# Indexicality, binding, anaphora and a priori truth

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Indexicals are linguistic expressions whose meaning remains stable while their reference shifts from utterance to utterance. Paradigmatic cases in English are 'I', 'here', and 'now'. Recently, a number of authors have argued that various constructions in our language harbour hidden indexicals. We say 'hidden' because these indexicals are unpronounced. even though they are alleged to be real linguistic components. Constructions taken by some authors to be associated, or to 'cohabit', with hidden indexicals include: definite descriptions and quantifiers more generally (hidden indexical refers to a domain - Davies (1981), Westerstahl (1985), Higginbotham (1988), Stanley and Williamson (1995)), propositional attitude verbs (hidden indexical refers to a mode of presentation – Richard (1990)), comparative adjectives (hidden indexical refers to comparison classes -Partee (1989), Kamp (1975), Ludlow (1989)). An interesting recent addition is the view that all nouns are associated with a hidden indexical referring to a domain restriction (Stanley and Szabo (2000), Stanley  $(2002)).^{1}$ 

We are sceptical of such posits, first, because evidence typically proffered to support their existence is better accounted for, we believe, in other ways;<sup>2</sup> and secondly, because each alleged case familiar to us is flawed, or so we will argue. We begin by concentrating on a recent, influential argument for hidden indexicals – the so-called *Argument from Binding*. We present a *reductio* of it. We then present two requirements any indexical – hidden or otherwise – should satisfy, illustrating how various alleged

<sup>1</sup> According to Lewis, the construction 'If it were ... then it would be' is indexical; it expresses different contents (relations) in different contexts (Lewis 1973, Kratzer 1977). Lewis does not suppose anything unpronounced shifts in content from context to context. He also holds 'flat' and 'could' are indexicals (Lewis 1979). Soames (1999) holds that 'green' is indexical. Also, some authors argue that epistemological or moral terms refer to a contextually salient standard of evaluation (Mackie 1977, Cohen 1988, De Rose 1995, Lewis 1996). We suspect these authors are not hidden-indexicalists, but their texts underdetermine their position. We believe these views are wrong as well, but will not argue so here. Thanks to David Braun for clarifying these other positions for us.

<sup>2</sup> See Cappelen and Lepore 1997, 2000, 2003, and Lepore 2003.

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hidden indexicals fail to do so. It's our working hypothesis that *all* alleged hidden indexicals fail our tests.

## 1. The argument from binding

Normal utterances of (1) are taken to be about a restricted class of failures, perhaps, for example, students in a specific class.

(1) Many students failed.

One explanation for how this restriction is effected is that quantified sentences contain an unpronounced indexical referring to a quantifier domain restriction. Stanley and Szabo (S & S), advocates of hidden indexicals, argue that *syntactic* evidence must be adduced for any posited domain variable; and they cite as evidence the fact that these posited domain variables interact in binding relations with other quantifiers. In sentences like (1), they claim one can intuitively bind its hidden constituent, enabling its domain to vary according to the values introduced by a variable-binding operator (S & S 1999: 243; cf. also Stanley 2000). They infer this constituent must be present in (1). So, in (2),

(2) In every class, many students failed.

the domain associated with 'many students' varies as a function of the values introduced by 'every class'. (2) means (on one reading), according to S & S,  $(2^*)$ :

 $(2^*)$  [Every (x): class (x)][many (y): student in x (y)](failed y)

Assuming binding to be a syntactic phenomenon,<sup>3</sup> such examples would seem to provide evidence for a variable somewhere in the syntactic structure of quantified noun phrases.<sup>4</sup> (S & S go as far as to suggest that, without positing a hidden domain variable, it is not clear that sentences like (2) express 'coherent propositions at all' (S & S 1999: 243).)

S & S generalize their idea by associating with each nominal an indexical, which when unbound is like a free variable to which a semantic value must be contextually assigned. So construed, (1) is interpreted along the lines of  $(1^*)$ ,

(1\*) Many students (i) failed.

where 'i' is a hidden indexical (in (1)) that, in a context of use, picks out a set, which functions to restrict the extension of 'student', and thereby

<sup>&</sup>lt;sup>3</sup> We think they might be best accounted for pragmatically, but that's a topic for another occasion (see Cappelen and Lepore 1997, 2000, 2002); see also Farkas (1997), who denies that the data require a syntactic treatment but are instead best accounted for semantically.

<sup>&</sup>lt;sup>4</sup> For the full development of this theory see S & S.

restricts the domain of 'many' further than 'student' does by itself. (Their actual account is more complex, but nothing we want to say requires us to go into the extra detail.)

The Binding Argument is alleged to generalize. To see how, consider (3).

(3) It's sunny.

Notice that (3) can be embedded in a larger sentence:

(4) Everywhere Sally goes, it is sunny.

Intuitively, what (4) says, or at least a natural reading of (4), is that for every place that Sally goes, it is sunny at that place. So we should represent the logical form (4) something along the following lines:

(4\*) For all places, x, if Sally goes to x, then it is sunny at x.

The quantifier phrase 'Everywhere Sally goes' is binding a place variable in the logical form of 'It is sunny' – otherwise there would be nothing for the quantifier phrase to bind (Nelson 2001: 27–28; see also Stanley 2000: 415–17).

We claim that all of the evidence adduced here is insufficient to establish any hidden domain variable. To treat it as if it were, we will argue in the next section, issues in absurd results.

## 2. Reductio of Binding Argument

A confused mathematical anthropologist (call her 'Sally') trying to find out if mathematical truths are universal utters (5) as a summary of her findings:

(5) Everywhere I go, 2 + 2 = 4.

Here's the Binding Argument applied to (5):

Intuitively, (5) says that for every place Sally goes, 2 + 2 = 4 at that place. So we should present the logical form of (5) along the following lines:

(5\*) For all places, x, if Sally goes to x, then 2 + 2 = 4 at x.

The quantifier phrase 'Everywhere Sally goes' is binding a place variable in the logical form of 2 + 2 = 4' – otherwise, there would be nothing for the quantifier phrase to bind. This establishes that the logical form of the sentence 2 + 2 = 4 has a freely occurring place variable.

Since there is obviously *no* variable ranging over locations in 2 + 2 = 4, this is a *reductio* of the Binding Argument.

We would like to leave the argument here; it is close to indisputable that arithmetical statements lack hidden indexicals referring to places. However, since no bullet is unbitable, two brief remarks are in order. First, since both speakers and audiences are blissfully unaware of any reference to a location in utterances of 2 + 2 = 4, the referent of a hidden indexical would have to be fixed in a manner entirely unconnected with speaker intentions. Such a reference fixing mechanism would be unique. We are owed a story about how it is achieved.

Second, those who recognize a place index in (2 + 2 = 4) (or in (1) or (3)) are vulnerable to a most slippery slope, for consider (5\*\*):

(5\*\*) No matter where Sally goes, no matter when she goes there, 2 + 2 = 4.

Based on the Binding Argument should the logical form of  $(5^{**})$  be (5+)?

(5+) For all places x, for all times y, if Sally goes to x at time y, then 2 + 2 = 4 at x at y.

No one should want to conclude that the complex quantifier expression 'No matter where I go, no matter when I go there' binds two hidden variables in 2 + 2 = 4'. Such examples illustrate that a blind endorsement of the Binding Argument might ultimately require positing *indefinitely* many dedicated variables in every single sentence.

Notice that our slippery slope objection has an analogue in an earlier debate about event verbs and adverbial modification. Recall, according to one early proposal, ascribing  $(6^*)$  as (6)'s logical form was supposed to *explain* why (7) entails (6).

- (6) Mary kissed John.
- (6\*) Mary kissed John in some place.
- (7) Mary kissed John in the park.

We increase the adicity of an event verb like 'kiss' in order to accommodate an inferential relation. However, following this strategy consistently would require each event verb to harbour indefinitely many 'hidden' places in order to accommodate inferential data among (6)–(10), etc. (see Davidson (1967)).

- (8) Mary kissed John in the park after midnight.
- (9) Mary kissed John in the park after midnight behind his left ear.
- (10) Mary kissed John in the park after midnight behind his left ear on August 24, 1999.

So, for example, in order to explain how (10) logically implies (6), should we treat (6)'s logical form as  $(6^{**})$ ?

(6\*\*) Mary kissed John in some place after some time behind some place on some date.

Following this strategy would render the adicity of an ordinary verb like 'kiss' indefinitely large. How would anyone ever learn his language (Larson and Segal (1995: 468))?

Likewise, the seeming unboundedness of the Binding Argument requires too many indexicals. So, the Binding Argument fails to be decisive for the existence of hidden indexicals. But what then does the Binding Argument show? The data it appeals to are interesting, and require explanation. The facts are these: sentences like (1), (3), and 2 + 2 = 4 lack a place variable (or any other hidden variable of the sort S & S posit). However, these sentences are grammatical, and so their initial quantifiers are nonvacuous. Without positing hidden indexicals of the sort that S & S favour, how are we to explain their grammaticality? Since it goes beyond the scope of this paper to provide a full answer, we will do no more than sketch a possibility.

We just suggested an analogy between the strategy of enhancing the adicity of event verbs to accommodate inferences based on adverbial modification of event verbs and the strategy of positing hidden variables based on the Binding Argument. With respect to the former, note that people sometimes say (11).

(11) Somewhere Mary kissed John.

(11) is grammatical, and so its quantification is not vacuous. Can we account for its grammaticality without positing a place in the simpler embedded (6) for locations? Davidson, in effect, replies we can by treating (6)'s logical form as (6'),

(6') [There is an event *e*](*e* is a kissing by Mary of John)

and the logical form of (11) as (11\*) (Davidson 1967).

(11\*) [There is an event *e*](*e* is a kissing by Mary of John & *e* occurs at some place)

So construed, even though no hidden variable *for places* is posited in (6), (11) is still grammatical, since its quantification is *not* vacuous. The grammaticality of sentences like (7)–(11) is accounted for not by treating quantified adverbials as a mark of increased argument structure but rather as adjuncts.

Likewise, returning to S & S's problematic (2), we treat the logical form of (1) as  $(1^{**})$  and the logical form of (2) as  $(2^{**})$ .

- (1\*\*) [Many (x): person (x)][ $\exists e$ ](e was a failing of x)
- (2\*\*) [Every (y): class (y)][Many (x): person (x)][ $\exists e$ : event (e)](e was a failing of x & e is in y)

(The argument place for events is independently motivated (cf. e.g. Parsons 1990, Schein 1993, Hornstein 2002).) What's right about the Binding Argument is that each non-vacuous quantifier added to a sentence must be binding something or other; what's wrong about it is that that binding must occur in the embedded sentence.

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We are not here endorsing this proposal.<sup>5</sup> Before we did we would need to develop it; at this stage, we are merely pointing out an alternative to S & S's account that explains grammaticality without positing hidden indexicals. We turn now to further constraints on indexicality.

#### 3. Two constraints on indexicals

Positing hidden linguistic expressions incurs certain obligations. With indexicals there are at least two:<sup>6</sup> on the syntactic side, a posited indexical should enter into anaphoric relationships; on the semantic/epistemological side, it should generate certain kinds of a priori truths. We discuss these in turn.

#### 3.1. Anaphora

Overt indexicals can participate in anaphoric relationships. In (12) and (13), the antecedents of 'it' and 'himself' are the indexicals 'that' and 'he'.

- (12) That's a table but *it* is not a book.
- (13) He's a senator who likes *himself*.

Since hidden indexicals are indexicals, they too should be capable of entering into anaphoric relationships. So if (1) harbours a hidden reference to a restricted domain, (14) should be intelligible, with 'it' anaphoric.

?(14) Many students failed, and it is a big domain.

That (14) makes no sense (even though  $(14^*)$  below does) is evidence against a hidden indexical in (1).

(14\*) Many students in this (domain) failed, and it is a big domain.

For another illustration, consider S & S's view that (15), roughly, has the form  $(15^*)$ ,

- (15) Tigers are mammals.
- $(15^*)$  Tigers (*i*) are mammals.

where '*i*' indexes, in a context of use, a domain. But, then,  $(15^{**})$  should make as much sense as (15+) does, where 'it' is alleged to be anaphoric on '*i*'.

<sup>&</sup>lt;sup>5</sup> Bach (2000: 279–82) also suggests that appeal to the Davidson event analysis might thwart the Binding Argument. Another possibility is that speakers exploit a kind of pragmatic mechanism that enables them to add a variable to sentences that lack one. See Bach 2000, Carston 2002 and Stanley 2002.

<sup>&</sup>lt;sup>6</sup> Hidden indexicals fail other tests, e.g. so-called weak cross violations, but we'll not pursue this criticism. Cf. Blair ms, Hawthorne ms.

- (15\*\*) Tigers are mammals, and it is a big domain.
- (15+) Tigers in this (domain) are mammals, and it is a big domain.

The impossibility of reading 'it' anaphorically on the alleged indexical is evidence against a hidden indexical in (15).

Notice that on Davidson's account, (6), since it is represented roughly as (6'), should pass the anaphora test, *and it does*, as in, (6").

(6") Mary kissed John, and she did *it* in the bathroom.

We are not committed to the view that *every* alleged covert element goes our way in this respect. For example, it is not easy to make reference to the covert subject of 'please' in 'John is easy to please'. But even if it's hard/impossible to get anaphora on controlled 'PRO', because the potential constructions have their own 'PRO' controlled by a matrix subject, that in itself might be good reason to treat controlled 'PRO' as a special case. Our point is that either you do get anaphora, or there is an independent explanation for why not; minimally proponents of unpronounced indexicals owe us an independent explanation.<sup>7</sup>

#### 3.2. A priori truths

According to Kaplan, it is an essential feature of an indexical that its linguistic meaning can be used to generate certain kinds of a priori truths.

Intuitively, (6) ['I'm here now'] is deeply, and in some sense, which we will shortly make precise, universally true. One need only understand the meaning of (6) to know that it cannot be uttered falsely. No such guarantees apply to (7) ['D.K. is in Portland on 3/26/1977']. A Logic

- <sup>7</sup> Stanley (2002: 368) claims that the reason for the unavailability of anaphoric link is due to the fact that the domain variable cohabits the node with the noun. This case is alleged to be similar to that of incorporation, as the contrast between (a) and (b) illustrates:
  - (a) John owns a bicycle. He rides it daily.
  - \*(b) John is a bicycle-owner. He rides it daily.

Of course, one needs to motivate claims about incorporation, if the latter notion is taken in its technical sense. So we need to hear Stanley's argument that the index 'cohabits' a node with the noun, as opposed to merely being a sister of the noun. This can't be stipulated, since one can't stipulate that there is syntax that behaves as though it isn't there. Also incorporation typically involves some kind of movement, driven for some independent reason. We know that compounding of the 'bicycle-owner' variety blocks modification of various sorts; and even if we don't know why this is the case, we have independent grounds for treating 'bicycle-owner' as a compound. But while we see that appeal to incorporation blunts the worry Stanley faces, we don't see the independent reason for thinking that the (alleged) syntax of indices is relevantly like the familiar cases. Thanks to Paul Pietroski for walking us through this subtle debate. *of Indexicals* which does not reflect this intuitive difference between (6) and (7) has bypassed something **essential** to the logic of indexicals. (Kaplan 1989: 509, our emphasis)

These 'universal' truths are generated as follows: Kaplan identifies the linguistic meaning of an expression with its *character*, which is a function that delivers the expression's content at each context. So, the character of the first person indexical 'I' is a function on contexts whose value at any context is the agent of that context. Suppose the character of an indexical D specifies that its referent in a context, U, is whatever object satisfies conditions C in U. Then an a priori truth will be expressed by an utterance of:

D satisfies conditions C

This kind of sentence cannot be uttered falsely. For instance, no utterance of (16) or (17) is false; and anyone who understands 'I' and 'you' will recognize this, that is, it constitutes a priori knowledge.

- (16) I am the person who utters this sentence.
- (17) You are the person addressed by this utterance.

However, no utterance of (16) or (17) is necessarily true; whatever proposition an utterance of (16) expresses is false in any context, say, where the utterer does not exist. Since any speaker could fail to exist, this proposition is contingent. Kaplan infers that his semantics for indexical expressions provides examples of the contingent a priori.

We are now positioned to state our worry about hidden indexicals. In all of these cases none of these essential features is manifested.

According to S & S, (1) properly construed means the same as  $(1^*)$ . Since '*i*' is an expression it has a character, i.e. a linguistic meaning. Given what S & S say we assume they intend the character of '*i*' to be something like 'the contextually salient domain'. We (or they) might be wrong about this. But this indexical, according to Kaplan, must have some character or other; call whatever it is F. Then (18) (or (18\*)) ought to be such that their every utterance is true and this is knowable a priori.

- (18) Everyone is in the contextually salient domain.
- (18\*) Everyone is in F.

Likewise, speakers should know a priori that every utterance of (19)–(20) is false.

- (19) Some ducks are only in non-salient domains.
- (20) At least one little duck is not in a salient domain.

However, not every utterance of (18) is true, and not every utterance of (19) or (20) is false. (We doubt any utterance of (19) or (20) is false.) Hence, no one has any such a priori knowledge.

If we are right, the analogy between hidden indexicals referring to contextually salient domains and ordinary overt indexicals breaks down. But if Kaplan is right about the semantics and epistemology of indexicals, it follows that S & S must be wrong. Minimally, they need to defend their departure.

Our goal is not to establish conclusively that *all* hidden indexicals fail these two constraints, but it is, however, fairly simple to construct similar arguments for every example mentioned in the introduction. As a final, brief illustration, consider comparative adjectives. Suppose, as is commonly supposed (Ludlow 1989, Stanley 2002), sentences with comparative adjectives contain a hidden reference to a comparison class and that for each context of utterance it is a contextually salient comparison class that's referenced. It should then, first, be possible to refer anaphorically to these classes, as in (21) and, second, to generate certain kinds of a priori truths or falsehoods, as in (22).

- (21) She's tall, and it has many five year-old members.
- (22) She's tall, but not compared to a salient class.

However, we can't get 'it' in (21) to refer to a comparison class, and (22) doesn't seem a priori false to us.

### 4. Conclusion

We strongly doubt the viability, at this stage, of any hidden indexical account. Of course, this imposes on us, and we gladly accept, the burden of explaining the various data that forced some philosophers and linguists to make these posits in the first place. That, again, is a topic for another occasion.<sup>8</sup>

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