse referent for" is used in two different ways: in the first instance, it seems to mean "discourse referent that is the contribution to the semantics of," while in the second instance it seems to mean "discourse referent that evaluated in context yields." For the uniqueness condition, see clause (ii) of (58^d) (Roberts 2002: 123).

³⁵ An anonymous reviewer for *Linguistics and Philosophy* says that Roberts's theory of discourse deixis covers cases of deferred ostension, but I cannot see any textual evidence of this. It is made quite clear, for example in the quotations given in footnote 33 and in the definition of **demonstration_in_discourse** in Roberts 2002: 123, that discourse deixis covers only cases in which a discourse referent of a distinct linguistic constituent is reused as the discourse referent of a demonstrative.

(196) If a bishop meets a bishop, he blesses him.

It was noted by Hans Kamp (reported in Heim 1990) that D-type theories of donkey anaphora faced problems with sentences like (196). D-type theories, broadly construed, interpret donkey pronouns as definite descriptions; and use of a definite description was supposed by early D-type theorists such as Cooper (1979) to entail uniqueness of the referent with respect to the descriptive content of the NP. In (196), however, there is no evident way that the pronouns can be interpreted as definite descriptions, given this constraint: we cannot have ‘the unique bishop blesses the unique bishop,’ because there are two bishops in each case described; nor can we have ‘the unique bishop who meets a bishop blesses the unique bishop,’ since there are two bishops who meet bishops in each case, meeting being a symmetric relation. This, therefore, seems like a problem for the D-type analysis of donkey anaphora. Dynamic theories, on the other hand, generally have no difficulties with sentences like these, since they just interpret the pronouns as different bound variables. Roberts’s theory, however, does seem to run into trouble: although Roberts assumes a Heimian dynamic semantics, she also reintroduces the uniqueness requirements that are thought to characterize definite descriptions in the non-dynamic tradition. (See clause (b) of (193) and (194).) Thus when we come to interpret the occurrence of *that bishop* in (195) the current theory predicts that there will be presupposition failure, since the discourse referent used, whichever one we choose, will not be the unique familiar discourse referent contextually entailed to be a bishop. This is not the case, however: there is no presupposition failure and the sentence is quite natural.³⁶

Before we leave the topic of Kamp’s bishop sentences, we should note that Roberts (2003: 333) does attempt to deal with (196), the variant involving only pronouns. Is there any chance that her explanation here might be extended to deal with (195)? In order to understand her explanation, we must be aware of the presuppositions that she associates with the use of pronouns (Roberts 2003: 330), which are given in (197):

(197) *Presuppositions of Pronouns*

Given a context C , use of a pronoun Pro_i presupposes that it has as antecedent a discourse referent x_i , which is:

³⁶ The theory advocated in the present article, on the other hand, can avail itself of the solution to the problem of (195) proposed in Elbourne 2003, 2005b. The D-type solution proposed in these works makes crucial use of situation semantics and hence would not generalize to dynamic theories unless they were to introduce situation semantics in addition to their own dynamic devices, which would surely be undesirable on grounds of theoretical economy.

- a) weakly familiar in C ,
- b) salient in C , and
- c) unique in being the most salient discourse referent in C which is contextually entailed to satisfy the descriptive content suggested by the person, number and gender of Pro_i .

Given this definition, the analysis of (196) in Roberts 2003: 333 goes as follows. The two occurrences of *a bishop* in the antecedent will be salient to different degrees when we come to find a discourse referent to be the interpretation of *he*; we can assume, following work in Centering theory (Grosz et al. 1995), that the subject is more prominent than the object. Because of clause (c) in (197), this means that the discourse referent contributed by the subject of the antecedent must be used for the interpretation of *he* in the consequent. It would have to be used for *him*, too, but the fact that a reflexive pronoun is not used prevents this; this syntactic fact overrides clause (c) in (197) in the case of the object of the consequent, and the discourse referent contributed by the object of the antecedent has to be used instead. As Roberts herself puts it (2003: 333), “Use of *him* instead of a reflexive pronoun for the direct object rules out taking the antecedent clause subject as antecedent for *him* as well [...], amounting to an additional implicated domain restriction in the instantiation of [clause (c) of (197)].”

What are we to make of this, and would it be possible to extend this explanation to help out in the analysis of (195)? Note first that in order to be able to analyze (195) by these means, the uniqueness presuppositions currently part of the presuppositions of demonstratives would have to be removed and the salience presuppositions currently associated only with pronouns would have to be put in their place. This would be no small change, therefore, and it might have consequences for other parts of Roberts’s theorizing. But suppose, for the sake of argument, that such a change could be made with no ill effects elsewhere. Would we have a viable analysis of bishop sentences? I believe we would not, for the following reason. As Roberts acknowledges (2003: 333), the saliency conditions on pronouns would seem to force both pronouns in (196) to have to be interpreted by the discourse referent of whichever antecedent is most salient. The use of this discourse referent for the first pronoun would presumably not make it any less salient, and it would seem to have to be used for the second pronoun too. Only Binding Theory intervenes and overrides this preference, in the analysis as it stands. This predicts, then, that in an example where Binding Theory did not place any constraints on the interpretation of the second pronoun, the same discourse referent would have to be used for the interpretation of both. The prediction is, then, that (198) should

only be able to mean “. . . he blesses his own buskins,” since Principle B does not prevent genitive pronouns in the object being covalued with the subject.

(198) If a bishop meets a bishop, he blesses his buskins.

This is not the case, however. This sentence could equally well describe acts of blessing one’s own buskins or acts of blessing one’s fellow bishop’s buskins. I conclude, therefore, that the theory of bishop sentences in Roberts 2003 does not account for all the relevant data, and that there is no point, therefore, in extending it to encompass bishop sentences involving demonstratives.

I now move on to some problems that I think would face any attempt to deal with demonstratives in a dynamic framework like that adopted by Roberts. As noted in Elbourne 2005b: 20, dynamic theories like those of Heim 1982, Groenendijk and Stokhof 1990 and van Eijck and Kamp 1997 have problems with examples like (199), which is taken from Jacobson 2000:

(199) (*A new faculty member picks up her first paycheck from her mailbox. Waving it in the air, she says to a colleague:)*
Do most faculty members deposit it in the Credit Union?

As Jacobson (2000) notes, *it* has a covarying reading here. The sentence means something like, ‘Do most faculty members deposit their paycheck in the Credit Union?’ Dynamic theories of the type mentioned deal with examples of covariation without c-command, such as donkey anaphora, by supposing that certain antecedents, normally indefinite DPs, can introduce discourse referents that can function as bound variables in the interpretation of the covarying expression. (199) poses a problem for dynamic theories, then, in that we have covariation without c-command, but there is no antecedent expression that could possibly introduce into the semantics a discourse referent suitable for the interpretation of *it*, since *it* has no linguistic antecedent whatsoever. There could of course be a weakly familiar discourse referent *for the particular paycheck that is waved in the air*; but this is no good to us, since we need something that can function as a bound variable. In the present context, then, we should note that there are examples like (199) that involve demonstratives instead of pronouns, as we see in (200).

(200) (*A new faculty member picks up her first paycheck from her mailbox. Waving it in the air, she says to a colleague:)*
Do most faculty members deposit this in the Credit Union?

Exactly the same problem arises here, and it is difficult to see how a dynamic theory of the kind under discussion could handle it.

A similar problem is posed by certain classic paycheck sentences, such as (201) from Cooper 1979:

- (201) John gave his paycheck to his mistress. Everybody else put it in the bank.

The second sentence here means ‘Everybody else put their paycheck in the bank,’ with a bound variable reading. Again we have a pronoun displaying a covarying reading without being c-commanded at any linguistic level by anything that could bind it; but once more there is nothing that normal dynamic semantics methods can do, since there is no antecedent indefinite to contribute a discourse referent that could be used in the interpretation of the pronoun. The intuitive antecedent, of course, is *his paycheck*; but this cannot contribute a discourse referent in the requisite fashion, since it is a definite. Once again, then, we should note in the present connection that similar examples arise with covarying demonstratives, as we see in (202), where slight contrastive stress should be placed on *that* and *flowers*:

- (202) John gave his paycheck to his mistress. Every other man put that in the bank and gave flowers to his mistress.

The example is interpreted in the same way as the previous one. It is difficult to see how a theory of demonstratives as definites embedded in Heimian dynamic semantics could deal with this.³⁷

I conclude, then, that the theory of demonstratives proposed in the current article has a greater empirical reach than the theory given in Roberts 2002.

5. Conclusion

I conclude that a theory that sees demonstratives as individual concepts in a situation semantics is entirely viable. The particular formulation suggested in this article, which incorporates a version of the indexical apparatus of Nunberg 1993, may even have some empirical advantages over current rival theories.

³⁷ An anonymous reviewer points out that Roberts talks about paycheck sentences in Roberts 2004: 541. There is only a brief mention of paycheck sentences here, however, and I do not see how what is said would help to overcome the difficulties just noted.

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