Indexicality, Binding, Anaphora and *A Priori* Truth[1]

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Indexicals are linguistic expressions whose meaning remain 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 harbor 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 'co-habit', with hidden indexicals include: definite descriptions and quantifiers more generally (hidden indexical refers to a domain – Davies (1981), Westerstahl (1985), Soames (1986), 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)).[2]

We are skeptical of all such posits, first, because evidence typically proffered in support of their existence we believe is better accounted for in other ways;[3] and secondly, because every 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 –

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[2] Other authors believe there are more *overt* indexicals than is generally recognized. 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 themselves indexicals (Lewis (1979)). Soames (1999) holds that 'green' is an indexical. Also, some authors have argued 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 also not hidden-indexicalist, but their texts underdetermine their position. We believe all these views are wrong as well, but will not argue so here. Thanks to David Braun for clarifying these other positions for us.

should satisfy, illustrating how various alleged hidden indexicals fail to do so. It's our working hypothesis that *all* alleged hidden indexicals fail our tests.

The Argument From Binding

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

(1) Many students failed.

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

(2) In every class, many students failed.

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

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

Assuming binding is a syntactic phenomenon,[4] such examples would seem to provide evidence for a variable somewhere in the syntactic structure of quantified noun phrases.[5] (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, p. 243).)

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[3] See Cappelen and Lepore (1997), (2000), (2002), and Lepore (2000).

[4] 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.

[5] For the full development of this theory see S&S.

S&S generalize their idea by associating with each nominal an indexical. Such expressions when unbound are like free variables 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 restricts the domain of 'many' further than 'student' does by itself.

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

(3) It's sunny

Notice that [3] can be embedded in 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), pp.27-28 ms; see, also, Stanley (2000), pp.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.

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' 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.[6]

Notice that our slippery slope objection has an analog in an earlier debate about event verbs and adverbial modification. Recall, one early proposal for the logical form of sentences like (6) was (6*).

(6) Mary kissed John.
(6*) Mary kissed John in some place.

Ascribing (6*) as (6)'s logical form was supposed to *explain* why (7) entails (6).

(7) Mary kissed John in the park.

The suggestion was that we treat 'kissed' as a three-place verb in order to accommodate an inferential relation. One problem is that following this strategy

[6] There is a way around this objection, by having each restriction extend only as far as the next embedded quantifier. However, some 'readings', including the one we want, resist this treatment.

consistently requires each event verb to harbor indefinitely many 'hidden' places to accommodate data like (8)-(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.

But does this mean that in order to accommodate inferential relations among (6)-(10) we should treat (6)'s logical form as (6**)?

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

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

Likewise, we believe that positing a hidden variable in a sentence on the basis of its behavior in embedded quantifier contexts is no better motivated. The seemingly unboundedness of the Binding Argument requires too many indexicals. So, the Binding Argument fails to be decisive for the existence of hidden syntactic structure.

What then Does the Argument from Binding show?

The data appealed to in the Binding Argument 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 non-vacuous. Without positing hidden indexicals of the sort that S&S favor, how do we 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.[7]

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

[7] Bach (2000), pp.279-282, also suggests that appeal to the Davidson event account 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).

(11) Somewhere Mary kissed John.

Can we account for its grammaticality without positing a place in (6) for locations; otherwise, what is the quantifier 'somewhere' *binding* in (11)? Davidson, in effect, replied we could by treating the logical form of (6) 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.

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)][∃e](e was a failing of x)
(2**) [Every (y): class (y)][Many (x): person (x)][∃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).)

We are not, again, endorsing this proposal. Before we did we would need to develop it; at this stage, we are merely pointing out that an alternative to S&S's exists that accounts for grammaticality without positing hidden indexicals. We turn now to further constraints on indexicality.

Two Constraints on Indexicals

Positing hidden linguistic expressions incurs certain obligations. With indexicals there are at least two:[8] 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.

Anaphora

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

[8] Hidden indexicals fail other tests, e.g., so-called weak cross violations, but we'll not pursue this criticism. Cf., Dan Blair's 'Domain Restrictions, Relational Nouns and Weak Crossover' and John Hawthorne's 'Context in Epistemology'.

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

Since hidden indexicals are just the same indexicals, they too should be capable of entering into anaphoric relationships. So if (1) harbors a hidden reference to a restricted domain, (14) should be intelligible, with 'it' anaphoric.[9]

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

That (14) makes no sense (even though (14*) below does) is evidence against an 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'.

(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).[10]

Notice that on Davidson's account of event verbs (Davidson 1967), (6), since it is supposed to be represented roughly as (6'), should pass the anaphora test, *and it does*, as in, (6'').

(6'') Mary kissed John, and he did *it* in the bathroom.

This anaphora test can be applied to every alleged instance of a hidden noun phrase, including indexicals; we leave it to the reader to work it out for his or her favorite examples of hidden indexicals.[11]

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[9] Strictly speaking, according S&S, there are two variables associated with each nominal, one for a function and one for an individual. The function applied to the individual yields a property. The extension of that property in the actual world is a set. All of this is irrelevant, so will be neglected.

[10] Paul Pietroski pointed out to us that it is unclear whether *every* alleged covert element goes our way. 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'

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 false. No such guarantees apply to (7) ['D.K. is in Portland on 3/26/1977']. *A Logic of Indexicals* which does not reflect this intuitive difference between (6) and (7) has bypassed something **essential** to the logic of indexicals. (Kaplan, 1989, p.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. Kaplan says:

> In fact, this is one of those cases in which – to use Kripke's excellent idiom – the rule simply tells us how to *fix the referent* but does not supply a synonym. (Kaplan, 1989, p.518)

> Consider the proposition I express with the utterance 'He [Delta] is the male at whom I am now pointing'. Call that proposition 'Sean'. Now Sean is certainly true. We know from the rules of the language that any utterance of that form must express a true proposition. In fact we would be justified in calling the *sentence*
>
> He is the male to whom I am now pointing.
>
> almost analytic ('Almost' because of the hypothesis that the demonstrative is *proper* – that I am pointing at a unique male – is needed.)

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as a special case. Our point is that either you do get anaphora, or there is an independent explanation for why not; minimally Stanley and Szabo owe us an independent explanation.

[11] S&S have suggested to us since the domain consists of contextually salient things one would expect plural anaphora instead of singular. For (14) is ungrammatical, (a) is not.

(a) Every computer was stolen, but they were cheap.

Still, (a) does not have a reading where the plural pronoun is anaphorically linked to the value of the domain variable. 'They' can refer to all contextually salient computers or all contextually salient stolen computers, but it cannot refer to all contextually salient things. S&S have yet other rejoinders but we'll leave it as is for this round of the debate.

> But is Sean necessary? Certainly not, I might have pointed at someone else. (Kaplan, 1989, p. 518)

According to Kaplan, just in virtue of the linguistic meaning (i.e., character) of each indexical expression, certain sentences are such that no utterance of them is false, even though these truths are contingent. So, no utterance of (15) or (16) is false; and anyone who understands 'I' and 'you' will recognize this, that is, it constitutes *a priori* knowledge.

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

However, no utterance of (15) or (16) is necessarily true; whatever proposition an utterance of (15) 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 (17) (or (17*)) ought to be such that their every utterance is true and this is knowable *a priori*.

(17) Everyone is in the contextually salient domain.
(17*) Everyone is in F.

Likewise, speakers should know *a priori* that every utterance of (18)-(19) is false.

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

However, not every utterance of (17) is true, and not every utterance of (18) or (19) is false. (We doubt any utterance of (18) or (19) 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 here is not to conclusively establish that *all* hidden indexicals fail to satisfy 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); Stanely (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 (20) and, second, to generate certain kinds of *a priori* truths or falsehoods, as in (21).

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

However, we can't get 'it' in (20) to refer to a comparison class, and (21) doesn't seem *a priori* false to us.

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.

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