SOME APPROACHES TO COMPLEX DEMONSTRATIVES
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Complex demonstratives, nominal phrases of the form ⌜that NP⌝, have been a recurrent topic in linguistics and philosophy of language. In this paper, I review a number of analyses that have been proposed for these expressions and discuss questions that they leave unanswered.

1. Kaplan (1889)

One of the earliest attempts at a systematic account of demonstratives is made in Kaplan (1889). This theory is based on two principles, which Kaplan takes to be obvious.[1]

(1) The referent of a demonstrative depends on the associated demonstration
(2) Demonstratives are directly referential

The first principle says that demonstratives are not complete without some sort of demonstration. The second says that the contribution a demonstrative makes to the proposition expressed by the sentence containing it is not a Fregean sense, but an object, namely the very object picked out by the demonstration accompanying the use of the demonstrative. As an example, suppose that I point to John, who is wearing a hat, and utter (3).

(3) That man wearing a hat is sick

I will be expressing the singular proposition that John is sick. The truth-value of this proposition in some hypothetical situation will depend only on whether John is sick in that situation, not on who wears a hat, for example. Thus, demonstratives in Kaplan's theory are similar to proper names (cf. Kripke 1982): they refer directly, without the mediation of a Fregean sense, and consequently, they are rigid designators, denoting the same object in every possible world.

Such is not the case with definite descriptions. These do not refer directly, nor are they rigid designators. The difference between definite description and demonstratives is brought out dramatically in the following example.[2] Suppose John sits to my right and Mary to my left, and I point to John, uttering (4).

(4) If John and Mary had switched places, the person being pointed at would be a woman

Intuitively, I am speaking truthfully. The reason seems to be the following. What (4) says is roughly that for any world w which is exactly like the real world except that in w, John sits to my left and Mary to my right, the person being pointed at in w is a woman in w (cf. Lewis 1973). Well, it is obvious that in such a world, I will be pointing at Mary, not John, and since that world is exactly like the real world in all other respects, Mary is a woman in it. Thus, (4) is true.

Now suppose that in the same scenario, I utter (5) instead of (4).

(5) If John and Mary had switched places, that person being pointed at would be a woman

Most agree that I am speaking falsely in this case. And the intuition here is that John's gender has nothing to do with where he sits. Thus, (5) seems to say that for any world w which is exactly like the real world except that in w, John sits to my left and Mary to my right, John is a woman in w. And this is clearly false. Thus, we

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[1] See Kaplan (1889: 492). The original formulation of the two principles is different, as they are intended to cover all indexicals, not just demonstratives. As we are only concerned with demonstratives, I make the modification to keep the discussion short and simple.

[2] This is a variant of an example given by Kaplan himself (cf. Kaplan 1889: 515-516). Similar variants have been used by other people to make illustrate the same point that Kaplan makes (cf. Roberts 2002: 94-95, Wolter 2006: 14-15).

have evidende that the demonstrative ⌜that person being pointed at⌝ in (5) refers directly to John, who is being pointed at by the speaker in the actual context of use. This follows from (1) and (2).

That, in brief, was Kaplan's theory of demonstratives. Now it is obvious that this theory captures only a small subset of the data on demonstratives, namely those used with a demonstration.[3] There are clearly other uses of ⌜that NP⌝ which are not and cannot be accompanied by any demonstration. Here are some examples.

(6) *Anaphoric uses*
I met a man. That man wore a hat.

(7) *Donkey uses* (cf. Abbott 2002)
Every farmer who owns a donkey beats that donkey

(8) *Bound uses* (cf. Swanson 2005)
Professor White hopes that each professor will nominate that professor's best student

Data such as these motivate Robert's (2002) theory, which purports to account for the direct reference use of demonstratives observed by Kaplan and also for the anaphoric, donkey and bound uses of the same.

2. Roberts (2002)

The basic idea of Robert's (2002) theory is that demonstratives are definite descriptions with some additional presuppositional content. Her theory of definite descriptions starts out from Heim's (1882) dynamic model, which I will assume is familiar to the readers of this paper. Briefly, Heim identifies the task of specifying the meaning of a (declarative) sentence with that of specifying how (the utterance of) that sentence changes the common ground of the speech participants. This common ground is conceived as shared knowledge about a list of abstract individuals called the discourse referents. In Heim's (1882), it is modeled as a file containing indexed cards with information written on them. Card n represents the n-th discourse referent. Henceforth, we use 'n' with systematic ambiguity to mean either the card indexed n or the n-th discourse referent which it represents. Language is related to the world as follows: a sentence is true (in w) iff the file that obtains berfore and after its utterance is true (in w), and a file is true (in w) iff for each of its card, there is at least one entity (in w) who fits the description on that card. What Heim says about definite descriptions is this.

(9) $[\text{the NP}]_n$ refers to n iff
(a) n is familiar, i.e. the file already contains n by the time $[\text{the NP}]_n$ is uttered
(b) the information written n allows the inference that n is NP

As an illustration, witness the contrasts in (10). Consider all of the sentences to have been uttered out of the blue, i.e. assume the initial file to be empty.

(10) a. # The dog_2 came in
b. A dog_2 came in. The animal_2 sat down.
c. # A dog_2 came in. The chiwawa_2 sat down.

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[3] Kaplan says "[w]ords and phrases which have demonstrative use may have other uses as well, for example, as bound variable or pronouns of laziness (anaphoric use)" (cf. Kaplan 1889: 524). Thus, it might seem possible to say that if an expression of the form ⌜that NP⌝ is used without a speaker demonstration, it would not count as a demonstrative in Kaplan's sense, and thus would not be of concern to his theory. However, if it is a matter of definition that demonstratives are expressions associated with a demonstration, it would be pointless to formulate a principle which requires demonstratives to be associated with a demonstration, which is what Kaplan does. In any case, the fact remains that some uses of ⌜that NP⌝ are not captured by Kaplan's theory, and this is the substantive issue. Whether this fact results from the descriptive inadequacy of the theory, or from its narrow definition of terms, is of no real importance.

(10a) is infelicituous because by hypothesis, the file does not contain 2 when the definite is uttered. (10b) is fine because after the utterance of the first sentence, 2 has been introduced into the file with 'is a dog' written on it. Thus, it is familiar by the time ⌜the animal⌝ is uttered, and since 'is a dog' entails 'is an animal', all conditions are fulfilled. Lastly, (10c) is bad because 'is a dog' does not entail 'is a chiwawa.'

Roberts (2003) proposes a theory of definite descriptions which has the features of Heim's theory plus something else. Here is an informal reconstruction of what she says.

(11) $[\text{the NP}]_n$ refers to n iff
  (a) n is weakly familiar
  (b) the information written on n allows the inference that n is NP
  (c) n is the only discourse referent that is NP

Thus, $[\text{the NP}]_n$ refers to the n-th discourse referent only if that discourse referent is unique among the discourse referents in being NP. Furthermore, Roberts weakens the notion 'familiar' to 'weakly familiar'. What that means is that if the existence of an entity can be infered from what has been said, the discourse referent corresponding to that entity can already be considered familiar.[4] Examples which support Roberts' assumtions are given in (12).[5]

(12) a. # A man lives here. Another man lives down the street. The man is strange.
  b. I drop ten marbles and found nine. The missing marble is probably under the sofa.

(12a) is bad because by the time the third sentence is uttered, two discourse referents have been introduced that have 'is a man' as description. Thus, (11c) is violated. (12b) is good even though no discourse referent has been explicitly introduced which is described as 'is a missing marble'. This is because the existence of a marble which is missing can be inferred from the first sentence, thus making the corresponding discourse referent familiar.

We now come to Roberts' (2002) theory of demonstratives. Informally, it is this.

(13) $[\text{that NP}]_n$ refers to n iff there is a (weakly familiar) discourse referent m such that
  (a) m is described as 'identical to d', where d is the unique entity picked out by the demonstration accompanying the utterance of $[\text{that NP}]_n$
  (b) the information written on m allows the inference that m is NP
  (c) m = n

Roberts assumes that the demonstration suffices to bring about (weak) familiarity. Thus, (13) basically says that $[\text{that NP}]_n$ refers to n iff the demonstration accompanying the utterance of $[\text{that NP}]_n$ has a unique demonstratum to which n corresponds and n is NP. There is a discussion of the notion 'demonstration' in

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[4] Heim (1882) seems to suggest that familiarity comes about only through explicit mention or contextual salience. Although there is some room for interpreting the notion of contextual salience, it seems safe to say that Heim does not take this notion to include cases like (12b).

[5] Heim would presumably explain (12a) by appealing to processing: how can the hearer know which man the definite refers to? As for (12b), she would say that a discourse referent can be introduced by 'accomodation' (cf. Heim 1882: 370-396). Roberts recognizes that accomodation is needed, but that 'taking weak familiarity to be the relevant notion [...] radically cuts down the number of cases which call for accomodation'' (Roberts 2002: 104).

Roberts (2002), but no explicit theory is proposed. Hence, Roberts' theory of demonstratives presupposes antecedent knowledge of the unique demonstratum of a demonstration.

Here is how Roberts accounts for the direct reference effect noted by Kaplan. Suppose the initial file is empty. I point to John and say ⌜that man$_2$ is sick⌝. By pointing to John, I introduce (make familiar) a discourse referent i which is described as 'identical to John'. Let us assume that being identical to John entails being a man. Thus (11b) is satisfied. By (11c), i = 2. In uttering my sentence, I update the file by writing 'is sick' onto 2. The file that results has 2 with 'identical to John' and 'is sick' written on it. This file is true iff John is sick. We're done.

But what about anaphoric uses of demonstratives such as (6), repeated here in (14)?

(14) I met a man$_2$. That man$_2$ wore a hat.

To explain such cases, Roberts proposes that demonstratives are ambiguous. When the relevant demonstratum is an object O, the demontrative refers to the discourse referent coresponding to O. However, the demonstratum can also be a linguistic expression E. In this case, the demonstrative refers to the discourse referent (introduced and) refered to by E. This means that (13) should be amended to (15).

(15) [that NP]$_n$ refers to n iff there is a (weakly familiar) discourse referent m s.t. the following holds:
  (a) If the accompanying demonstration picks out a unique object O, then m is is described as 'identical to O'; if the accompanying demonstration picks out a unique linguistic expression E, m is refered to by E.
  (b) The information written on m allows the inference that m is NP
  (c) m = n

In (14), the relevant demonstration picks out the expression ⌜a man⌝, which (introduces and) refers to 2. Consequently, the demonstrative in the second sentence refers to i = 2. This is the right result. It is implicit in Roberts' theory that the donkey and bound uses of demonstratives exemplified by (7) and (8) are to be handled in similar manner. This seems to me to be feasible. The reader is invited to verify that for himself.

In summary, Roberts' (2002) theory of demonstratives accounts for all of Kaplan's data in the sense that it explains the direct reference effect observed in demonstratives used with demonstrating gestures (pointing, nodding etc). It explains the donkey and bound anaphoric uses at the price of postulating an ambiguity for ⌜that⌝ and making the notion 'demonstration' much more abstract and unintuitive. Furthermore, it seems to me that Roberts would also have problems explaining the following example, which is a variant of the 'paycheck' example from Cooper (1979).

(16) *Paycheck uses*
John gave his first paycheck to his wife. Everyone else gave that paycheck to his mistress.

In the relevant reading, the demonstrative in the second sentence does not refer to John's first paycheck. So the demonstratum cannot be the expression ⌜his first paycheck⌝. But it cannot be an object either, for there is no object being demonstrated.

3. King (2001)

King takes demonstratives to be generalized quantifiers. Before making clear what this means, let us consider some examples King gives to argue for his position.

Suppose that Greg has gotten back his math exam, on which he did terribly. Furthermore, Greg has heard the teacher say that some student got a hundred on the same exam. Reflecting on the difficulty of the exam, Greg says (17a). Having heard that, I say (17b).

(17) a. That student who got a hundred on the exam is a genius
b. Greg believes that that student who got a hundred on the exam is a genius

If the demonstrative ⌜that student who got a hundred on the exam⌝ contributes an individual to the proposition expressed by the sentence containing it, I would be asserting that Greg stands in the belief relation to a singular proposition. But this is not the case. Greg does not know who got a hundred on the exam. He is not pointing to anyone and does not have any particular person in mind when he made his statement. He just believes that whoever got a hundred on the exam is a genius, which is a general belief. It follows that the demonstrative ⌜that student who got a hundred on the exam⌝ does not contribute an individual to the relevant proposition, but probably that which is expressed by the definite description ⌜the student who got a hundred on the exam⌝. Let us call this use of demonstrative the *opaque use.*

Another use of demonstratives in which these seem to be equivalent to definite description is what King calls the *quantifying in* (*QI*) *use*. Consider the following example.

(18) Every father dreads that moment when his oldest child leaves home

Here, the demonstrative contains a pronoun which is bound by a universal quantifier. Thus, ⌜that moment when his oldest child leaves home⌝ does not even refer, let alone refer rigidly, as claimed by Kaplan. In fact, the sentence seems to mean exactly what is meant by ⌜every father dreads the moment when his oldest child leaves home⌝.

Above we said that King considers demonstratives to be generalized quantifiers. But what we have seen so far is that they behave like definite descriptions. Well, the point is that King considers definite descriptions to be generalized quantifiers, which are two place relations between properties. Thus, ⌜every⌝ means something like $\lambda P \lambda Q[P \subseteq Q]$, and ⌜the⌝ means something like $\lambda P \lambda Q[|P|=1 \ \& \ P \subseteq Q]$, which is the Russellian semantics for the definite determiner (cf. Russell 1805). Consequently, the fact that demonstratives are sometimes equivalent to definite descriptions is for King strong evidence that demonstratives are generalized quantifiers. In addition, King also gives syntactic arguments for his position. First, assuming that ACD resolution depends on the ability of the object to QR out of the antecedent VP, and that only quantifiers can QR, the grammaticality of sentences like (19) is evidence that demonstratives are quantifiers.

(19) Tiger birdied that hole that Michael did

Second, King claims that (20) cannot have a reading in which ⌜his⌝ is anaphoric to ⌜that man with a goatee⌝.

(20) His mother loves that man with a goatee

If we assume that the demonstrative is a quantifier which undergoes QR, the lack of the anaphoric reading can be explained by whatever explains WCO, i.e. by whatever explains why the pronoun cannot be bound by the universal quantifier in ⌜his mother loves every boy⌝.

King wants to construct a theory of demonstratives which allows these expressions to behave like Russellian definite descriptions. On the other hand, this theory should also be able to cover the cases that Kaplan's theory was intended to cover, e.g. cases where I point at John and say ⌜that man is a smoker⌝. In other word, the theory must be flexible enough to allow ⌜that NP⌝ to contribute to the proposition expressed by the sentence containing it either an individual or something that is contributed by a definite description.

Here is how King proceeds. He postulates a lexical entry for ⌜that⌝ which is essentially like that which Russell gives for ⌜the⌝, except that it has two other argument slots to be filled in by contextual information. Informally, the sentence ⌜that P is Q⌝ is to mean something like (21).

(21) P and R are uniquely K in an object x and x is Q

P, Q and R are properties of individuals. K is a property of properties. The context of utterance will supply R and K, and depending on what these are, the demonstrative ⌜that P⌝ will mean what ⌜the P⌝ means or will contribute an individual to the proposition expressed, as Kaplan said. Let us consider this in more detail.

Suppose I point at John and say ⌜that man is a smoker⌝. Kaplan claims – and we assume that he is correct – that what my sentence expresses is the proposition that John is a smoker. Can this proposition take the form 'P and R are uniquely K in an object x and x is Q', where P is the property expressed by ⌜man⌝ and Q is the property expressed by ⌜is a smoker⌝? Yes, says King. Here is it: being a man and being identical to John are uniquely jointly instantiated in the actual world (w_0) in an object x and x is a smoker. This just means that John is a smoker. The context of utterance supplies the following: R = being identical to John and K = being jointly instantiated in w_0. Now what about Greg's statement above, i.e. ⌜that student who scored a hundred is a genius⌝? The job is to express the proposition that the student who scored a hundred, whoever he is, is a genius, and express it in the form 'P and R are uniquely K in an object x and x is Q', where P is the property expressed by the subject term and Q is the property expressed by ⌜is a genius⌝? No problem, says King. Let R be the property of being a student and having scored a hundred on the relevant exam, and let K be the property of being jointly instantiated. Not jointly instantiated in w_0, but just jointly instantiated. Here is the result: being a student who scored a hundred and being a student who scored a hundred is uniquely jointly instantiated in an object x and x is a genius. This just means that the unique student who scored a hundred is a genius, i.e. what is expressed by ⌜the student who scored a hundred is a genius⌝. We're done.

King's theory is quite elegant, and does capture more facts about demonstratives than Kaplan's. However, objections to it have been raised. Elbourne (2008) challenges King's factual claim that demonstratives give rise to WCO violations. Thus, Elbourne – and supposedly many other native speakers whom he has asked – do not think (20) is ungrammatical on the reading where ⌜his⌝ is anaphoric to ⌜that man with a goatee⌝. He also cites Lasnik and Stowell (1891), who explicitly say that demonstratives and definite descriptions do not cause WCO. The example that Lasnik and Saito give is (22).

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

The second objection Elbourne makes to King's theory concerns the latter's ACD argument. King says that demonstratives can contain an elipsis site whose antecedent contains the demonstrative itself, as seen in (18). King takes this to be evidence that the demonstrative is a quantifier. To do this, however, he has to assume that only quantifiers can QR, and to this assumption Elbourne objects. He cites Sag (1876) and Heim (1893) as works where it is shown that proper names and pronouns can also undergo QR.

Lastly, since King takes demonstratives to be enriched Russellian definite descriptions, his theory will have to face all the difficulties that Russell's theory of definite description faces. For example, King would predict that (23a) means (23b), and thus be contradictory, which is intuitively not the case (cf. Heim 1982).

(23) a. Everyone who bought a sageplant bought eight others along with that sageplant
b. Everyone who bought a sageplant bought eight others along with the unique sageplant

The reader can consult Heim (1982) and Heim (1991) for further problems with the Russellian theory of definite descriptions.

4. Elbourne (2008)

Elbourne himself proposes a theory of demonstratives in his (2008) paper. In this theory, ⌜that⌝ is taken to be the following function.

(23) $\lambda x_e \lambda f_{\langle e,\langle se,st\rangle\rangle} \lambda g_{\langle se,st\rangle} \lambda s[\iota z[f(x)(\lambda s[z])(s) \wedge g(\lambda s[z])(s) \wedge x \text{ is distal from the actual speaker}]]$

Elbourne adopts the framework of situation semantics. In the above formula, 's' and 'e' are types for situations and entities, respectively. Thus, '$f_{\langle e,\langle se,st\rangle\rangle}$' is a variable over functions from individuals to functions from individual concepts to propositions, whereby individuals concepts are functions from situations to individuals and propositions are functions from situations to truth-values. '$\iota z[...]$' is a singular term. It means somthing like 'the z such that ...'. Elbourne does discuss what it means for something to be distal or proximal from the something else. But no explicit theory is given, and it is assumed in all of his example that the third conjunct in (23) is always satisfied. In what follows, we will ignore this condition and just take ⌜that⌝ to denote the function $\lambda x_e \lambda f_{\langle e,\langle se,st\rangle\rangle} \lambda g_{\langle se,st\rangle} \lambda s[\iota z[f(x)(\lambda s[z])(s) \wedge g(\lambda s[z])(s)]]$.

All arguments are realized in the syntax. Thus, (24a) has the LF in (24b).

(24) a. That cat laughs
b. [[[[That i] R] cat] laughs] .

Now suppose I utter (24a) while pointing at my cat Felix. Here is how Elbourne gets this sentence to mean what we would take it to mean in this context: that Felix laughs. Elbourne says that the context of utterance supplies the following denotations for ⌜i⌝ and ⌜R⌝.

(25) a. $[\![i]\!] = \text{Felix}$
b. $[\![R]\!] = \lambda x_e \lambda u_{\langle s,e\rangle} \lambda s[u(s) = x]$

⌜R⌝ denotes is a function that maps an individual x and an individual concept u to a proposition which is true in a situation s iff the extension of u in s is identical to x. As for the predicates ⌜cat⌝ and ⌜laughs⌝, it is assumed that they are functions from individual concepts to propositions.

(26) a. $[\![cat]\!] = \lambda u_{\langle s,e\rangle} \lambda s[u(s) \text{ is a cat in } s]$
b. $[\![laugh]\!] = \lambda u_{\langle s,e\rangle} \lambda s[u(s) \text{ laughs in } s]$

The reader can verify for himself that given the LF in (24b) and the definitions in (25) and (26), the following meaning is derived for (24a).

(27) $\lambda s[\iota z[z = \text{Felix} \wedge z \text{ is a cat in } s] \text{ laughs in } s]$

This is a function from each situation s to true iff the cat identical to Felix laughs in s. And this is none other than the proposition that Felix laughs, which is what we want in this case.

Recall from our discussion of King (2001) that sometimes, ⌜that NP VP⌝ is equivalent to ⌜the NP VP⌝. It turns out that Elbourne's theory can derive this equivalence. Consider (17a) again. This sentence should have the LF in (28).

(28) [[[[That i] R] student who got a hundred on the exam] is a genius]

Now suppose ⌜i⌝ and ⌜R⌝ have the following denotations.

(29) a. $[\![i]\!] =$ ⌜student who got a hundred on the exam⌝
b. $[\![R]\!] = [\![\ ]\!]$

That is, let ⌜i⌝ denote the linguistic expression ⌜student who got a hundred on the exam⌝ and ⌜R⌝ denote the interpretation function ⟦ ⟧ itself. Then it can be verified that ⌜that i R student who got a hundred on the exam⌝ will denote the individual concept λs[ιz[z is a donkey in s]], which is exactly what the definite description ⌜the student who got a hundred on the exam⌝ denotes.

We see that Elbourne (2008) can account for the direct reference and the opaque uses of demonstratives. Elbourne claims that his theory can explain the donkey uses as well. Here is how. In Elbourne (2001, 2005), donkey pronouns are analyzed as (Fregean) definite description. Thus, (30a) is taken to be equivalent to (30b), whose meaning is roughly (30c).

(30) a. Every farmer who owns a donkey beats it
b. Every farmer who owns a donkey beats the donkey
c. Any minimal situation s containing a farmer and a donkey he owns can be extended to minimal situation s' in which the unique farmer beats the (unique) donkey

Now it has been observed that donkey pronouns are best paraphrased by demonstratives (Abbott 2002). Specifically, (30a) seems to mean exactly what is meant by ⌜every farmer who owns a donkey beats that donkey⌝. Then, if Elbourne (2001, 2005) is correct, this means that ⌜that donkey⌝ should be able to express whatever ⌜the donkey⌝ expresses. As we have seen, Elbourne (2008) can deliver this result (cf. Elbourne 2008: 45). And it can be shown that the anaphoric use of demonstratives, exemplified in (6), can be accounted for in a similar manner.

The attentive reader will have noted that given how Elbourne get ⌜that NP⌝ to mean ⌜the NP⌝, the wrong prediction is made about Kaplan's classic example. Thus, there is nothing that prevents me from pointing at John, saying (31a) and meaning (31b).

(31) a. If John and Mary has switched places, that person being pointed at would be a woman
b. If John and Mary has switched places, the person being pointed at and having switched places with John would be a woman

To get (31a) to mean (31b), we just have to let ⌜i⌝ denote John and ⌜R⌝ denote the relation "has switched places with", both plausible choices given the speech context. To prevent such assignments, Elbourne, following Nunberg (1979), postulate the following condition.

(32) If the utterance context of ⌜[[[that i] R] NP]⌝ allows the inference that ⟦i⟧ is ⟦NP⟧, then ⟦R⟧ must be the identity relation, i.e. $⟦R⟧ = [\lambda x_e \lambda u_{\langle s,e\rangle} \lambda s[u(s) = x]]$

In Nunberg's formulation, "when the demonstratum could be the referent, it must be the referent" (cf. Elbourne 2008: 41, citing Nunberg 1979: 160). Thus, when I point at an object O which could be a person and say ⌜that person ...⌝, the demonstrative must refer to O.

I conclude my presentation of Elbourne's (2008) theory of demonstratives and turn to the discussion of a problem that I think it might face.

Elbourne (2008) accounts for the donkey use of demonstratives by getting ⌜that NP⌝ to mean the thing denoted by ⌜NP⌝, i.e. by taking the index to be ⌜NP⌝ and the relation to be ⟦ ⟧ itself. This solution is based on the assumption made in Elbourne (2001, 2005), which says that donkey pronouns are definite descriptions. Now in Elbourne (2001, 2005), the approach developed for donkey pronouns is intended to explain paycheck sentences as well. The only auxiliary assumption made was that ⌜his paycheck⌝ has the structure [the paycheck of him]. Thus, (33a) is assigned the LF in (33b).

(33) a. John gave his first paycheck to his wife. Everyone else gave it to his mistress.
b. John gave [the first paycheck of him] to his wife. Everyone else gave [the first paycheck of him] to his mistress.

Above, we have seen that paycheck pronouns can be replaced with demonstratives. The example is repeated in (34). I represent ⌜his paycheck⌝ as [the paycheck of him], which is the representation at the relevant level of interpretation.

(34) John gave [the first paycheck of him] to his wife. Everyone else gave that paycheck to his mistress.

It seems to me that the same story told for donkey pronouns cannot be told here. What we want is for the demonstrative in the second sentence to do the job of ⌜the first paycheck of him⌝. There is no obvious way, as far as I can see, for ⌜that NP⌝ to mean ⌜the NP⌝ in Elbourne's theory except to let the index i be the expression ⌜NP⌝ and the relation R be ⟦ ⟧, so that ⌜that i R NP⌝ would in effect mean "the thing denoted by ⌜NP⌝". Now if we let ⟦i⟧ = ⌜first paycheck of him⌝, R = ⟦ ⟧, we will have ⟦that i R paycheck⟧ = the paycheck of him which is a paycheck, where ⌜him⌝ refers to a certain (salient) individual. In the case of (34), this salient individual is likely to be John, so the sentence is predicted to mean "John gave his first paycheck to his wife and every other person gave John's first paycheck to the mistress of that person/of John." No other reading is possible. This is not the right result.

5. Wolter (2006)

Wolter, like Elbourne, adopts situation semantics. In this framework, sentences are predicates of situations. A sentence ϕ is true iff it is true of the actual situation. ⌜John believes that ϕ⌝ is true iff ϕ is true of the situation which John takes to be the actual situation, so to say. Thus, every sentence is about some situation, actual or hypothetical. In other word, for each sentence, there is a *situation under discussion*. Given this, we can say that the essence of Wolter's theory of demonstratives is this: ⌜that NP⌝ refers to the unique NP in s, where s is a situation distinct from the situation under discussion.

Let us look at a concrete example. Suppose you and I came into a room with three paintings on the wall. I point to one and say (35).

(35) (In this room) I like that painting

Supposedly, my sentence is about the situation which consists of the relevant room, you, me and the three paintings on the wall. Call that situation s. Now by pointing to one of the paintings, call it A, I make salient another situation s' which is a proper subpart of s and which consists only of A. What I am saying in (35) is then something like: the actual situation s_0 is such that I like the unique painting in s', where s' is the proper subpart of s which I am delineating with my pointing.

Note that in the same scenario, I cannot say (36).

(36) (In this room) I like the painting

Wolter explains this fact as follows. A definite description ⌜the NP⌝ can refer to the unique NP in a situation distinct from the one under discussion. However, it does not have to. It can also refer to the unique NP in the situation under discussion. Thus, the circumstances in which ⌜that NP⌝ can be used is a subset of those in which ⌜the NP⌝ can. By the Elsewhere Principle (or Maximize Presupposition etc.), ⌜the NP⌝ can only be used when ⌜that NP⌝ cannot be used. This means that ⌜the NP⌝ always picks out the unique NP in the

situation under discussion. Since in the scenario which we are entertaining, the situation under discussion has three paintings, (36) constitutes presupposition failure.

Here is how Wolter technically implements her idea. She takes all predicates to have a situation argument. This is standard in situation semantics (cf. Elbourne 2002, Heim 1990, among others). Following Percus (2000), she assumes that sentences have a situation binder on top, and that situation arguments of verbs have to be locally bound, whereas those of nouns does not have to. For example, (38a) is a grammatical representation of (37), but (38b) is not.

(37) Mary thinks the man is a woman

(38) a. λs [Mary thinks(s) [$\lambda s'$ [the man(s) is a woman(s')]]
b. * λs [Mary thinks(s) [$\lambda s'$ [the man(s') is a woman(s)]]

Thus, (37) can mean "the entity which is actually a man is thought by Mary to be a woman", but not "the entity which is thought by Mary to be a man is actually a woman." In addition to these assumptions, Wolter proposes that the determniners ⌜the⌝ and ⌜that⌝ be indexed, and their index determines the index of the situation variables of their NP complements. This means that (39a) is grammatical and (39b) is not.

(39) a. the_2 man(s_2)
b. * the_3 man(s_2)

Given this background, Wolter gives the following definitions for ⌜the⌝ and ⌜that⌝. I copy the definitions verbatim from her works (cf. Wolter 2006, 2007).

(39) a. $[\![\text{the}_n]\!] = \lambda P_{\langle s,et\rangle}$: $P(s_n)$ denotes a singleton set.
If defined, denotes $\iota x[P(s_n)(x)]$
b. $[\![\text{that}_n]\!] = \lambda P_{\langle s,et\rangle}$: $P(s_n)$ denotes a singleton set and s_n is free.
If defined, denotes $\iota x[P(s_n)(x)]$

It follows from what has been said that neither (40a) nor (40b) is grammatical, whereas (40c) is.

(40) a. λs_1 [I like(s_1) that_1 painting(s_2)]
b. λs_1 [I like(s_1) that_1 painting(s_1)]
c. λs_1 [I like(s_1) that_2 painting(s_2)]

We can see that with these machineries, Wolter can model the intuition that ⌜that NP⌝ always refers to the entity satisfying NP in some situation distinct from the one under discussion.

That, in brief, is Wolter's (2006) theory of demonstratives. There are a large number of empirical facts which finds explanation in this theory. However, I must say that to the extent that I understand the theory – which is hard mainly because the formulations are quite vague – it suffers from overgeneration. For example, Wolter explains the weirdness of demonstratives like ⌜that center of the universe⌝ as follows: because there is only one center of the universe, every situation s is such that ⌜center of the universe(s)⌝ denotes a singleton set. Consequently, ⌜the⌝ can always be used, and as it is less marked than ⌜that⌝ in the sense that it has less presuppositions, it is prefered. But note that when you and I come into a room with only one bucket of water, I can also point to the bucket and say ⌜that bucket is full of water⌝. Wolter's explanation of this fact is that in such a situation, I can 'zoom in' onto the bucket, leaving out the room, you and me. The situation which is being 'zoomed in' is consequently distinct from the one under discussion, allowing the use of the demonstrative determiner. But then it remains a puzzle why I cannot do the same with the center of the

universe. Why can I not zoom in onto the center of the universe, leaving out all the physicists etc.? Of course, I might well just be missing something.

There is another possible problem that I see with Wolter's theory. This one is of technical nature. Consider the second presupposition in the definition of ⌜that⌝ in (39). As far as I can see, it is a very strange presupposition, if 'presupposition' is to be understood in the standard sense, namely as a condition on the set of situations that we assume could be the situation under discussion. Suppose I uttered (41) as a declarative sentence, pointing at John.

(41) That man smokes

According to (39), ⌜that man⌝ can refer to John only if the actual situation satisfies the following: the LF of my sentence is such that the situation variable that is the argument of ⌜man⌝ is not bound in it. In other word, (41) is felicituous only if some abstract representation satisfies some structural condition. I think this is not what Wolter has in mind when she formulated her definitions. I concede that it might be a very trivial enterprise to 'clean up' the definitions in questions. However, I will not attempt it here.

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