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"Strong" predicative presuppositional objects*

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1 Introduction

The past few decades have seen a proliferation of algorithms designed to predict the presuppositions of complex sentences given the presuppositions of their parts (the "projection problem"). In general, this work has focused on presuppositions "triggered" as propositional objects. For instance: the string knows John is incompetent tends to be used by speakers who presuppose that John is incompetent. Certain sentential contexts cause this presuppositional inference to disappear, a fact which much work has sought to explain.

This isn't to say that presuppositions born as non-propositional objects have been ignored. "Predicative" triggers like quit smoking, which might be said to trigger a presuppositional object characterizing the set of individuals who smoked, have been discussed at least since Heim (1983). Of particular interest has been the behavior of such triggers when embedded in the nuclear scope and restrictor positions of quantificational DPs.

Most of what might be termed the "major" accounts of presupposition projection make predictions about how predicative presuppositional objects (PPOs) project out of both the nuclear scope and restrictor positions. It would, I think, be fair to divide these accounts into three groups: (1) those which predict all universal presuppositions all the time from both positions (e.g. Heim 1983; Schlenker 2008, 2009), (2) those which predict no universal presuppositions ever for either position (e.g. van der Sandt 1992; Geurts 1999), and (3) accounts with predict universal inferences some of the time depending on the position of the trigger and the particular quantified determiner (George 2008; Chemla 2008b).

Though all of these accounts have more or less comparable claims to descriptive adequacy in the *propositional* case (with certain exceptions; see e.g. Beaver 2001 for discussion), the interaction of PPOs and quantification represents a opportunity for distinguishing among them. And though judgments about the relevant constructions tend to be less accessible than for their propositional counterparts, Chemla (2008a) provides experimental evidence that for French speakers, at least, the general empirical profile associated with the accounts in group (3) seems to be most appropriate. In other words, we have evidence that the projective behavior of PPOs in quantificational contexts is subtler than either groups (1) or (2) predict.

In the following, I argue for a less subtle picture of PPO projection out of quantified contexts in order to account for the projective behavior of "strong" PPOs (what I mean by this will become clear shortly). Specifically, strong PPOs seem to give rise to robust universal inferences whether embedded in a quantified (subject) DP's restrictor or nuclear scope. And yet we still have Chemla's experimental results for "weak" triggers. How to account for this? Though none of the varieties of accounts mentioned above gets the whole story, I argue that group (1) comes closest—mostly by way of showing that the other two have fairly intractable difficulties.

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2 Weak PPO triggers and quantification

2.1 Experimental facts

Chemla (2008a) shows that French speakers only derive strong universal inferences when PPOs are embedded in the nuclear scope of quantified DPs headed by a universal or negative-existential quantified determiner:

(1) Each of these 100 students [quit smoking]. ($\pi : \forall$)

(2) None of these 100 students [quit smoking]. ($\pi : \forall$)

(3) Some of these 100 students [quit smoking]. ($\pi : \neg\forall$)

(4) (At least) two of these 100 students [quit smoking]. ($\pi : \neg\forall$)

(5) Of these 100 students, none of the ones who [quit smoking] are blonde. ($\pi : \neg\forall$)

(6) Of these 100 students, two of the ones who [quit smoking] are blonde. ($\pi : \neg\forall$)

Bracketing delimits the relevant PPO trigger, and 'π' refers to an expression's presuppositional content. Though these aren't Chemla's exact stimuli (nor faithful English renderings thereof), my intuitions are that the presuppositional character of these expressions is in line with his results.

Chemla reports speakers robustly associate constructions like (1) and (2) with universal presuppositional inferences—viz. of the form $[\![\mathsf{all\ 10\ students\ smoked}]\!]$. The remainder of the examples—with the trigger embedded (a) in the nuclear scope but under quantifiers other than each or none and (b) in the restrictor position—carry no such universal inference. Note the absence of a universal inference *regardless of the determiner* when the PPO occurs in the restrictor position.

2.2 Implications for various projection accounts

2.2.1 Satisfaction theories

"Satisfaction" theories of presupposition projection (e.g. Heim 1983; Schlenker 2008, 2009) generally predict universal inferences (a) for PPOs in both the nuclear scope and restrictor positions and (b) regardless of the particular quantified determiner. Why this obtains is, perhaps, most obvious for Schlenker's (2009) static reformulation of Local Contexts.

Similar to Heim (1983), Schlenker's (2009) theory of projection is such that the presupposition of a sentence as a whole is derived by requiring a triggered presuppositional object to be entailed by its local context. When dealing with PPOs we require a generalized notion of entailment, as follows: for every intensional predicate P and Q, P entails Q at some world w just in case, for all individuals x if $Pwx = 1$, $Qwx = 1$. Given a PPO Q with a local context P, we derive a universally quantified presupposition π of the form $\lambda w \forall x. Pwx \rightarrow Qwx$. To avoid presupposition failure, π must map every world in the common ground to `True`.

Schlenker (2009) proves that the local context for the trigger quit smoking in each of the above examples is $\lambda w \lambda x.\mathbf{student}(w)(x)$. The theory of local contexts thus predicts a presupposition equivalent to $[\![\mathsf{all\ 10\ students\ smoked}]\!]$ for each of these sentences.

Satisfaction theories, then, make the correct sorts of predictions when a PPO occurs in the nuclear scope of each or none—examples (1) and (2). In the remaining cases the predicted presupposition appears too strong. However, satisfaction accounts possess a

mechanism for weakening/obliterating presuppositions: local accommodation (**LA**). How **LA** works is easy enough to grasp intuitively. For a sentence like some of these ten students quit smoking, **LA** of the presupposition used to smoke would yield an expression roughly equivalent in meaning with some of these ten students used to smoke and don't smoke. This latter expression, of course, presupposes nothing about whether or not any of the 10 students used to smoke.

Using **LA** to systematically weaken presuppositions in this way has at least two difficulties. For one, if we wish for **LA** to explain the lack of universal inferences in certain cases, an independent explanation for why a similar move is unavailable for examples (1) and (2) is required. Were **LA** capable of applying equally easily to all cases (which seems like the null hypothesis), we'd have no explanation for why (1) and (2) differ from examples (3)–(6) in what they presuppose.

Secondly, it's my impression that examples (3)–(6) do presuppose *something*—perhaps on the order of some of these 100 students used to smoke, cf. Beaver (2001).[1] If **LA** is what's responsible for these constructions' lack of a universal presupposition, it's a mystery why they should carry any presuppositional inference at all. Though a proper consideration of this issue lies beyond the scope of the present paper, this point underscores the skepticism/carefulness with which we should approach any **LA**-based solution.

2.2.2 *DRT*

DRT—cf. van der Sandt (1992); Geurts (1999)—has something of the reverse problem. In particular, it's unable to derive universal presuppositional inferences for *any* of the quantificational examples above. Since in DRT PPOs are formulae which host a variable bound only within the scope of some quantifier $\mathcal{Q}$, accommodating them globally (DRT's equivalent of projection)—which places the PPO outside the scope of $\mathcal{Q}$—results in variable un-binding and an uninterpretable DRS. Therefore only intermediate and local accommodation are available to the PPO, and (universal) presuppositional inferences are predicted to not arise.

This result has been argued to be correct by e.g. Geurts (1999), given that sentences like everyone should leave his camera at the front desk don't seem to presuppose that everyone has a camera. It seems likely, however, that Geurts has simply not controlled for implicit domain restriction—cf. Stanley & Szabó (2000). When the domain of quantification is made explicit—as in Chemla's stimuli—the universal inference is robust:

(7) Each of your ten students must leave his camera at the front desk. ($\pi : \forall$)

2.2.3 *Trivalent accounts*

With respect to weak PPOs the trivalent "repairs" account of George (2008) seems to fare the best. Though the details are beyond the scope of what I can discuss here, it will suffice to note that George's account comes close to predicting the patterns of projection observed in Chemla (2008a).[2] In brief: PPOs *never* project out of the restrictor, *always* give rise to universal inferences when triggered in the nuclear scope of each or none, and *never* give rise to universal inferences when triggered in the nuclear scope of non-universal quantifiers like some, exactly 4, at least two, most, etc.

1 Embedding these sentences in non-upward monotone environments confirms that the relevant inference isn't just part of each sentence's assertive component.

2 Even if this characterization is too generous, it will suffice for the purposes of this paper.

2.2.4 Wrapup

When attention is confined to Chemla's data on PPO triggers in quantified contexts, George (2008)'s trivalent account has the greatest claim to descriptive adequacy. It's important to note, however, that this descriptive power entails a loss of *flexibility*. What I mean is this: George derives results relatively consistent with Chemla's data but does so with a theory that *only* allows for *non*-universal inferences in cases like examples (3)–(6). In this way George's account resembles DRT. Both achieve non-universal presuppositional inferences by default—though the set of cases for which this holds is, of course, not shared between the two. However, DRT is unable to derive universal inferences *ever*, and George is only able to derive universal inferences for PPOs triggered in the nuclear scope of none and each. In short, should universal inferences appear consistently in other quantificational PPO cases, George's framework would lose much of its claim to descriptive adequacy.

3 Strong PPO triggers

3.1 The basic facts

This section presents a series of constructions, each of which has a (more-or-less) minimal-pair counterpart in §2.1. The members of each pair differ in that the "weak" PPO trigger quit smoking has been replaced with the "strong" PPO trigger smoke Marlboros$^\sharp$ too—and later also smoke Marlboros$^\sharp$. Bracketing again delimits the PPO trigger and the '$\sharp$' superscript denotes focus-marking.

(8) None of these 100 students [smokes Marlboros$^\sharp$ too]

(9) Some of these 100 students [smoke Marlboros$^\sharp$ too]

(10) (At least) two of these 100 students [smoke Marlboros$^\sharp$ too]

(11) Of these 100 students, none of the ones who [smoke Marlboros$^\sharp$ too] are blonde

(12) Of these 100 students, two of the ones who [smoke Marlboros$^\sharp$ too] are blonde

Too is a focus-sensitive presuppositional particle. What sort of presupposition it triggers is mediated by (a) which constituent C it syntactically associates with, (b) what sub-constituent(s) of C bear focus-marking, and (c) the contextually-relativized set of alternatives to $[\![C]\!]$.

Before proceeding it's important to note that there's a syntactic ambiguity to be controlled for in the nuclear-scope constructions—(8), (9), and (10). In particular, these constructions could have been bracketed as follows:

(13) [[None of these 100 students smokes Marlboros$^\sharp$] too]

(14) [[Some of these 100 students smoke Marlboros$^\sharp$] too]

(15) [[(At least) two of these 100 students smoke Marlboros$^\sharp$] too]

In short: too can either associate with the predicate smoke Marlboros$^\sharp$ or with the sentence $\mathscr{Q}$ of these 100 students smoke Marlboros$^\sharp$. This syntactic ambiguity has semantic consequences. For instance, the bracketings in (8) and (13) yield (respectively), the interpretations

in (16a) and (16b)—assuming drinking as a salient alternative to smoking.[3]

(16) None of these 100 students smokes Marlboros$^\sharp$ too
a. $\neg\exists x\,.\,\textbf{student}.x \wedge \textbf{smoke}.\textbf{marl}\;x \wedge (\exists y\,.\,y \neq \textbf{marl} \wedge \textbf{smoke}.y\,x)$
b. $(\neg\exists x\,.\,\textbf{student}.x \wedge \textbf{smoke}.\textbf{marl}\;x) \wedge (\neg\exists x \exists y\,.\,\textbf{student}.x \wedge \textbf{smoke}.y\,x \wedge y \neq \textbf{marl})$

Since only the bracketings in (8)–(10) yield a PPO, we want to make sure the alternative parses are ruled out (or at least made highly unsalient). This can be accomplished either by introducing an adverbial VP modifier after too (forcing parse with VP-internal too) or by substituting also smoke Marlboros$^\sharp$ for smoke Marlboros$^\sharp$ too. Both of these moves rule out the irrelevant parse.[4] Note further that the restrictor cases—examples (11) and (12)—are syntactically unambiguous. Given the specified intonation, the only viable parses for these constructions seem to be such that too associates with smoke Marlboros$^\sharp$. Thus we arrive at the following paradigm (propagating also across the board to reinforce that as a PPO trigger it behaves just like too):

(17) None of these 100 students [smokes Marlboros$^\sharp$ too] at recess
None of these 100 students [also smokes Marlboros$^\sharp$]

(18) Some of these 100 students [smoke Marlboros$^\sharp$ too] at recess
Some of these 100 students [also smoke Marlboros$^\sharp$]

(19) (At least) two of these 100 students [smoke Marlboros$^\sharp$ too] at recess
(At least) two of these 100 students [also smoke Marlboros$^\sharp$]

(20) Of these 100 students, none of the ones who [smoke Marlboros$^\sharp$ too] are blonde
Of these 100 students, none of the ones who [also smoke Marlboros$^\sharp$] are blonde

(21) Of these 100 students, two of the ones who [smoke Marlboros$^\sharp$ too] are blonde
Of these 100 students, two of the ones who [also smoke Marlboros$^\sharp$] are blonde

The inference associated with each of these constructions is universal—i.e. $\approx$ ⟦each of these 100 students smokes something other than Marlboros (at recess)⟧. Note that exs. (13)–(15) provide a useful control here. In these cases the triggered presuppositional object is strong but not predicative. These examples lack a universal inference, suggesting that strongness and predicative-ness are both necessary ingredients in the phenomenon we're considering.

None of exs. (17)–(21) can felicitously be uttered if the common ground entails the proposition expressed by (22), as in e.g. (23), cf. (24) (bracketing the too-examples for brevity's sake):[5]

(22) Many of these n students don't smoke.

(23) Just five of those 100 students smoke. They all smoke Newports.
#Fortunately, none of those 100 students also smokes Marlboros$^\sharp$.
#Unfortunately, some/at least two of those 100 students also smoke Marlboros$^\sharp$.
#Of those 100 students, none of the ones who also smoke Marlboros$^\sharp$ passed my exam.
#Of those 100 students, two of the ones who also smoke Marlboros$^\sharp$ passed my exam.
cf. Two of those five students also smoke Marlboros$^\sharp$.

3 Note here that I'm being a bit sloppy and putting the PPO under the scope of the PL quantifier. This is only to highlight the relevant reading and is not to suggest that the PPO is part of the sentence's asserted content.

4 Inserted into the Chemla-like examples above, the adverbial phrase doesn't seem to have any sort of presuppositional strengthening effect, and so it appears unlikely to confound matters.

5 Note the use of many in lieu of some. This is to control for universal presuppositions felicitous due to sloppy talk.

(24) Each of those 100 students smokes. They all smoke Newports.
Fortunately, none of those 100 students also smokes Marlboros$^\sharp$.
Unfortunately, some/at least two of those 100 students also smoke Marlboros$^\sharp$.
Of those 100 students, none of the ones who also smoke Marlboros$^\sharp$ passed my exam.
Of those 100 students, two of the ones who also smoke Marlboros$^\sharp$ passed my exam.

The continuations in (24) are felicitous, in clear contrast to their marginal counterparts in (23). The only difference between the two sets of examples is whether the proposition ⟦every student smokes Newports⟧ is in the common ground (as in 24) or not (as in 23). Note that the universal inference obtains regardless of (a) the position in which the PPO is triggered and (b) the particular quantifier.[6] Additionally, the example in (23) which universally quantifies over Newport-smokers is felicitous.

That this inference is indeed presuppositional is suggested by the usual tests—i.e. it persists in non-upward-monotonic contexts:[7]

(25) I doubt that some of these 100 students [also smoke Marlboros$^\sharp$]

(26) Do some of these 100 students [also smoke Marlboros$^\sharp$]?

(27) If some of these 100 students [also smoke Marlboros$^\sharp$], the principal will be upset.

(28) I doubt that of these 100 students, two of the ones who [also smoke Marlboros$^\sharp$] are smart.

(29) Is it true that of these 100 students, two of the ones who [also smoke Marlboros$^\sharp$] are smart?

(30) If of these 100 students two of the ones who [also smoke Marlboros$^\sharp$] are smart, I'll be shocked.

Examples (25)–(27) involve PPOs triggered in a quantifier's nuclear scope, and examples (28)–(30) PPOs triggered in the restrictor position. Universal inferences persist in each set of constructions and, in both cases, with quantified determiners which tend to preclude universal inferences—cf. Chemla (2008a). We conclude that universal presuppositions result when too associates with a predicative expression in *either* the nuclear scope or restrictor position of a quantificational expression and regardless of the particular quantifier. As before, the proposition expressed by (31) can't be part of the common ground prior to the utterance of (25)–(30) (nor can it be felicitously added to the common ground after any of these sentences is uttered):[8]

(31) Many of these n students don't smoke.

(32) Only five of my 100 students smoke. They all smoke Newports.
#Do some of your 100 students also smoke Marlboros$^\sharp$?
#Of your 100 students, did some of the ones who also smoke Marlboros$^\sharp$ pass the exam?

(33) Each of my 100 students smokes. They all smoke Newports.
Do some of your 100 students also smoke Marlboros$^\sharp$?
Of your 100 students, did some of the ones who also smoke Marlboros$^\sharp$ pass the exam?

6 The restrictor examples seem to require accommodating something ≈⟦some of the smokers smoke Marlboros⟧, which isn't very difficult to do. I don't think this affects any of my points. Imagine inserting some of the smokers smoke Marlboros$^\sharp$ too before the restrictor cases in (23) and some of the students smoke Marlboros$^\sharp$ too before the restrictor cases in (24). The examples in (23) are still infelicitous, in contrast to (24).

7 Though Chemla (p.c.) expresses reservations about whether these sorts of tests really do reliably identify *presuppositional* content.

8 Additionally, Schlenker (p.c.) notes that constructions with *only* also seem to give rise to universal projection patterns. For instance, two of these ten students only smoke Marlboros$^\sharp$ seems to presuppose something like ⟦all the students smoke something other than Marlboros⟧.

3.2 Embedding presupposition triggers under too *or* also

When the predicate which associates with too or also is itself a PPO, an interesting pattern of projection is observed (we bracket the issue of syntactic ambiguity in the following):

(34) One of these 100 defendants [killed his father's$^\sharp$ lover too]
One of these 100 defendants [also killed his father's$^\sharp$ lover]
#And some of them were innocent of any crime.
#Some of their mothers didn't have lovers.

(35) Of these 100 defendants, the one who [killed his father's$^\sharp$ lover too] was found guilty
Of these 100 defendants, the one who [also killed his father's$^\sharp$ lover] was found guilty
#And some of them were innocent of any crime.
#Some of their mothers didn't have lovers.

(36) One of these ten subjects [quit smoking$^\sharp$ too]
One of these ten subjects [also quit smoking$^\sharp$]
#And some of them didn't quit doing anything.
#Some of them never had any non-smoking vices.

(37) Of these ten subjects, the one who [quit smoking$^\sharp$ too] succeeded
Of these ten subjects, the one who [also quit smoking$^\sharp$] succeeded
#And some of them didn't quit doing anything.
#Some of them never had any non-smoking vices.

Unsurprisingly given the behavior observed in the previous section, each expression carries a (universal) presupposition of the form ⟦each of the 10 defendants killed his mother's lover⟧ or (assuming drinking as the contextually given alternative to smoking) ⟦each of these 100 subjects quit drinking⟧. These expressions, though, are *themselves* presuppositional, and in fact, both (34) and (35) seem to require that (a) every defendant has a mother x, (b) every x has a lover, and (c) perhaps that every defendant is male. In other words, *any* presuppositions in the scope of predicative too or also get discharged universally, regardless of the position of the PPO and the quantifier $\mathscr{Q}$. Similarly, (36) and (37) seem to require that (a) every subject quit drinking (assuming drinking as the salient alternative to smoking), and accordingly, that (b) every subject drank.

In sum, PPOs which normally "surface" in weakened (i.e. non-universal) form—one of these 100 defendants killed his mother's lover intuitively does not presuppose, for instance, that every defendant's mother has a lover—are realized with universal force when they are strengthened by associating with a particle like too. Any presuppositions embedded inside strong triggers are, in other words, discharged universally, along with the "main" presupposition associated with the strong trigger.

4 Problems for...

I argue in this section that these facts present fairly intractable difficulties for DRT—cf. van der Sandt (1992); Geurts (1999)—and George's (2008) trivalent account.

4.1 DRT

As discussed prior, the fact that PPOs triggered in the nuclear scope/restrictor positions host a variable "bound" by (a) quantifier or (b) some discourse referent u entails that they cannot project beyond the scope of their binder, since doing so would un-bind the variable and result

in an uninterpretable DRS. It follows that global accommodation is impossible and thus that universal presuppositional inferences can *never* be derived. The only universal inference of any sort derivable in DRT is the entailment which results from locally accommodating a PPO triggered in the nuclear scope of each/every. Given Chemla's (2008a) results, this was a problematic state of affairs even before the addition of the strong PPO trigger data in the previous section. These new data show that the under-generation problem for DRT is wider-ranging than initially suspected.

A possible response for DRT might be to stipulate an operation CLOS which introduces a universal quantifier for every unbound variable in the DRS. In other words, if some formula Px occurs in the outermost DRS with x unbound, CLOS introduces a binder $\forall x$. But this isn't enough. CLOS needs to be able to restrict the domain of quantification in some way, else we end up with presuppositions equivalent to everyone does something other than smoke (even non-students). So instead of $\forall x.Px$, CLOS yields $\forall x.Qx \rightarrow Px$, with Q an anaphoric predicative restrictor variable.

In addition to being stipulative, this account suffers from several difficulties in its implementation. Firstly, for DRT-style anaphoric resolution of predicative-type objects, we need to be able to introduce predicative discourse referents. Secondly, there's a regularity here regarding which predicative expression Q ends up referring to: it's *always* the nominal restrictor (i.e. student, defendant, or subject in the previous examples). Letting Q be specified anaphorically rather than deterministically (i.e. as in Local Contexts) offers no explanation for why Q always ends up identical to the nominal restrictor. Finally, even if some principled means for deterministically resolving Q to the nominal restrictor is offered, if the PPO is accommodated globally the discourse referent corresponding to the nominal restrictor is in an *inaccessible* DRS and there should in principle be no way for the two to co-refer.[9] To make the account work, a predicative discourse referent R corresponding to the denotation of the nominal restrictor must be introduced in the top-level DRS, and Q in the formula resulting from CLOS must be deterministically resolved to R.

4.2 Trivalent accounts

We saw previously that George's trivalent account did a good job handling the interaction of weak PPO triggers with quantification but achieved this at the expense of a certain degree of flexibility. For George, the reason a sentence like two of these 100 students quit smoking doesn't have a universal presupposition is because *the theory just generates a non-universal presupposition*, full stop. The presupposition isn't born universal and subsequently weakened (as on the local contexts story of **LA** sketched above); rather, the very semantics of non-universal quantifiers and the nature of George's projection algorithm guarantee that (barring some strengthening operation) the only sort projection we should see out of a non-universal quantifier's restrictor and nuclear scope positions is non-universal.

In sum, though the trivalent account gives a ready account of Chemla's data, it's far from immediate how it might extend to the projective behavior of strong PPOs.

9 I.e. for, I believe, the same reason DRT rules out coreference for Every man$_i$ came. *He$_i$ left—in short, that the discourse referent u of whom a sub-DRS asserts **man**.u is inaccessible to he.

5 A preliminary account with Local Contexts

This isn't to say that a satisfaction theory like Schlenker's (2009) Local Contexts necessarily wins the day. But let me sketch what the local contexts solution might look like to show that the problem is at least tractable within the theory.

We assume the following:

(38) The lack of a universal inference for weak PPO triggers is due to **LA**.

(39) Each and none don't allow for **LA** in their nuclear scope but do in their restrictor.

(40) "Strong" PPOs associated with triggers like too and also resist **LA**.

Each of these points is stipulatory in character, though some more so than others. Assumption (38), for instance, isn't much of a leap. **LA** is independently motivated and has been argued to apply fairly widely; for instance, it's how Heim (1983) derives the reading of it's not the case that the king of France is bald compatible with such a monarch's nonexistence. If **LA** is in principle available as a "repair" strategy it's not surprising that it might be able to neutralize PPOs by turning them into a locally "asserted" predicative expressions (scare quotes since one can't very well assert something of predicative type).

Principle (40), too, isn't much of a leap. In particular, so-called "anaphoric" triggers like too, also, and again[10] are well known to resist any sort of accommodation. For instance, as Kripke (1990) notes John$^\sharp$ is having dinner in Paris too isn't felicitous unless the fact that some non-John individual is dining in Paris is already under discussion, even though in principle it should be quite easy to (globally) accommodate the proposition that some non-John individual is dining in Paris. Whatever makes these sorts of "anaphoric" presuppositions difficult to accommodate *globally* (call it, say, "super-buoyancy" after Geurts 2000) might feasibly be related to their resistance to *local* accommodation.

If (a) the PPO generated by the string smoke Marlboros$^\sharp$ too is something like $(\lambda w \lambda x \exists y.\textbf{smoke}.w\,y\,x \wedge y \neq \textbf{marl})$—though I haven't given a semantics for too, this seems like a fairly plausible value for the sort of presupposition it might induce when it associates with a predicate like smoke Marlboros$^\sharp$—(b) we require that a presupposition be entailed in its local context, and (c) **LA** is unavailable due to the super-buoyancy of the PPO, we derive the projection pattern for PPOs in both the nuclear scope and restrictor positions that we observed previously. Specifically, we predict that any quantificational sentence with a non-presuppositional nominal restrictor N and a strong PPO triggered by e.g. smoke Marlboros$^\sharp$ too in the nuclear scope or modifying N will presuppose that every N was such that he did one of the contextually mediated alternatives to smoking Marlboros. For every world w' in the common ground, $\lambda w \forall x.[\![N]\!]\,w\,x \rightarrow (\exists y\,.\textbf{smoke}.w\,y\,x \wedge y \neq \textbf{marl})$ must map w' to `True` in order to avoid presupposition failure.[11,12]

10 I haven't attempted to address again in this paper since I think it's a bit trickier to deal with than too or also. Nevertheless, a sentence like of these 100 students, the two who smoked again were caught by the principal certainly seems to carry a universal presupposition of the form every student smoked at some $t'' \prec t' \prec n$, where t' corresponds to the time at which the two re-smokers smoked. These facts are suggestive and certainly merit a closer look.

11 NB: this semantics for too gives the $\exists$ narrow scope with respect to the universality of the presupposition. In other words, every student need not do the same non-smoking (illicit) activity. Five of the students could smoke Newports, and five could smoke Camels, in principle. Whether this is a good prediction is beyond the scope of what I can consider here.

12 Note further that Local Contexts gets us quite close for donkey PPO sentences like if any student$_i$ talks to me, he$_i$ will quit smoking$^\sharp$ too and if Chris$_i$ or Phil$_j$ talks to me, he$_{i,j}$ will quit smoking$^\sharp$ too—a fact pointed

The main difficulty for this proposal is to provide a principled explanation for why each and none should allow **LA** in their restrictor positions but not their nuclear scopes. At the moment I'm not sure how to respond to this objection. Nevertheless, what I hope to have shown is that (a) the Local Contexts solution is at least *potentially* extensible to the projective behavior of strong PPOs in quantificational contexts, whereas (b) DRT and George's trivalent theory have a much harder time accounting for these data.

6 Conclusion

The interaction of presupposition with quantification helps us decide between accounts with roughly equal claims to descriptive adequacy in the propositional case. Experimental data (i.e. Chemla 2008a) suggested that satisfaction theories might be off on the wrong track and that a theory bakes the subtleties of PPO projection into the cake—i.e. George (2008)—might in fact be preferable. I hope to have shown here that such a conclusion is unwarranted. In particular I've argued that building certain projective behavior into a theory of projection predicts a degree of inflexibility for how different sorts of PPOs (viz. strong, weak) project, one which doesn't comport well with the projective behavior of strong PPOs triggered in the nuclear scope and restrictor positions of quantifiers.

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out by Schlenker (p.c.). Assuming that these sentences can be paraphrased as every student who talks to me will quit smoking$^\sharp$ too and every individual identical with Chris or Phil who talks to me will quit smoking$^\sharp$ too, the version of Local Contexts sketched here guarantees the following two presuppositions (respectively): every student who talks to me quit drinking, and every individual identical with Chris or Phil who talks to me quit drinking. A process of partial strengthening—i.e. whatever allows every diver who wants to impress his girlfriend will bring his swimsuit to presuppose every diver has a swimsuit rather than every diver who wants to impress his girlfriend has a swimsuit—subsequently derives these sentences' actual presuppositions: i.e. (respectively) every student quit drinking and every individual identical with Chris or Phil quit drinking.

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