Of-Possessive Pivots*

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1 Introduction

When an English definite DP has a relational noun taking an overt complement (e.g. *the cover of a book*), it is exceptional in a variety of ways. Such DPs, instances of what I will refer to as the *Of*-Possessive (OP) construction[1], are exempt from the normal uniqueness requirements of definites (Löbner 1985; Kadmon 1987; Barker 2005); they do not need to refer to a familiar discourse entity (Poesio 1994), and they can appear in the pivot of an existential sentence despite being headed by a definite determiner (McNally 1992; Poesio 1994; McNally 1998). It is this last property that will be of interest here.

The canonical pivots of existential sentences are DPs headed by the weak determiners of Milsark 1974 – roughly, the determiners with existential force (for discussion of the English facts see Barwise and Cooper 1981; Keenan 1987; McNally 1992; Ward and Birner 1995; Zucchi 1995; McNally 1998; Keenan 2003 and Beaver et al. 2005 among many others). Definite descriptions, pronouns, and proper names can occasionally appear as the pivot of an existential sentence, but only under exceptional circumstances – mainly, the so-called list context. Definite *of*-possessives are an exception to this exception – certain definite OPs can appear as a pivot despite the head determiner being definite. A schematic illustration of the OP construction is given in (1), and examples from the literature are given in (2) and (3). (Despite my name for the construction, occasionally the preposition is not *of* – in (2) it is *to*.)

(1) ***Of*-possessives:** $[_{DP}\ D\ [_{NP}\ N_{relational}\ [_{PP}\ of/to\ [_{DP}\ ...]]]]$

(2) There was the top to a box floating in the stream. (McNally 1992 235a)

(3) (?) There is the student of a linguist in the garden. (Poesio 1994 8)

The meaning in each case is that of a run-of-the-mill existential sentence – in (2), the existence of a box-top floating in the stream is asserted, and in (3) the presence in the garden of some linguist's student is asserted.

The task for any theory of existentials is clear – we must ensure that the correct *of*-possessives are licensed as pivots. The present paper gives an account of the licensing of *of*-possessives in existential sentences in English. I take as a starting point the analysis of McNally 1992, 1998; this is the only analysis of existentials that I know of that attempts to deal with OPs. I argue that while McNally's account makes the right predictions about the distribution of *of*-possessives in existential sentences (the distribution is discussed in §2), it makes the wrong predictions about the interpretation of *of*-possessives (discussed in §3 and 4). I give an account of the interpretation of *of*-possessives (in §5), and finally how to restate a McNally-style felicity condition formally (in §6 and §7).

The restatement of the felicity condition I settle on is that pivots of existential sentences are not just required to be associated with a novel discourse referent, but that they must be associated with a novel discourse referent in any context. Pivots are the kinds of objects that (if they refer at all) are **necessarily** associated with novel discourse referents.

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[1]Previous names for this construction have included Possessive Weak Definites (Poesio 1994; Barker 2005) and Possessive Definites (Rawlins 2005). Here, not all of the phrases with the relevant structure at issue are definite, not all are weak, but they still need to be distinguished from *'s* possessive and double genetives. Hence the new name.

2 The generalization

In this section I discuss the facts of *of*-possessives in existential sentences. To start off, I supplement the grammatical examples from the literature mentioned earlier with more grammatical examples of definite OPs found via Google. The OPs are in bold in each example.

(4) (no preceding context, picture to left on page) On the left there is **the cover of a fantastic Parsley Annual from 1972**, illustrated in psychedelic brilliance by the artist called Esor. (Google)

(5) ...And on the trail one morning, I could only see maybe 3 yards ahead of me in the mist. There is **the back side of a cat**, a big cat. I think well, it's not a lion or anything, but that is a big cat... (Google)

(6) If it's true that there is **the son of a minister** involved, we would definitely request that this person is present during the trial," Mr Hadibudi said. (Article in The Age, Nov 7 2005, via Google)

(7) Often in these short messages there is **the answer to a problem or question**, expressed or unexpressed, felt by many of those present. (Google)

(8) There is **the possibility of two different π type bonds** for any given σ bond (oriented 90 degrees from each other). (Google)

Each of these examples seems perfectly natural, strengthening the generalization that at least some definite OPs can appear as the pivot of an existential sentence. In the next section I discuss the characterization of which definite OPs can appear.

2.1 Definites

It is well known that plain definites are not licit pivots in existential sentences, except under special circumstances (list contexts, etc.). The situation with *of*-possessives is somewhat more complex. As the data in the previous section shows, *of*-possessives, despite having a definite head determiner, can be perfectly fine pivots. I've repeated one example, (2), below.

(2) There was the top to a box floating in the stream. (McNally 1992 235a)

Not all *of*-possessives can be the pivot of an existential sentence. In particular, when there is no indefinite head determiner anywhere in an OP, the OP is not licensed. Actually, "anywhere" is too imprecise. The positions we need to consider are the head determiners along the "spine" of the *of*-possessive: the head determiner, and any determiner that is the head of a DP in the argument position of a relational noun participating in the larger OP structure.[2] This can be seen by modifying (2) to give the ungrammatical, or infelicitous, (9).

(9) * There was the top to the box floating in the stream.

We can add another layer of OP structure, to give the contrast between (10) and (11):

(10) There was the corner of the page of a book turned down.

(11) * There was the corner of the page of the book turned down.

[2] This can be defined recursively: a determiner matters if it is the head of the DP, or if it is the head of a DP that is the argument of a relational noun that heads an NP that is the argument of a determiner that matters.

So an OP is licensed as a pivot, so far, if at least the lowest head determiner is an indefinite. It isn't licensed if there is no indefinite, i.e. if all the determiners that matter are definite.

An *of*-possessive is also acceptable if the lowest determiner is definite, just as long as some determiner at all is indefinite. Some grammatical permutations of (11) are given below.[3]

(12) There was the corner of one page of a book turned down.

(13) There was one corner of the page of the book turned down.

(14) There was one corner of one page of the book turned down.

(15) There was one corner of the page of a book turned down.

In summary, an *of*-possessive makes a licit pivot of an existential sentence if one of the determiners that matters is indefinite, even if every other determiner is definite.

This data raises the question of whether OPs headed by strong quantifers are also an exception, and I turn to this question in the next section.

2.2 Strong quantifiers

Strong quantifiers (I will focus on *every*) can make an OP pivot illicit, but not in the same way as a definite. It is of course well known that strongly quantified plain DPs cannot be pivots of existential sentences. Similarly, when a strong quantifier heads an *of*-possessive structure, this structure is not licensed as a pivot.

(16) * There was every corner of a piece of paper torn off.

(17) * There was every side of a box floating dismantled in the stream.

The distribution of strong quantifiers contrasts with the distribution of definites – the head determiner of an OP may be definite as long as some other determiner is indefinite, but having an indefinite determiner in some head position is not enough to save an OP structure with a strong quantifier as its head.

If the lower determiner of a two-level OP structure is a strong quantifier, then the OP can be a pivot, as long as the higher determiner is indefinite. An example of this kind is (18).

(18) There was one page of every book torn out.

I now turn to three-level OP structures. If the lowest determiner is a strong quantifier, then the OP can be a pivot straightforwardly (as in (19)), assuming a higher indefinite.

(19) There was the corner of one page of every book torn off.

When the strong quantifier is in the middle, and the indefinite is lower, then judgements become murkier. There is certainly a contrast between (20) and (21), but it isn't clear that (21) is fully grammatical or acceptable.

(20) * There was the corner of every page of the book turned down.

(21) ?? There was the corner of every page of a book turned down.

[3] Note that (13) has a peculiar implication that the book has only one page – this is a property of completely definite OPs like *the page of the book* and *the feather of the bird* that I don't understand. As far as I can tell it has no bearing in the present issue.

There are two ways of taking this data – the first is that (21) is grammatical but incurs some parsing difficulty. The other possibility is that the apparent contrast between the two sentences is not one that would stand up to experimental work, and both are ungrammatical.

The generalization about strong quantifiers is that no DP headed by a strong quantifier can be the pivot of an existential sentence, regardless of whether it is an *of*-possessive. This generalization is quite different than what we find with definite determiners, thus supporting McNally 1992's claim that the ungrammatically of definites is distinct from the ungrammatically of strong determiners as the head of pivots (in fact, McNally supported this point using a subset of the OP data).

3 Predicting *Of*-possessives

Several analyses (McNally 1992; Zucchi 1995) try to derive the definiteness effect from the presuppositions of the pivot DP. McNally treats the definiteness effect as arising from a felicity condition on existential predicates, restricting the pivot to denote a non-familiar entity (the idea goes back to Prince 1988 and Lumsden 1988). McNally's condition is given in (22):

(22) Felicity Condition: The discourse referent corresponding to the instantiation of the nf-argument[4] of the existential predicate must be novel. (McNally 1992 233)

This condition rules out plain definites in the pivot, but taken alone, doesn't say much about *of*-possessives – we don't yet have a theory of whether *of*-possessive pivots will be associated with novel or familiar discourse referents. McNally provides one such theory, in the form of rules for indexing DPs. These rules are given in (23):

(23) Indexation:

1. All morphologically indefinite DPs receive a new index.
2. All necessarily quantificational DPs receive a new index.
3. All names and pronouns receive an old index.
4. A morphologically definite DP receives an old index iff all of its complement DPs receive an old index; otherwise it receives a new index.

Rule 4 is the crucial rule for *of*-possessive structures. It amounts to a recursive procedure for assigning indices to the contents of an OP. If a definite DP has no complement DPs (i.e. it is a plain definite), it receives an old index vacuously. This captures the fact that plain definites always refer to discourse-familiar entities. If a definite DP has a complement (and its complement has a complement, etc.), and if all of these complement DPs are definite, then the DP receives an old index as well. In both of these cases, such a DP will run afoul of the felicity condition in (22), and will not be licensed as a pivot. An *of*-possessive that has an indefinite anywhere in a head position, on the other hand, will receive (as a whole) a new index, and won't run into the felicity condition. Such OPs will therefore be licensed pivots. This is exactly what we want given the generalization in §2.1 – an OP is ruled in as a pivot exactly when it has an indefinite determiner in some head position.

McNally's analysis as it stands predicts the correct distribution of *of*-possessives in existential sentences, but this is not where I want to take issue with the analysis. The indexing rules in (23) do not provide for the correct interpretation of *of*-possessives – they predict that OPs which contain only definite head determiners must refer familiarly, i.e. be assigned an old index. In fact any *of*-possessive can refer to a novel

[4] McNally 1992 uses Chierchia and Turner's property theory here – the details of what "nf" means aren't important here. "The instantiation of the nf-argument" can simply be taken to mean the denotation of the DP in the pivot.

discourse entity. In indexing terms, an *of*-possessive must always be able to receive a new index, regardless of what determiners head complement DPs.

To see this, consider the interpretation of the bold *of*-possessives in (24) and (25), assuming that each appears out of the blue.

(24) On Friday, a bomb exploded outside **the offices of an American corporation**. (Poesio 1994 4d)

(25) Someone doesn't like McDonald's. On Friday, a bomb exploded outside **the offices of the company**.

Both the sentence in (24) and the discourse in (25) are perfectly felicitous and sensible out of the blue. The whole *of*-possessive in each case refers to some offices, and not to a company, though the internal DP refers to a company in each case. In neither case are any offices of any corporation previously under discussion, but the indexing procedure above would require us to give an old index to the OP in (25), and a new one to the OP in (24). When uttered out of the blue, there isn't even an old index to choose from that we could use for the indexing of the OP in (25).

What McNally's analysis does not do is differentiate the novelty/familiarity properties of the complement of the relational noun from those of the *of*-possessive itself. In (24) both the entire OP and the complement DP are novel. On the other hand, in the OP in (25), there need be no offices under discussion, but the OP wouldn't be felicitous if some company weren't under discussion.

To step back a bit, analyses of the definiteness restriction have generally taken the distribution of pivots to be keyed on some property of the pivot as a whole, and more specifically, on its head determiner. This seems to be right for quantificational determiners, even when considering *of*-possessives, but not for definite determiners. What *of*-possessives show us, if we look carefully enough, is that it is not always the head determiner of the pivot (and therefore not the pivot as a whole) that matters. The presence of an indefinite anywhere in an OP is enough to salvage it, even if the head determiner is definite. The fact that a through-and-through definite OP is associated with a novel discourse referent is not enough to save it.

4 Restating McNally's felicity condition

In this section I restate the felicity condition proposed by McNally 1992, in order to allow for the correct interpretation of *of*-possessives. The felicity condition is repeated here:

(22) Felicity Condition: The discourse referent corresponding to the instantiation of the nf-argument of the existential predicate must be novel. (McNally 1992 233)

This condition makes direct reference to the discourse referent that corresponds to the pivot as a whole. Given the conclusions in §3, this is no longer feasible – there is no necessary correlation between the felicity of a pivot and the novelty of the discourse referent corresponding to the pivot itself. If we're talking about discourse referents, what matters is the novelty of any discourse referent of a DP that is part of the OP structure.

One kind of solution is to pay attention to the presuppositions that project out of an *of*-possessive. If indefinites presuppose the novelty of their discourse referent, then exactly those pivots that should be licensed by this condition will involve the projection of a novelty presupposition. A condition of this sort is given in (26).

(26) Felicity Condition (version 2): there must be some property P such that a presupposition projects from the argument of the existential predicate that there is no discourse referent x supplied by the context such that $P(x) = 1$.

The condition in (26) is triggered exactly when an OP structure has an indefinite determiner in some head position. This condition isn't triggered by *of*-possessives in general, because they don't have to involve a novelty presupposition – they can be associated with a novel discourse referent, but this is not necessary. The conditions for novelty are set up in the discourse in (27):

(27) The offices of a large corporation and a law firm were both bombed today. **The offices of the corporation** were damaged significantly more.

The bold OP in the second sentence refers to the offices mentioned in the previous sentence – that is, it refers familiarly. (In fact, when it is possible, it seems that an OP must refer familiarly.) It is clear from examples of this kind that OPs don't involve any kind of novelty presupposition, despite the possibility of novel reference – in fact, in the analysis of OPs I sketch in §5 they involve the accommodation of a familiarity presupposition.

This condition can be seen as a more specific version of Zucchi 1995's idea that pivots must be presuppositional – the condition says exactly what presuppositions must be involved.

It is important to note that the condition in (26) could not be inverted – we could not rule out OP structures that trigger a familiarity presupposition. Though many such structures are not licit pivots, some are, such as the bold structure in (28).

(28) There was **one page of the book** missing.

A familiarity presupposition projects from this DP – the existence of a salient book is presupposed. A novelty presupposition also projects, and it is this that allows the DP to be licensed as a pivot, despite the familiarity presupposition. Just the property of invoking some discourse-old information **does not** make a DP an illicit pivot.

There is a second approach that might be considered. This is to say that a DP is licensed as a pivot if the discourse referent it is associated with would be a novel discourse referent in any context in which it is felicitous. *Of*-possessives such as *the offices of the corporation* can have novel reference, but as (27) above shows, they can also have familiar reference. A OP with a lower indefinite determiner such as *the offices of an American corporation*, however, can never have familiar reference in any context. Because of the indefinite, the lower DP is associated with a novel discourse referent. The offices, then, are guaranteed to be offices of some company which has previously not been under discussion. Even if some offices have been under discussion, it therefore can't be known that they are offices of this company, since this company is discourse-new. The OP can't refer to any offices under discussion, because those don't satisfy the OP's descriptive content (offices of the discourse-new American corporation), and so it must refer to novel offices.

This version of the felicity condition is given in (29).

(29) Felicity Condition (version 3): For any context c, the argument of the existential predicate interpreted relative to c (if it is associated with a discourse referent at all) must be associated with a discourse referent that is novel in c.

Versions 2 and 3 of the felicity condition accomplish very similar things, and there are not many cases where they involve divergent predictions. If there were a way to block the effect documented above, whereby OPs with a lower indefinite become necessarily novel, they would make different predictions – version 2 would predict felicity as a pivot, and version 3 would not. Definite determiners clearly do not block this effect, but if strong quantifiers did, then we would have a partial explanation for the fact that (21) is not entirely acceptable, as documented in §2.2.

(21) ?? There was the corner of every page of a book turned down.

What we do not have an explanation for, however, is that there seems to be a contrast between (21) and a sentence with a lower definite (20 in §2.2). Version 2 of the felicity condition, however, predicts (21) to be entirely felicitous, and it isn't. Because of this evidence, I focus on version 3 of the felicity condition for the remainder of the paper.

In the remainder of the paper, I attempt to derive the interpretation of *of*-possessives, and consequently their distribution in the pivots of existential sentences. Before starting this endeavor, it is worth noting that changing the indexing system would not be enough. There is no way within just an indexing system to capture the fact that a DP is not just novel, but necessarily novel (similarly, there would be no compositional way to capture version 2 of the felicity condition with just a change to the indexing system). We have to look at the semantics of the DP in more detail for that.

5 *Of*-possessives

In order to formalize the new felicity condition, we need to understand how *of*-possessives work. I will sketch here the analysis of *of*-possessives developed in Rawlins 2005.

The definite article, when it appears in an *of*-possessive, does not behave as we expect. We expect definites to always refer familiarly and/or uniquely (cf. Kamp 1981; Heim 1982; Löbner 1985; Kadmon 1987; Roberts 2003 and much other work). *Of*-possessives require neither familiarity nor uniqueness as a rule. Uniqueness is not at issue for existentials (see Barker 2005 and Rawlins 2005 for discussion of uniqueness), but familiarity is. *Of*-possessives do not need to refer familiarly, but can still antecede pronouns (even donkey pronouns), and so on. Clearly, if one has a theory that makes use of discourse referents at all, OPs need to be able to introduce new ones.

A definite article, under the analysis I give here, involves a familiarity presupposition, taking the standard Heim/Kamp analysis as a starting point (Kamp 1981; Heim 1982). *Of*-possessives typically involve local presupposition accommodation of the familiarity presupposition. Accommodation happens in this case to allow composition to continue – without it, local presupposition failure would trigger a type mismatch. When this presupposition accommodates, it involves the introduction of a new discourse referent.

5.1 Background

I will present the analysis in a compositional dynamic semantics that blends the static semantics of Heim and Kratzer 1998, with the sentence-level dynamic semantics of Heim 1983. Notationally and compositionally this system is very similar to the compositional DRT developed by Muskens 1996. The difference is primarily in two areas: work that in Muskens' system is put into the merge operation on DRSs is here put into the composition via lambda abstraction over contexts, and I use a compositional treatment of presupposition accommodation that is easier to state in the present system.

Given a typical notion of assignment functions, a context is defined as in (31).

(30) An **assignment** is a partial function from discourse referents (D_r) (the set of natural numbers) to entities (D_e).

(31) A **context** is a set of world-assignment pairs. (Heim 1983)

Intuitively, a context is a set of all the ways the world and discourse model might be, in view of the mutual beliefs of the discourse participants. This is (on Heim's part) a straightforward extension of the notion of the context set from Stalnaker 1978 to include the discourse model as well as facts about the world. I will refer to the set of contexts as D_c. Sentences (and all constituents) are interpreted relative to a context.

Given this, we can define the context-change potential of a sentence S on a context c as:

(32) $c + S = [\![S]\!]^c$

The double-brackets stand for compositional interpretation in the standard Heim and Kratzer 1998 manner, enriched with the types and extra mode of composition I develop here. I will often refer to the contextual index for a constituent as the "input context."

This is also enough to define a more technical notion of familiarity:

(33) A discourse referent i is **familiar** relative to a context c iff $\forall \langle w, f \rangle \in c \ : \ i \in \mathrm{Dom}(f)$

The discourse model on this system amounts to the set of all assignment functions defined in the context.

A noun like *book* will denote the dynamic analogue of a predicate: a function from discourse referents to contexts. Most dynamic types here have analogues in the static type system, which may be useful for conceptualizing the dynamic versions:

- Discourse referents (D_r) are analogous to entities (D_e).
- Contexts (D_c) are analogous to worlds/indices of evaluation (D_s)/truth values (D_t).
- Dynamic predicates (type $\langle rc \rangle$) are analogous to static predicates (type $\langle et \rangle$).
- Dynamic generalized quantifiers (type $\langle\langle c\langle rc\rangle\rangle c\rangle$) are analogous to static generalized quantifiers (type $\langle\langle et\rangle t\rangle$).
- Dynamic quantification determiners (type $\langle\langle c\langle rc\rangle\rangle\langle\langle c\langle rc\rangle\rangle c\rangle\rangle$) are analogous to static quantificational determiners (type $\langle\langle et\rangle\langle\langle et\rangle t\rangle\rangle$).

(34) $[\![\textbf{book}]\!]^c = \lambda x \in D_r \, . \, \{\langle w, f \rangle \mid \langle w, f \rangle \in c \wedge f(x) \text{ is a book in } w\}$

This predicate removes from its input context any world-assignment pairs where its argument (abstracted over as the variable x) is not assigned to a book.

Some items will need to "modify" the context of their arguments, so we need a unary mode of composition for shifting the context.[5]

(35) **Context shifting**
If α denotes something of type T (for any T) and needs to compose as type $\langle cT \rangle$, then it can be interpreted as $\lambda c \in D_c \, . \, [\![\alpha]\!]^c$

This is analogous to lambda abstraction over a world or time index in a static Montagovian semantics.

Recall that I am building up to the denotation of an indefinite. For this we need some notation for adding a new discourse referent to a context. A context c updated with a discourse referent i will be written as $c[i]$ and defined as follows:

(36) $c[i] = \{\langle w, f \rangle \mid \exists f' \, . \, \langle w, f' \rangle \in c \wedge f'[i]f\}$

(37) $f'[i]f$ holds of any two assignment functions f and f', and referent i, iff f differs at most from f' by the presence of i in its domain (from Groenendijk and Stokhof 1991).

[5] In general, any item that is "upwardly dynamic" w.r.t. some argument (in the sense of Groenendijk and Stokhof 1991 slightly modified: it may supply new discourse referents to that argument) has to shift the context of that argument and modify that context.

This introduces into a context every way of assigning the new discourse referent to some object in the world.

These are the tools needed for interpreting an indefinite. The article *a* denotes a dynamicized quantificational determiner, which in this system is a function (ignoring abstraction over contexts) from dynamic predicates to a function from dynamic predicates to contexts. In practice the indefinite needs to control the input context for each of its arguments (this is more standardly handled by dynamic conjunction or left-to-right merging of DRSs), so both predicate arguments have their contexts abstracted over. I assume that there is free indexing of determiners in the inputs to semantic representation. In (38) is the denotation of *a*, where i is an index:

(38) $[\![\mathbf{a}_i]\!]^c = \lambda P \in D_{\langle c\langle rc\rangle\rangle} . \lambda Q \in D_{\langle c\langle rc\rangle\rangle} . \{\langle w, f\rangle | \langle w, f\rangle \in c \wedge Q(P(c[i])(i))(i)\}$
and is defined for an input context c iff $\forall\langle w, f\rangle \in c : i \notin \mathrm{Dom}(f)$

The definedness condition is a straightforward novelty presupposition.[6] The interpretation of the article *a* involves three updates from the input context:

1. $c[i]$: An intermediate context is built from c by adding i.[7]
2. $P(c[i])(i)$: This intermediate context is used as the input context for P (the restrictor of the quantifier), and i as the argument to P. (In practice: pairs in the context are thrown out where i does not satisfy the property P).
3. $Q(P(c[i])(i)(i)$: This 2nd intermediate context is used as the input context for Q (the nuclear scope of the quantifier), and i as the argument to Q.

The denotation I've given here does not differ substantively for current purposes from the denotation for an indefinite given by Muskens 1996.

An example: the indefinite article

To illustrate how this system works, I'll walk through a simple example of the sentence *a book is missing*.

Assume an input context: $c = \{\langle w_1, f\rangle, \langle w_2, f\rangle\}$ for some arbitrary assignment function f. Also assume that there are three individuals, A, B, and C. A and B are books in both w_1 and w_2, and C is a book in neither world. All three individuals are missing in w_1, none are missing in w_2.

The two predicates form the two arguments to *a*, by FA:

- $[\![\mathbf{a}_1 \textbf{ book is missing}]\!]^c$
- $= [\![\mathbf{a}_1]\!]^c(\lambda c' \in D_c . [\![\textbf{book}]\!]^{c'})(\lambda c'' \in D_c . [\![\textbf{missing}]\!]^{c''})$

Doing lambda reduction on the indefinite (substituting arguments for variables in the denotation of *a*) gives us:

- $= \{\langle w, g\rangle | \langle w, g\rangle \in [\lambda c'' \in D_c . [\![\textbf{is missing}]\!]^{c''}]([\lambda c' \in D_c . [\![\textbf{book}]\!]^{c'}](c[1])(1))(1)\}$

Doing lambda reduction on the context abstractions gives us:

[6] A novelty presupposition here seems to be a consequence of using an indexing system. Alternatively, if indefinites weren't indexed, they could add some (deterministically determined) discourse referent that isn't defined by the input context. This is too complicated and tangential to develop here.

[7] The sudden expansion of the context in this step is exactly analogous to the expansion of the set of alternatives during the interpretation of an indefinite in the Hamblinized grammar of Kratzer and Shimoyama 2002.

- $= [\![\textbf{is missing}]\!]^{[\![\textbf{book}]\!]^{c[1]}(1)}(1)$

That is, *book* is interpreted with the argument 1 relative to an input context c[1], and *is missing* is interpreted relative to the output of that. Substituting in the example context assumed earlier, gives us:

- $c{+}a_1$ *book is missing*$= \{\langle w_1, f/1 \rightarrow A\rangle, \langle w_1, f/1 \rightarrow B\rangle\}$

This is the same context that would result from using a more standard system with only sentence-level dynamics, but here we have the ability to talk about presuppositions during composition.

5.2 The definite article

I take as a starting point a standard Heim/Kamp familiarity theory of definiteness. A definite article is indexed, and presupposes that its input context makes the discourse referent corresponding to the index defined.

I am assuming that presuppositions manifest themselves in two ways. The first is the Heim and Kratzer 1998 partial-definedness story about presuppositions: a constituent is presuppositional if its denotation is partially defined for its argument domains. Presupposition failure in this sense is composition failure, due to partial definedness. Presuppositions also manifest themselves as conditions on input contexts – a completely composed sentence will be defined only for input contexts that satisfy certain conditions.

Expressed in the current formalism, the denotation of a definite article is as in (39).

$$(39)\quad [\![\textbf{the}_i]\!]^c = \lambda P \in D_{\langle c\langle rc\rangle\rangle} \text{s.t.} \left(\begin{array}{ll} & (\forall \langle w, f\rangle \in c : i \in \mathrm{Dom}(f)) \\ \wedge & P(c)(i) = c \end{array} \right) . \lambda Q \in D_{\langle c\langle rc\rangle\rangle} . Q(c)(i)$$

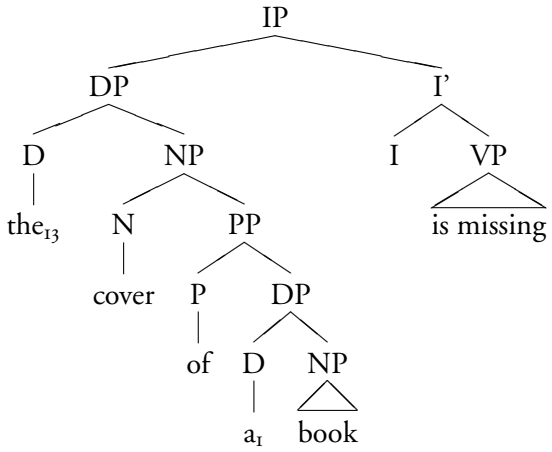
The is partially defined for its first argument, the descriptive content. The first conjunct of the definedness condition ensures that the discourse referent corresponding to the index exists in the input context – the referent is discourse-old. The second conjunct ensures that the descriptive content of the DP (the argument P) holds of the discourse referent i in every world-assignment pair in the context. This conjunct filters out indexings where we would refer to something that is discourse-old but does not match the descriptive content.

There is nothing truly new about the account so far – I have just put some old ideas together. What all this extra formalism does, however, is allow is to state how *of*-possessives compose in a very precise manner, including a description of local presupposition accommodation inside a DP.

5.3 Composing *Of*-possessives

In this section I go through an example of how an *of*-possessive composes, and introduce the details of how presupposition accommodation works. The sentence that the example will use is given in (40).

(40) The$_{13}$ cover of a$_1$ book is missing.



Let's assume an input context that doesn't define either discourse referent, and contains no covers or books – the context $c = \{\langle w_1, f\rangle, \langle w_2, f\rangle\}$ for some arbitrary f not defined for 1 or 13. There are three individuals, A, B, and C. B is a book in both w_1 and w_2. A and C are B's cover in both w_1 and w_2, the front and back cover respectively. A is missing in w_1 but not w_2, and C is missing in neither world.

The first step is to compose a_1 with *book* as in the previous example. *Book* (after context abstraction) forms the restrictor to the indefinite, and we end up with:

- $[\![\mathbf{a}_1]\!]^c(\lambda c' \in D_c \,.\, [\![\mathbf{book}]\!]^{c'})$
- $= \lambda Q \in D_{\langle\langle c\langle rc\rangle\rangle c\rangle} \,.\, Q([\![\mathbf{book}]\!]^{c[1]}(1))$

At this stage we have updated the input context (which is c) with the discourse referent 1, and removed world-assignment pairs from that context where 1 is not mapped onto a book.

I'll treat *of* as semantically vacuous, so the PP *of* a_1 *book* has the same denotation as a_1 *book*. This PP forms the internal argument to the relational noun *cover*.

Now comes a technical detail that is tangential to the main points: if *cover* is a two-place predicate, we have to deal with the same compositional mismatch as when we interpret a generalized quantifier in the object position of a transitive verb. There are various solutions (see Heim and Kratzer 1998 ch. 7 for a summary) and the particular solution is not important here; since I don't wish to deal with QR out of a DP, I'll assume that a type-shift applies to turn object-position generalized quantifiers into the right type. The type-shift is given in (41). Intuitively, what this does is abstract the external argument of the transitive noun outside the composition of the noun with its internal argument, so that the internal generalized quantifier sees the internal argument of the noun as the only one.

(41) **GQ object position lift**
If a constituent α whose denotation is a function with a domain of type $\langle c\langle\langle rc\rangle c\rangle\rangle$ needs to compose with a constituent β whose denotation is of type $\langle c\langle\langle r\langle rc\rangle\rangle c\rangle\rangle$, α can compose as:
$\lambda R \in D_{\langle c\langle\langle r\langle rc\rangle\rangle c\rangle\rangle} \,.\, \lambda x \in D_r \,.\, [\![\alpha]\!]^c(\lambda c' \in D_c \,.\, \lambda y \in D_r \,.\, R(c')(y)(x))$[8]

[8]This is analogous to a static type-shift as follows:

(1) **GQ object position lift (static)**
If a constituent α whose denotation is of type $\langle\langle et\rangle t\rangle$ needs to compose with a constituent β whose denotation is of type $\langle e\langle et\rangle\rangle$, α can compose as:
$\lambda R \in D_{\langle e\langle et\rangle\rangle} \,.\, \lambda x \in D_e \,.\, [\![\alpha]\!](\lambda y \in D_e \,.\, R(y)(x))$

Recall that *of* a_1 *book* before the typeshift denotes the same thing as *a book*, repeated from above:

- $[\![\textbf{of a}_1\ \textbf{book}]\!]^c$ (before the typeshift)
  $= \lambda Q \in D_{\langle\langle c\langle rc\rangle\rangle c\rangle} \,.\, Q([\![\textbf{book}]\!]^{c[1]}(1))$

After the typeshift applies, *of* a_1 *book* will denote:

- $[\![\textbf{of a}_1\ \textbf{book}]\!]^c$ (after the typeshift)
  $= \lambda R \in D_{\langle c\langle r\langle rc\rangle\rangle\rangle} \,.\, \lambda x \in D_r \,.\, R([\![\textbf{book}]\!]^{c[1]}(1))(1)(x)$

Composing with *cover*, we get:

- $= \lambda x \in D_r \,.\, [\lambda c' \in D_c \,.\, [\![\textbf{cover}]\!]^{c'}]([\![\textbf{book}]\!]^{c[1]}(1))(1)(x)$
- $= \lambda x \in D_r \,.\, [\![\textbf{cover}]\!]^{[\![\textbf{book}]\!]^{c[1]}(1)}(1)(x)$
- $= \lambda x \in D_r \,.\, \{\langle w, f\rangle |\ \exists f' \,.\, \langle w, f'\rangle \in c \wedge f'[1]f \wedge$
  $f(1)$ is a book in $w \wedge f(x)$ is a cover of $f(1)$ in $w\}$

That is, *cover of* a_1 *book* denotes a property that will remove from a context any world-assignment pairs where its argument x isn't mapped to a newly introduced book 1.

It is now time for this property to compose with *the*$_{13}$. The property forms the restrictor for the definite, and therefore it can't compose with the definite unless the presuppositions are satisfied. In the example context chosen earlier, there is no discourse referent 13 present in the discourse model, and therefore *the*$_{13}$ is not defined for any value for its first argument. This is presupposition failure.

At this point presupposition accommodation (Lewis 1979; Heim 1982; van der Sandt 1992; Beaver and Zeevat 2004 and others) comes in. Many items that presuppose are felicitous even when their presuppositions aren't met, as long as there is no knowledge that goes against those presuppositions. Accommodation is one explanation of this fact - a mechanism whereby the common ground can be updated around the time of presupposition failure so as to meet the presupposition. Here I will simply sketch how accommodation covers *of*-possessives, and in §5.4 I will discuss how accommodation needs to be constrained.

The immediate cause of presupposition failure is the conjunct that says that the input context has to be defined for the index of the definite article. In this case the index is 13. If this was all the presupposition said, accommodation would simply involve ensuring that 13 is in the domain of every assignment function in the context, i.e. adding 13 as a new discourse referent. This would give us the following context, for the ongoing example:

$$\left\{\begin{array}{ll} \langle w_1, f/13 \to A/1 \to B\rangle, & \langle w_2, f/13 \to A/1 \to B\rangle, \\ \langle w_1, f/13 \to B/1 \to B\rangle, & \langle w_2, f/13 \to B/1 \to B\rangle, \\ \langle w_1, f/13 \to C/1 \to B\rangle, & \langle w_2, f/13 \to C/1 \to B\rangle \end{array}\right\}$$

Simply adding 13 isn't enough, however, because the second conjunct (that the descriptive content hold of 13) would be violated. In the context above, 13 could (in view of the common ground) refer to B, and B is a book, not the cover of a book. We also have to update the context to ensure that the descriptive content, that is the restrictor of the definite determiner, holds of 13. In this case, the descriptive content is the property denoted by *cover of* a_1 *book*. So, to accommodate the definiteness presupposition, we replace the old input context c with the value $P(c)(13)$, where P is the first argument to the definite article. The result is used as the input context for interpreting *the*. This context is:

$$\left\{ \begin{array}{ll} \langle w_1, \mathrm{f}/13 \rightarrow \mathrm{A}/1 \rightarrow \mathrm{B} \rangle, & \langle w_2, \mathrm{f}/13 \rightarrow \mathrm{A}/1 \rightarrow \mathrm{B} \rangle, \\ \langle w_1, \mathrm{f}/13 \rightarrow \mathrm{C}/1 \rightarrow \mathrm{B} \rangle, & \langle w_2, \mathrm{f}/13 \rightarrow \mathrm{C}/1 \rightarrow \mathrm{B} \rangle \end{array} \right\}$$

1 is assigned to every possible book, which this example contains only one of. 13 is assigned to every possible cover of some book. Because there is only one book, there are only two possible covers, A and C. Accommodation has introduced one discourse referent to a cover, but it is not fixed as to which cover. We know that it is a cover because every way of assigning it a value makes it out to be a cover.

At this point, the presuppositions are satisfied. There is a familiar (relative to the output of accommodation) discourse referent mapped to an object that satisfies P, so we can proceed with composition. The next step is to compose *the*$_{13}$ *cover of a*$_1$ *book* straightforwardly with *is missing*. This throws out any world-assignment pairs where 13 is not assigned to a missing thing - giving us the final context:

$$\left\{ \langle w_1, \mathrm{f}/13 \rightarrow \mathrm{A}/1 \rightarrow \mathrm{B} \rangle \right\}$$

This concludes the account of how OPs compose; I will turn now to the issue of how to keep accommodation from predicting felicity in the wrong cases.

5.4 Constraining accommodation

The analysis I develop here makes crucial use of accommodation. This is not problematic for *of*-possessives, within a familiarity theory, since OPs can always be novel. However, accommodation can't be quite so prolific within definite descriptions in general. There are many well-known cases of definites that needn't be familiar, but there are many cases of definite descriptions that have to be familiar no matter how accommodating the hearer.

In general, "short" definites (such as *the linguist* and other such cases) and demonstratives, some proper names, and pronouns are among presupposition triggers (also including *too*, *indeed*, *another*, politeness markers, and intonationally marked focus; see Beaver and Zeevat 2004 for discussion and references) that do not allow accommodation readily or at all. OPs fall into a class that has been called "long definites", which Beaver and Zeevat use to refer to those that do allow accommodation. Russell's famous examples (*the king of France*, and *the author of Waverly*) appear to be OPs, but there are long definites which aren't OPs, including definites with relative clauses (*the guy Alfonso told me about the other day*) and superlatives (*the youngest player on the football team*). The analysis I give here will not consider long definites besides OPs (in fact, the class might not be homogeneous in terms of licensing conditions), but it must at a minimum separate out OPs from short definites.

I am aware of three explanations of why some presupposition triggers don't allow accommodation, and unfortunately none of them seem to quite work here (the following discussion parallels closely the discussion in Beaver and Zeevat 2004).

Geurts and van der Sandt 2001 suggest that we can't accommodate presuppositions which provide too little descriptive material. This idea was suggested in part to differentiate long and short definites, as intuitively, this is one major difference between them. While I wouldn't want to throw away the intuition, this idea by itself has several problems (discussed by Beaver and Zeevat 2004). First, it is very difficult to formalize precisely - there does not seem to be any easy way to pick a line below which the content is too little. Second, it is unclear how this would be theoretically motivated. Third, it isn't clear that it can handle all or even most cases of non-accommodation (see Beaver and Zeevat for discussion). If this condition can be stated in a more precise way, it would very likely work for *of*-possessives. Intuitively, they provide "enough" information to do accommodation. However, as it stands, this constraint does not seem precise enough.

Zeevat 2003 provides an analysis of non-accommodation in bidirectional OT, based on unpublished work by Blutner. Under this analysis, a presupposition can't accommodate if there is a non-presupposing form that is equivalent in meaning to the presupposing form. It is unclear how to apply the notion of "equivalent in meaning" to the kinds of presuppositions involved here. The closest candidate for equivalence is the indefinite article *a*, but I would be hard pressed to conclusively show either equivalence or non-equivalence between *the* and *a*. Furthermore, this analysis provides no way that I can see of distinguishing short definites on the one hand, and OPs on the other. The crucial difference between the two categories lies not in the source of the presupposition (the definite article), but rather in the construction itself, and a bidirectional-OT approach provides no clear way of dealing with this.

Beaver and Zeevat 2004 propose a third principle: accommodation can't modify the discourse record. While for other cases of non-accommodation, this seems to be the most promising of the principles they review, I don't think it works here. It is possible to envision familiarity presuppositions in a way that need not involve the discourse record - Prince 1992's notion of hearer-old will accomplish this. On this view, *the* would presuppose that addressees are aware of the existence of some particular object meeting the descriptive content of the definite. This may even be the right view of familiarity, but the problem is that somewhere along the line, if discourse referents exist at all, an OP is going to have to introduce one. This is mainly demonstrated by the fact that pronouns can refer back to the accommodated entity:

(42) The cover of this book is missing. Some unethical book store employee must have removed it.

The OP in (42) is novel, and no cover was previously mentioned, but it still is perfectly felicitous as a pronominal antecedent. It is possible that the discourse referent is introduced by the uniqueness presupposition, but then we'd expect uniqueness not to be accommodated. Furthermore, this principle once again can't easily distinguish between short definites, and *of*-possessives.

Though Beaver and Zeevat's proposal is problematic as-is, a very simple modification will allow us to explain the difference between possessive/bridging definites and short definites. For present purposes, the Beaver and Zeevat principle would have banned any new discourse referents. What we see is that new discourse referents are allowed if they are attached to some old referent, in some way. This is like an inverted version of Geurts and van der Sandt's proposal above - instead of preventing accommodation if there isn't enough descriptive content, accommodation is allowed just in case there is enough descriptive content that is the right kind.

(43) Beaver and Zeevat's **Discourse Record Principle** (modified)
Accommodation may not modify the discourse record except to add discourse referents that are in some highly salient relation with an existing discourse referent.

This exception is similar to what Prince 1981 referred to as anchoring: "A discourse entity is Anchored if the NP representing it is LINKED, by means of another NP, or "Anchor," properly contained in it, to some other discourse entity." Here referents that are anchored are not a separate kind of discourse referent (as Prince proposed); rather they are normal definites which are allowed to accommodate because of a constraint on accommodation.[9]

This condition is also quite similar to Heim 1982's constraint on accommodation, meant primarily to handle bridging definites: "When a new file card is introduced under accommodation, it has to be linked by crossreferences to some already-present file card(s)." While I do not address bridging definites here, they do share a commonality with *of*-possessives: in many cases bridging is triggered by the presence of a relational noun.

[9] Though I am ignoring other cases of long definites, it is worth noting that this formulation may be too strong to cover them. Prince's original formulation of anchoring was apparently intended to cover all long definites; she gives examples involving relative clauses.

I assume that the use of a relational noun in an OP makes the relation denoted by that noun highly salient. In this way the entire accommodation analysis is built on the presence of a relational noun. This matches interestingly with Barker 2005's analysis. That analysis worked by canceling a discourse uniqueness presupposition in the case of *of*-possessives. The cancellation is keyed (indirectly) on the presence of a relational noun, and so the two analyses converge on this point – what makes OPs special is the fact that they all involve a relational noun.

6 Formalizing the new felicity condition

Given this analysis of *of*-possessives, we are now in a position to give the restated felicity condition for existentials in a formal way. The informal version, (29) is repeated here.

(29) Felicity Condition (version 3): For any context c, the argument of the existential predicate interpreted relative to c (if it is associated with a discourse referent at all) must be associated with a discourse referent that is novel in c.

This condition requires not just that the discourse referent associated with the pivot be familiar relative to the context of interpretation, but that it would be familiar in any context for which the pivot is defined.

The condition is formalized in (45), after some useful notation in (44). Following McNally, the formalized version can be seen as associated with the expletive *there*.

(44) a. For any context c, $\mathrm{Dom}(c) \underset{\text{def}}{=} \{i \in D_r | \forall \langle w, f\rangle \in c : i \in \mathrm{Dom}(f)\}$

b. $\mathbf{ident} \underset{\text{def}}{=} \lambda c \in D_C \,.\, \lambda x \in D_r \,.\, c$

(45) Felicity condition version 3, formal: Given an index i, $[D_i\ \mathrm{NP}]$ is a felicitous pivot iff
$\forall c \in D_c : (\llbracket [\mathbf{D}_i\ \mathbf{NP}] \rrbracket^c \text{ is defined}) \rightarrow (i \notin \mathrm{Dom}(c) \wedge i \in \mathrm{Dom}(\llbracket [\mathbf{D}_i\ \mathbf{NP}] \rrbracket^c(\mathbf{ident})))$

This says that for every context where the denotation of the pivot is defined, that context will not contain the discourse referent i, but the result of $c + \mathrm{DP}_i$ will contain the discourse referent i. A DP is an acceptable pivot if it is the kind of thing that is bound to introduce a new discourse referent. The use of **ident** is just a way of ignoring the second argument of D, which is assumed here to be have the type of a quantificational determiner. For felicity conditions, what matters is the CCP of the determiner w.r.t. its first argument only.

It is helpful at this point to step through several examples, and I do this in the next section.

7 Applying the felicity condition

First, I'll go through a plain definite.

7.1 A plain definite

The example I use is given in (46).

(46) # There is the$_{22}$ cat in the room.

The sentence (46) has been indexed arbitrarily. There are three kinds of contexts that need to be considered to understand the condition in (45). There are contexts where 22 is not in the domain of the context – no such discourse referent is defined. There are contexts where 22 is in the domain, but the context does not

guarantee that 22 is a cat. Finally, there are contexts where 22 is in the domain, and guaranteed to be a cat. In contexts of the first kind, the referent 22 is novel relative to the context, and the presuppositions of the definite article are not satisfied. $[\![\textbf{the}_{22}\ \textbf{cat}]\!]^c$ will not be defined if c is such a context, and accommodation can't save it (cf. the constraints on accommodation in §5.4) so we can exclude this case. In contexts of the second kind, the presuppositions of $\textit{the}_{22}$ are again not met – the descriptive content is presupposed to hold of 22, and accommodation again can't play a role here. We can ignore this case as well. The third kind of context is the case we can't ignore for evaluating the felicity condition in (45), since the denotation of the pivot is defined relative to any such context. This is the case where the discourse referent is familiar (in the domain of a context), however, and while the quantifier's restriction in (45) is met, the nuclear scope can never be true, since it requires that the discourse referent not be in the domain of the input context. Therefore, plain definites will not meet the above felicity condition.

7.2 An indefinite

Next, I'll show that indefinites behave as expected.

(47) There is a_{22} cat in the room.

Here there are two kinds of contexts to consider – contexts where 22 is in the domain of the context, and contexts where it is not. In contexts of the first kind, the novelty presupposition is not met, and for such contexts c, $[\![\textbf{a}_{22}\ \textbf{cat}]\!]^c$ is not defined. We can set aside such cases. In the second kind of context, the felicity condition is guaranteed to be met – the novelty presupposition has ensured that the domain of c does not include 22, and the denotation of *a* ensures that after the interpretation of the pivot, 22 is present. So indefinites always satisfy the felicity condition in (45). Note that this logic applies independent of internal structure – it doesn't matter if the indefinite is an *of*-possessive.

7.3 An *of*-possessive

Finally, I'll go through an example of how an *of*-possessive works. This case is much more complicated than the previous two. Recall that the goal is to show that an OP of the right form necessarily involves novel reference. Let's consider McNally's example, repeated again here with some arbitrary indexing:

(48) There was the_{25} top to a_2 box floating in the stream.

For the sake of simplicity, I'll ignore cases where the presuppositions of a_2 aren't met. Just as with the case of a plain definite, there are three kinds of contexts to consider, when testing the felicity condition against the pivot of (48), $\textit{the}_{25}$ *top to* a_2 *box*. First, there are contexts in which 25 is not defined. If the pivot were a plain definite, its denotation would not be defined, and we could ignore this case, but the pivot is an *of*-possessive. This means that accommodation happens locally to resolve the type mismatch. Accommodation involves the introduction of a novel discourse referent 25, and so the nuclear scope of the felicity condition is satisfied in contexts of this kind.

Second, there are contexts where 25 is defined, but is not the top of anything. The presuppositions of *the* are not met here, but accommodation can't come into play – it would have to involve modification of information about an existing discourse referent, not introduction of a new one, and this is not allowed. This kind of context can be ignored.

Finally, there is the hardest case to discuss – we have to consider whether there are contexts c where 25 is defined, and is defined in such a way that after the interpretation of $[\![\textbf{a}_2\ \textbf{box}]\!]^c$, 25 picks out a thing that is in the *top-of* relation with 2. That is, contexts where the attempted pivot can refer familiarly with

all its presuppositions satisfied. If there are not such contexts, then definite OPs with lower indefinites will satisfy the restated felicity condition. I want to suggest that there are no such contexts.

These are contexts c that, where $c' = [\![\mathbf{a}_2\ \mathbf{box}]\!]^c$, every world-assignment pair $\langle w, f\rangle$ in c' is such that both $f(2)$ is a box in w and $f(25)$ is the top of $f(2)$ in w. The indefinite introduces no more information than that $f(2)$ is a box, so c' will contain all world-assignment pairs where some box is mapped to 2. That is, the context will contain every way of assigning 2 to some box in the contextual domain, and will be as unspecific as the domain allows about which box 2 is mapped to. Now of course any contextual domain that contains some boxes will also contain box-tops, and c could be furnished with 25 being mapped to some of those. For instance, 25 could be mapped (in c) to any old box-top, i.e. the effect that interpreting a_{25} *box-top* would result in. But as long as there is more than one box, or more than one box-top in the domain, the system can't be set up so that 25 is ensured to refer to the top of the newly mentioned box. This is because a_2 is interpreted in a maximally unspecific way, and so c' will contain world-assignment pairs mapping the new discourse referent to any possible box, and therefore, not be specific about which box-top it belongs to.

But what about contexts where the domain is set up so that there is one box-top, and one box? These are the problem cases for this analysis. The system, given what I've said so far, predicts that if such a context can be manufactured, then we should be able to use *the top to a box* to refer familiarly in such a context – just match up the indices. This is not the desired result. The fact of the matter is that such contexts are extremely hard (or even impossible) to manufacture, and that even in them, the OP can't refer familiarly. Let's consider a slightly more natural example. We know that there has only ever been one linguist from Reading, MA.[10] This linguist has one sister, named Adriana. We should then be able to have the dialogue in (49) with the illustrated indexings.

(49) A: Is Adriana$_1$ here?

B: The$_1$ sister of a$_2$ linguist from Reading is in the lobby.

If the system makes this dialogue felicitous, then this kind of OP should be ruled out from the pivot of an existential sentence, given what I've said so far. Intuitively, however, this indexing doesn't seem right. Upon hearing B's response, it seems like A must make an inference to figure out that B was talking about Adriana. It is more like the sentence is only felicitous with *Adriana* and *The* assigned distinct indices, and the speaker collapses them after the fact. However, this OP should satisfy the presuppositions of *the*$_1$: 1 is defined in the input context to B's utterance, and 1 picks out the only individual in the domain that is the sister of any linguist from Reading. The problem seems to come in with the interpretation of the indefinite. Even with this special domain knowledge, we resist treating a_2 *linguist from Reading* as referring specifically to the individual Kyle. We seem only to be referring to something like a guise of me, of which there could be many (cf. the discussion of guises and reference in Heim 1998). There is an inference that can be made that this is me, but the inference is only made after the fact, and not part of the interpretation of the sentence. In any case, I will assume (though not formalize) that the felicity condition in (45) does not consider contexts with this kind of domain restriction – that it only considers "natural" contexts for some appropriate value of natural. As far as I can tell, this problem is a pseudo-problem caused somehow by the formalism, and empirically OPs of the relevant kind can't refer familiarly.

If this assumption is accepted, then, OPs with a higher definite and a lower indefinite will always refer novelly independent of choice of context, and so meet the criteria of the revised felicity condition. The formal resolution of these technical difficulties will have to wait for another day.

[10] Me, as it happens. At least, I'm pretty sure this is true.

8 Concluding Remarks

McNally 1992, following Lumsden 1988 and Prince 1988, argues that pivots of existential sentences are licensed when they are associated with a novel discourse referent (see also Ward and Birner 1995 and Zucchi 1995 for related ideas). I have argued that this is not enough, when considering *of*-possessives. When coupled with a correct treatment of *of*-possessives, it would predict that any *of*-possessive would be licensed, even if every determiner in it were definite. This is the wrong prediction, and so McNally's felicity condition must be revised. I have revised it to say that pivots have to be the kind of semantic object that necessarily is associated with a novel discourse referent. This rules out completely definite OPs, which can either involve novelty or familiarity. I have argued that it rules in OPs that involve a lower indefinite (modulo some technical problems).

The meat of the felicity condition, on my account, is shifted from the information structure of particular existential sentences, to the information-structural behavior of pivots more generally. At an abstract level, the revised felicity condition is similar to the idea of an existential function from Keenan 1987 – a pivot is licensed if it is dynamically existential, i.e. leaves behind a new discourse referent. It is not necessary that the properties of any particular determiner cause this existentiality – *of*-possessives are dynamically existential due to the interaction of their structure, definiteness, and constraints on accommodation.

In this paper I have not attempted to account for the full range of facts – I have mostly neglected quantifiers. Since I am assuming McNally's analysis (McNally 1992, 1998), the natural step would be to place a type restriction on pivots in addition to the felicity condition (limit pivots to constituents whose denotation is or can be type-shifted to a property). The account here is pragmatic, and Keenan 2003 has recently argued against pragmatic accounts, in favor of strictly semantic ones. Accordingly, it would be interesting to see if the analysis here can be recast in purely semantic terms. The sticking point is the analysis of *of*-possessives – if I am correct that it involves local presupposition accommodation, this is extremely difficult to state in a static semantics. Finally, Beaver et al. 2005, following Mikkelsen 2002, argue that an account of existential sentences should do away with construction-specific stipulations entirely. *Of*-possessives provide an interesting challenge for this kind of analysis, since they seem to require attention to some construction-specific detail. This issues I leave to the future.

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