

# A PRESUPPOSITIONAL ACCOUNT OF INDEXICALS

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We argue, contra Kaplan, that indexicals should be understood as generating presuppositions that prefer to be resolved in the global context.

According to Kaplan's theory of pure indexicals (1989), terms like *I*, *here*, *now*, *yesterday*, and *the actual  $\phi$*  should always pick out their referents from the context of utterance. Moreover, they are directly referential and should always take "wide scope" with respect to modal operators at least in the sense that if George Bush is the actual President, then necessarily, George Bush is the actual President. However, there is evidence that indexicals do not behave as Kaplan predicted. According to Schlenker (2003), for example, Amharic *I* does not always pick out the speaker in the context of utterance. In our paper, we present and analyze examples like (1a,b) which bolster Schlenker's claim that indexicals do not always take wide scope, but offer a different account as to why this is the case.

Consider the following examples:

- (1) a. If John Kerry had won the election, the actual President would have been a democrat.
- b. If that car were my actual car [pointing at a red sports car], maybe I'd have a girlfriend.

According to Kaplan, *actual  $\phi$*  should always be evaluated at the world in the context of utterance; therefore, *the actual President* in (1a) should pick out the President in the actual world, i.e. George W. Bush. However, surveys of native speakers show that the preferred reading of (1a) is one in which *the actual President* picks out John Kerry. In this case, *actual* is evaluated at a world in a counterfactual context introduced by the antecedent of the counterfactuals, contrary to Kaplan's predictions.

We can force *actual* to be evaluated at worlds other than the one supplied by the context of utterance by loading counterfactuals with information that leads to a contradiction, or at least a very unintuitive reading of the counterfactual, if we take *actual* to force the material in its scope to be evaluated at the world provided by the context of use. For example, the antecedent of (1a) asks us to entertain the possibility that John Kerry has won the election. Given this priming, it is more natural to take

*the actual President* to pick out John Kerry—a known democrat—than to interpret the counterfactual as asserting that Bush would have changed political parties had he lost the election. Similarly, if we take *actual* in (1b) to force *car* to be evaluated at the world provided by the context of use, the result is an unnatural identity claim and not the preferred interpretation: ‘If I owned that car, maybe I’d have a girlfriend’.

Unlike standard, Kaplan-style treatments according to which *actual* is a modal operator that shifts the world of evaluation to that supplied by the context, we propose that *actual* should be understood as introducing an operator that is relevant to the resolution of presuppositions. In our examples this operator interacts with the presuppositions introduced by a definite description and provides instructions for how the presupposition should be resolved (either bound or accommodated). We follow the general treatment of presuppositions in DRT by van der Sandt (1992) although we disagree with him on one major point. We think that moving away from a modal operator approach to *actual* is important; any modal analysis of the operator that accounts for the data we present forces counterfactuals, conditionals and other modal operators to shift the context (and hence the world supplied by the context), thus accounting for the shift in the world of evaluation of the material within the scope of *actual*. In other words, such an account leads naturally to the presence of monsters. Treating *actual* as giving instructions on how to resolve presuppositions avoids any appeal to monsters, and indeed allows us to forego a special stage of interpretation for indexicals.

Consider (1a) above ((1b) receives a similar treatment). The definite description itself generates the presupposition,  $\exists!x(\text{President}(x))$ , and *actual* gives specific instructions on where to bind or accommodate this presupposition. This presupposition needs to be satisfied for there to be any hope of the assertion in the consequent of (1a) being true. Our data shows that *actual* forces the resolution of the presupposition in the global context first, or top-level, outermost DRS. We assume that the outermost DRS contains information on the context of utterance such as a speaker, time, and world. If the presupposition finds an acceptable antecedent (i.e. one which yields a sufficiently natural reading) in this context, it will bind to it. If it does not, but accommodation is possible (i.e., the accommodation yields a consistent and pragmatically plausible reading for the sentence as a whole), we will resolve the presupposition by accommodating in the global context. But if binding or accommodation in the global context is not possible as in (1a), *actual* will start searching for an antecedent in a local context and, again, if it finds one there, it will bind to it. If not, then we will attempt to accommodate there. Thus, Kaplan’s intuition about indexicals cashes out here as a preference on how to bind the presupposition.

What forces the attachment of the presupposition to the antecedent of the conditional in (1a)? Informally, it amounts to an attempt to make the counterfactual be as plausible as possible (Asher and Lascarides 2003). There are most likely worlds in which John Kerry won the last Presidential election and Bush is a democrat but those won’t be intuitively amongst the closest worlds to ours where the election so turns

out. Since counterfactuals are evaluated in the closest worlds to ours where the antecedent is true, choosing a global binding or accommodation for the presupposition would make the counterfactual false or highly implausible. Thus, a pragmatic principle of *charity* (maximize the chances of truth of the assertion) seems an integral part of presupposition attachment.

The semantic effect of *actual* marks expressions like *the actual  $\phi$*  apart from other presupposition bearing expressions and forms our principal emendation of van der Sandt's view: whereas van der Sandt's theory predicts that definites prefer to bind locally, we show that when combined with *actual* they prefer to bind globally. To see this, consider

- (2) If someone other than George Bush had won the election, the actual President would have been really really angry.

The presuppositions generated by *the actual President* in (2) should on van der Sandt's theory bind to the antecedent of the conditional. Namely, *the actual President* should bind to whomever would have won the election. However, intuitions run counter to this prediction. We predict that *the actual President* in (2), as it prefers a global attachment and nothing blocks that attachment, is perforce evaluated at the world given by the context of utterance. Further, interviews of native speakers have found that *the  $\phi$*  and *the actual  $\phi$*  differ in their accommodation tendencies. In (3) the tendency is to understand *the actual winner* as bound to the person other than George Bush who counterfactually wins the election, whereas in (4) intuitions differ as to whether the winner is George Bush or someone else.

- (3) If someone other than George Bush had won the election, the actual winner of the election would have been happy. (locally bound)
- (4) If someone other than George Bush had won the election, the winner of the election would have been happy. (ambiguous)

We take this as evidence that *actual* affects the preferences for binding or accommodating the presuppositions of definites.

Formally, *actual* introduces an operator  $\uparrow$  over material in its scope that affects the resolvability,  $\Vdash$ , of a presupposition, where this includes the pragmatic constraint discussed above.<sup>1</sup> To define  $\Vdash$ , we simplify binding to a notion of DRS satisfaction  $\models$  and accommodation as incorporation of a presupposition  $\phi$  into a DRS  $K \triangleright \phi$ . The interpretation of a subDRS  $K$  depends on assignments to discourse referents declared in superordinate DRSs but free in  $K$ . Let  $K_0, \dots, K_n$  be a sequence beginning with the global DRS  $K_0$  such that  $K_0 \geq \dots \geq K_n$ , and  $\geq$  is the immediate superordination relation on DRSs. Then,  $K_0, \dots, K_{l-1}, [K_l, \dots, K_n] \models \phi$  iff  $\phi$  is a dynamic consequence of  $K_l, \dots, K_n$  relative to any assignment to free variables occurring in  $K_l, \dots, K_n, \phi$  that are declared in  $K_0, \dots, K_{l-1}$  and satisfy the conditions in  $K_0, \dots, K_{l-1}$ . Then:

<sup>1</sup>As well as others of the sort discussed in Asher and Lascarides (2003) and Asher (forthcoming).

- $K_0, \dots, K_i \Vdash \phi$  iff  $\exists j \leq i$  and  $\exists l \geq 0$  such that  $K_0, \dots, K_{l-1}, [K_l, \dots, K_j] \models \phi$  or for some  $k, 0 \leq k \leq j, K_k \triangleright \phi$ , for  $\phi$  a normal DRS or DRS condition.
- $K_0, \dots, K_i \Vdash \uparrow \phi$  iff there is some  $j \leq i$  such that  $K_0, \dots, K_j \Vdash \phi$  and there is no  $k < j$  such that  $K_0, \dots, K_k \Vdash \phi$

Informally, a presupposition is resolvable in a sequence of contexts just in case some subsequence entails the presupposition or it is accommodated at some element in the sequence. Resolving the presupposition means choosing some witness for the existential quantifier. The clause for  $\uparrow \phi$  then forces the binding or accommodation of  $\phi$  in the outermost context possible.

Assuming the treatment of definites in Asher and Lascarides (2003) and abstracting away from DRS notation, we provide a compositional derivation of the appropriate presupposition for (1a):

- $\|\text{actual}\| = \lambda P \lambda x \uparrow P(x)$
- $\|\text{actual President}\| = \lambda x (\uparrow \text{President}(x))$
- $\|\text{the actual President}\| = \lambda P (p : \exists! y \exists z \exists R (\uparrow \text{President}(y) \wedge R(y, z) \wedge z = ? \wedge R = ?); a : P(y))$ ,  
where  $p$  and  $a$  label the presupposed and asserted components of the DP.
- Ignoring the presuppositions of *the election*, we get:  
 $\|1a\| = \exists e \text{Election}(e) \wedge (\text{Win}(e.jk)) \Box \rightarrow [p : \exists! y \exists z \exists R (\uparrow \text{President}(y) \wedge R(y, z) \wedge z = ? \wedge R = ?); a : \text{democrat}(y)]$ .

Resolving  $R$  to identity and  $z$  to John Kerry, we have a presupposition that can be bound to the context given by the antecedent of the counterfactual, though it cannot bind or accommodate in the global context:

$\exists e \text{Election}(e) \wedge (\text{Win}(e.jk) \wedge \exists! y (\text{President}(y) \wedge y = jk)) \Box \rightarrow \text{democrat}(y)$ . Our theory requires a dynamic semantics; otherwise the quantification over  $y$  in the antecedent of the conditional wouldn't bind the variable in the consequent, nor would the binding from presupposed to asserted constituents make any sense.

Our theory extends to explain the behavior of other indexicals, such as *now* and *here*. Consider;

- (5) [Recounting a trip to an airplane museum] That's when I realized that I was now boarding the very plane my grandfather flew during WWII.
- (6) Every time I take him to a new restaurant, he says he's been here before.

*Now* and *here* work just like *actual*. They prefer binding in a global context, but sometimes plausibility and other pragmatic constraints will dictate that these presuppositions are satisfied in a more local context, as in examples (5) and (6).

English *I* and *you* trigger presuppositions with more restrictive resolution conditions (unlike *I* in Amharic or even Serbian). Using our enumeration of DRT contexts,

we can expand our operator language to countenance operators of the form  $\uparrow_{K_0}$ , which when prefixed to presupposed material  $\phi$  means that  $\phi$  must resolve at least in  $K_0$ . The entry for English *I* then is:

- $\|I\| = \lambda P(p : \uparrow_{K_0} \exists x(\text{Speaker}(x) \wedge x = ?) ; a : P[x])$

If the global context always contains a discourse referent that is linked to the speaker of the context of utterance as in Zeevat (1999), then our semantics predicts that *I* will behave in the way that Kaplan predicted. *You* works analogously; the presupposition always binds to the global context—viz. to the contextually given addressee.

Fiction provides well known examples of shifting uses of indexicals. We stipulate that fiction shifts the  $K_0$  context to a fictional one and the actual context of writing or reading is a superordinate DRS  $K_{-1}$ . Our lexical entries for *here*, *now*, *I* and *you* all predict shifting uses of indexicals in fictional contexts. As an example consider *Now our hero was happy* when used in a fictitious story. *Now* searches for a time in the global context first, but such a binding is not acceptable. Thus, it is forced to look to a local context, namely, the one introduced by the fiction.

Our view entails that different presuppositions may require different resolution strategies depending on their environment or associated presupposition triggers. This view contrasts with the standard view of presuppositions, but is well supported by examples of presupposition triggers like *too*, where accommodation is not possible. We can easily formalize the presuppositions for such expressions in our framework by countenancing presuppositions of the form  $B\phi$ , where  $B$  requires material under its scope to be bound.

Turning to demonstratives, we build on Roberts’s (2003) theory which takes demonstratives to be presupposition triggers. Demonstratives presuppose a demonstration (where ‘demonstration’ is construed broadly as in Roberts’s paper). The principal difference between her account and ours is on her account demonstratives don’t bind locally. A Google search turned up several cases of modally subordinate local binding of the demonstrative *this*.<sup>2</sup> There are also many examples with the demonstrative *that* where local binding or accommodation occurs as in Jeff King’s *Every professor admires most that first book of his*. Demonstratives are of a piece with standard indexicals like *actual*, *here* and *now*. They prefer a binding in the global context via a demonstration, but when pragmatic constraints like charity or semantic constraints like variable binding dictate, they may bind locally. Thus, they would have their presuppositions  $\phi$  prefixed with the operator  $\uparrow$ .

As our data indicates, definite descriptions by themselves don’t seem to have a predetermined resolution strategy, but certain *readings* of them do. For example,

<sup>2</sup>For instance:

(7) Assuming that Plan 2 takes effect in 2009, this would mean that the worker would lose 1.2 percent of their scheduled benefit for each of the 39 years (2009 to 2047, when the worker turns 62) included in their benefit calculation. This would leave the benefit at the point of retirement in 2050 at 63 percent (1.012-39) of the scheduled benefit.

the attributive use of a definite description makes the presupposed content part of the local assertion typically. Thus, we could take  $\downarrow$  (the converse operator to  $\uparrow$ ) and assign the presuppositional content  $\phi$  of a description read attributively as  $\downarrow \phi$ . Definites understood referentially might well have their presuppositions prefixed again by the operator  $\uparrow$ . We believe our account extends also to proper names, which generate presuppositions that prefer a global binding or accommodation and thus have the form.  $\uparrow \phi$ . Our account then immediately explains the behavior of names in modal contexts observed by Kripke (1972).

Finally, with respect to the adverb *actually*, our account predicts that if the adverb includes within its scope presuppositional material, it should behave as though the presuppositions are prefixed with the operator  $\uparrow$ . But *actually* often takes non presupposed material within its scope. The introduction of the operator must have some semantic or pragmatic effect; so in such a case we hypothesize that  $\uparrow$  has a particular discourse function, such as emphasis or correction. For example, suppose you were talking to someone who said *John Kerry is President*. A corrective use of *actually* would be: *Actually, George Bush is President*.

Our theory takes a middle road between Kaplan and Schlenker. It clearly differs from Kaplan's as it is a single-stage theory which maintains that indexicals need not bind to a global context. But it is not as complicated as Schlenker's in that we do not import contexts as points of evaluation. We explain the shifting of indexicals by minimally extending existing mechanisms in dynamic semantics that account for the resolution of presuppositions. Our account shows that, contrary to Schlenker, shifting indexicals do not require the introduction of monsters.

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