Three Challenges for Indexicalism

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Abstract: *Indexicalism* is a strategy for defending truth-conditional semantics from under-determination arguments. According to indexicalism the class of indexical expressions includes not only the obvious indexicals, e.g. demonstratives and personal pronouns, but also *unobvious indexical* expressions, expressions which allegedly have been discovered to be indexicals. This paper argues that indexicalism faces significant obstacles that have yet to be overcome. The issue that divides indexicalism and truth-conditional pragmatics is first clarified. And then three general problems for indexicalism are presented, and some potential solutions that have been proposed in its defense are criticized.

1. Introduction

The fundamental idea behind the family of views known as *truth-conditional semantics* is the following simple principle of truth-conditional compositionality:

> The truth-conditions expressed by an utterance of a declarative sentence *S* are determined by only two factors: (i) the logical form (LF) of *S*, and (ii) the semantic contents of the lexical items in *S*.

Because of the influential work of Kaplan (1989) it is now a familiar point that in order to account for sentences that contain obvious indexicals—e.g. 'I', 'now', 'she', 'that' and perhaps some 'relational terms' such as 'local'—a defender of truth-conditional semantics must reject this simple principle of truth-conditional compositionality in favor of a relativized principle:

> The truth-conditions expressed by an utterance of a declarative sentence *S in a context c* are determined by only two factors: (i) the logical form (LF) of *S*, and (ii) the semantic contents of the lexical items of *S in c*.

Critics of truth-conditional semantics, i.e. theorists who endorse some form of truth-conditional pragmatics, argue that even this relativized principle of truth-conditional compositionality is inadequate to account for all the truth-conditional

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context-sensitivity exhibited by declarative sentences of natural language. That is, defenders of these alternative views argue that even relativized truth-conditional compositionality is refuted by *under-determination arguments*. An under-determination argument for a sentence *S* proceeds in two steps. First, two contexts, c_1 and c_2, are described, and it is argued that the truth-conditions expressed by *S* in c_1 differ from the truth-conditions expressed by *S* in c_2. And then, second, it is argued that factors (i) and (ii) are constant across c_1 and c_2. It then follows that the truth-conditions of *S*, even when relativized to a context, are not determined by factors (i) and (ii), and therefore even relativized truth-conditional compositionality must be rejected. A now classic under-determination argument for the sentence 'The leaves are green' is provided by Travis (1994). We are asked to consider a particular Japanese maple whose leaves are naturally russet in color but for some reason have been covered with green paint. Travis describes two contexts in which the sentence 'The leaves are green' is used to make an assertion. Context c_1 is, say, an art class, wherein all that matters is the outward appearance of the leaves. In c_1 then an utterance of 'The leaves are green' is intuitively true. Context c_2 is, say, a botany class, wherein all that matters is the natural color of the leaves, regardless of whatever dust, paint, etc., might be on them. In c_2, an utterance of 'The leaves are green' is intuitively false. And, now taking the second step, factors (i) and (ii) seem to be constant across the two contexts: The logical form of the sentence is clearly the same, and it appears to contain no (relevant) indexical expressions. (Note that *by stipulation* 'The leaves' is used in c_1 and c_2 to denote exactly the same leaves in exactly the same condition. And the tensed verb is clearly not relevant.) So, contrary to what is maintained by even relativized truth-conditional compositionality, the truth-conditions expressed by an utterance of a sentence (in a context) are not determined by factors (i) and (ii).

Defenders of truth-conditional semantics can respond to an under-determination argument for *S* by rejecting either of the two steps. To reject the first step is to adopt what I will call *the error-theoretic response*. To adopt this response is to argue that even though we do *intuitively judge* that the utterance of *S* in c_1 and the utterance of *S* in c_2 express different truth-conditions, it is an error to suppose that these intuitions are indicative of the actual *semantic content* of the sentence *S* in c_1 and/or *S* in c_2. One way of fleshing out the error-theoretic response is to claim that the truth-conditional content we erroneously judge *S* in c_1 (and/or *S* in c_2) to express is actually some sort of conversational implicature of the utterance, and thus not the semantic content of the utterance.[1] Another way of fleshing out the error theoretic response is to distinguish between *speech act content* and *semantic sentence (relative to a context) content*.[2] Though these ways of fleshing out the error theoretic response differ in important ways, they both endorse rejection of the premise that *S* in c_1 and *S* in c_2 semantically express different truth-conditions.

[1] Though he distinguishes between implicatures and implicitures, this is the approach advocated by Bach (1994) for utterances that undergo a process of *semantic expansion*.

[2] This is the approach advanced by semantic minimalism. See Cappelen and Lepore, 2005, and Borg, 2004.

One way of rejecting the second step is to adopt what I will call the *indexicalist response*, or simply *indexicalism* (sometimes also called *contextualism*).[3] The indexicalist response involves accepting that the intuitions concerning the truth-conditions expressed by *S* in c_1 and c_2 are not erroneous, but rejecting the claim that factors (i) and (ii) are constant across the two contexts. According to indexicalism the class of indexical expressions includes not only the *obvious* indexicals—e.g. pure indexicals such as 'here', personal pronouns, demonstratives, and perhaps relational expressions such as 'local'—but also *unobvious* indexical expressions, expressions which are alleged to have been *discovered* to be indexicals. Such unobvious indexicals can then be invoked to explain away the apparent counterexample to relativized truth-conditional compositionality provided by the under-determination argument. For instance, several indexicalists propose rejecting the second step in Travis' argument for 'The leaves are green' by analyzing color-adjectives as unobvious indexical expressions.[4] Under such analyses, the acknowledged fact that 'The leaves are green' can express different truth-conditions in different contexts is no more a threat to relativized truth-conditional compositionality than is the fact that 'I am here' can express different truth-conditions in different contexts.

My purpose here is to demonstrate that indexicalism faces significant obstacles that have yet to be overcome. In what follows I will first clarify the issue that divides indexicalism and truth-conditional pragmatics. I will then present three general problems for indexicalism, and criticize some potential solutions that have been proposed in its defense.

2. Clarifying the Issue: Truth-Conditional Semantics, Truth-Conditional Pragmatics, and Indexicalism

What divides indexicalism and truth-conditional pragmatics? The debate is *not* over whether or not many sentences that contain no obvious indexicals are truth-conditionally context-sensitive. For both the advocate of truth-conditional pragmatics and the indexicalist accept the first step of under-determination arguments for many sentences *S* that contain no (relevant) obvious indexicals. The debate rather concerns what the correct account of such acknowledged truth-conditional context-sensitivity is. The indexicalist maintains that for many such

[3] There are other ways of rejecting the second step: one can also argue that factors (i) and (ii) are not constant across the two contexts by claiming that *S* contains some ambiguity—either lexical or structural. (See Kennedy and McNally, 2010, for such an appeal to lexical ambiguity.) Or one can argue that factors (i) and (ii) are not constant across the two contexts because either *S* in c_1 or *S* in c_2 (or both) involves some sort of ellipsis. (See Stanley, 2000, for such an appeal to ellipsis.) And Bosch (2009) makes a sharp distinction between *indexicality* and *context dependence*, and argues that the phenomenon of *polysemy* is a form of non-indexical context dependence. I will not consider these other responses here.

[4] See Szabó, 2001; Rothschild and Segal, 2009; and Kennedy and McNally, 2010.

sentences *S* the exhibited truth-conditional context-sensitivity is explained by the presence of *unobvious* indexical expressions in *S*. If this is correct, then the exhibited truth-conditional context-sensitivity of such a sentence can be accounted for by something at least similar to Kaplan's (1989) semantics for obvious indexicals, and thus the apparent counter-example to (relativized) truth-conditional compositionality is explained away. In contrast, the advocate of truth-conditional pragmatics denies that for such sentences *S* the exhibited truth-conditional context-sensitivity is explained by the presence of unobvious (or obvious) indexical expressions. And thus the advocate of truth-conditional pragmatics maintains that even relativized truth-conditional semantic compositionality fails to account for the truth-conditions expressed by utterances of at least some declarative sentences.

The debate between truth-conditional pragmatics and indexicalism is thus not over how much *truth-conditional context-sensitivity* there is in natural language, but rather over how much *indexicality* there is. And the question as to whether or not the truth-conditional context-sensitivity exhibited by an under-determination argument for a sentence *S* is due to the presence of one or more indexical expressions is fundamentally a question about what sort of *knowledge* and/or *cognitive processes* competent interpreters utilize in determining the truth-conditions of utterances of *S*. Stanley (2000), who presents a paradigmatic defense of indexicalism, is very clear that the issue at stake is fundamentally epistemic, or cognitive, in nature:

> ... if the advocates of truth-conditional pragmatics are correct, then the proper place to situate an account of the bulk of the truth-conditional interpretation of linguistic assertions is in whatever account one has of reasoning generally, regardless of its subject matter. If, by contrast, the truth-conditional interpretation of assertions is entirely a matter of semantics, then the truth-conditional interpretation of assertions is special in a way that other kinds of reasoning processes are not (Stanley, 2000, p. 398).[5]

Thus the fundamental issue is whether 'the truth-conditional interpretation of assertions is entirely a matter of semantics,' as is claimed by Stanley and the defenders of truth-conditional semantics, or whether there is some 'extra capacity, beyond knowledge of meaning and referents ... on which understanding what is said inescapably depends,' as is claimed by Travis (1994, p. 177) and the defenders of truth-conditional pragmatics.

At this point an obvious objection against truth-conditional semantics arises: Given that natural language undeniably contains obvious indexical expressions,

[5] Stanley (2000) does not go so far as to claim that knowledge sufficient for the determination of truth-conditions is encapsulated in a specialized cognitive module, but many defenders of truth-conditional semantics do take this extra step. See for example Borg, 2004, p. 8.

how can Stanley and the defenders of truth-conditional semantics maintain that 'truth-conditional interpretation of assertions is *entirely a matter of semantics*' (my emphasis)? For example, since determining the truth-conditions of 'I am hungry' in a context *c* requires knowing who is speaking in *c*, and such knowledge is clearly not *semantic* knowledge, how could it be even remotely plausible to maintain that determining truth-conditions is 'entirely a matter of semantics'? The response on behalf of truth-conditional semantics is suggested in the following passage, in which Stanley presents the theoretical motivation for indexicalism:

> Each [indexical] element brings with it rules governing what context can and cannot assign to it, of varying degrees of laxity. The effects of extra-linguistic context on truth-conditional interpretation are therefore highly constrained. If this picture of truth-conditional interpretation is correct, then it is fundamentally different from other kinds of interpretation, like the kind involving kicks under the table and taps on the shoulder [note: 'where the latter are not governed by explicit meaning-granting stipulations'] (Stanley, 2000, p. 396).

The response is then to concede that though, e.g., knowing who is speaking is not itself *semantic*—it is not knowledge of conventional linguistic meaning nor of relevant syntactic structure—such pragmatically provided information is *specified as necessary for the determination of truth-conditions by conventional linguistic meaning*. In Kaplan's terms, though knowing who is speaking is not in and of itself knowledge of *character*, it is nonetheless knowledge of the character of 'I' that informs the interpreter that knowing who is speaking is required to determine the truth-conditions of an utterance of, e.g., 'I am hungry'.

The issue that divides indexicalism and truth-conditional pragmatics can now be stated more precisely. The indexicalist, as an advocate of truth-conditional semantics, is motivated to defend the thesis that, even though *purely* semantic knowledge alone is not sufficient to determine the truth-conditions of utterances of declarative sentences, nonetheless pure semantic knowledge *together with pragmatically provided information that is specified as required by pure semantic knowledge* does suffice to determine truth-conditions. And hence the indexicalist response to under-determination arguments for many sentences *S* is to maintain that the truth-conditional context-sensitivity manifested in such arguments is explained by the presence of some unobvious indexical expression in *S*, an expression whose linguistic meaning (or *character*) specifies what information must be pragmatically provided to determine the truth-conditions of utterances of *S*. In contrast, advocates of truth-conditional pragmatics reject the claim that pure semantic knowledge together with pragmatically provided information that is specified as required by pure semantic knowledge always suffices to determine truth-conditions. And thus the advocate of truth-conditional pragmatics is motivated to reject the indexicalist appeal to unobvious indexicals to account for the truth-conditional context-sensitivity exhibited in under-determination arguments for some sentences.

3. First Challenge: Determining Which Sentences Contain Unobvious Indexicals

It is now generally accepted that under-determination arguments can be formulated for *many* sentences of natural language. For example, Searle (1980) showed under-determination arguments can be formulated even for the hackneyed 'The cat is on the mat'. And hence if one endorsed the indexicalist strategy of response to *all* under-determination arguments, one would be compelled to maintain that *many* sentences contain unobvious indexicals, and this in turn would entail that *many* words were unobvious indexicals. This is acknowledged by Szabó, who utilizes the indexical strategy in response to Travis' under-determination argument:

> . . . the strategy of defense of compositionality pursued here is likely to lead to a lexicon where many, perhaps most entries contain [indexicals]. Whether the defense of [truth-conditional semantics offered by indexicalism] is ultimately convincing depends largely on the plausibility of such a lexicon (Szabó, 2001, 138).

Szabó is correct that the acceptability of widespread unobvious indexicality depends upon the 'plausibility of such a lexicon.' The problem here is not merely the shallow objection that widespread unobvious indexicality is counter-intuitive. Such an objection is question begging against indexicalism, for indexicalism just is the claim that some lexical items are indexicals even though this is not apparent to competent speakers; a certain degree of counter-intuitiveness is inherent to the view. The problem, rather, is that, in the absence of any independent motivation, acceptance of this consequence of widespread unobvious indexicality is indicative of *explanatory vacuity*. Indexicalism posits unobvious indexicals to explain *novel* cases of truth-conditional context-sensitivity—*novel* because it is not explained by the presence of *obvious* indexicals. The charge of explanatory vacuity would not be significant if indexicalism were invoked only for some exceptional sentences (e.g. knowledge reports,[6] epistemic modals[7]) that exhibited novel truth-conditional context-sensitivity. But it turns out that novel truth-conditional context-sensitivity is exhibited even by such banalities as 'The cat is on the mat' and 'The leaves are green'. If the indexicalist's reaction is simply to claim that this proliferation of under-determination arguments indicates that there is widespread unobvious indexicality, then his response to under-determination arguments is rendered explanatorily vacuous. Unobvious indexicals are *posited to explain* instances of novel truth-conditional context-sensitivity. And thus, as is the case for all theoretical

[6] As advocated by, for example, Cohen (1991).
[7] As advocated by, for example, DeRose (1991).

posits, the existence and nature of what is posited must be motivated *independently* of the phenomenon it is alleged to explain.[8]

What is needed to motivate the indexicalist response to under-determination arguments is thus an independent means of distinguishing between sentences that contain indexicals—in particular *unobvious* indexicals—and sentences that do not. Such a method, an independent test for the presence of indexicals, would provide the indexicalist with a means of distinguishing (at least in principle[9]) between under-determination arguments that warrant the indexical response from under-determination arguments that do not. If indexicalism were then utilized in response only to under-determination arguments for sentences that were shown by the test to contain indexicals, the charge of explanatory vacuity could be countered. A number of relevant proposals of such tests can be found in the recent literature (Cappelen and Lepore, 2005; Cappelen and Hawthorne 2009). I will demonstrate that what Cappelen and Hawthorne call an 'agreement based' test for 'semantic context-sensitivity' cannot be invoked to counter the charge of explanatory vacuity.[10]

Cappelen and Hawthorn propose the agreement test as an improvement upon the 'collective-says-that' test, which was in turn proposed as improvement upon the 'inter-contextual disquotation' test originally proposed in Cappelen and Lepore, 2005. The differences between these tests will not be of importance here; they are all inadequate for essentially the same reason. Cappelen and Hawthorne propose the following:

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[8] An anonymous referee pointed out that the explanations offered by truth-conditional pragmatics may also be subject to this sort of challenge. To be clear, I am not claiming that the explanations offered by truth-conditional pragmatics are immune to this sort of challenge; *any* entity posited for explanatory purposes ought to have some independent motivation, on pain of explanatory vacuity.

[9] It could turn out that every sentence *S* for which there is an under-determination argument is also revealed by the test to contain an indexical. This would not be problematic for indexicalism, so long as the test was appropriately *independent*.

[10] One might deny that Cappelen and Hawthorne's (2009) agreement-based tests for 'semantic context-sensitivity' are proposed as tests for the presence of *indexicals*. But such a denial would be unfounded. First, it is clear that Cappelen and Hawthorne's classification of a subsentential expression (e.g. 'is cold' p. 19) as being *context sensitive* is equivalent to my classification of the expression as being (or containing) an *indexical*. The phrase 'semantic context-sensitivity' is then used (p. 26) as a more general term covering all the context-sensitivity that is due to the context-sensitivity of subsentential expressions. (See pp. 19–20, 26, 34, 36, 102–105.) Second, Cappelen and Hawthorne (2009, ch. 4) use their agreement-based tests for *semantic context-sensitivity* to argue *against* relativism and in support of *indexicalism* (which they call 'contextualism'). If *semantic context-sensitivity* were not equivalent to *indexicality*, the agreement-based tests for semantic context-sensitivity could not be invoked to support contextualism over relativism. Third and more importantly, this issue of interpretation is not relevant. My point is simply that agreement-based tests cannot be invoked by the indexicalist to counter the charge of explanatory vacuity; this point holds regardless of what exactly Cappelen and Hawthorne take 'semantic context-sensitivity' to be.

> *Agree-1*: Let u be a sincere utterance of S by A in C and u′ a sincere utterance of 'not S' by B in C′. If from a third context C″ they cannot be correctly reported by 'A and B disagree whether S', then S is semantically context sensitive. Meanwhile, if from a third context C'' they can be correctly reported by 'A and B disagree whether S', that is evidence that S is semantically invariant across C, C″ and C″ (Cappelen and Hawthorne, 2009, p. 54).

Some clarification is required. Following Cappelen and Hawthorne (2009), let us define a *Collective Disagreement Report triple* (a *CDR-triple*) for a sentence *S* as an ordered triple of utterances $<u, u', u''>$ where *u* is an utterance in *c* by *A* of *S*, *u*' is an utterance in c' by *B* of 'not *S*', and u'' is an utterance in c'' by *D* of '*A* and *B* disagree that *S*'. Now let us define a *correct CDR-triple* as a CDR-triple whose third member is intuitively true, and an *incorrect CDR-triple* as a CDR-triple whose third member is intuitively not true. Using this new terminology we can provide two interpretations of *Agree-1*.

Let us first consider the following interpretation:

> *Agree-1a*:
>
> (i) If there is an incorrect CDR-triple for *S*, then *S* is semantically context-sensitive (i.e. *S* contains an indexical expression).
> (ii) If there is a correct CDR-triple for *S*, then *S* is semantically context-invariant (or at least this constitutes evidence that *S* does not contain an indexical).

Agree-1a is not a charitable interpretation of *Agree-1*. The problem is that conditional (ii) is either false, or the evidence appealed to in the consequent is so weak as to be inconsequential. Let us see why. Let *S* be 'Mary is at home' which contains what I will assume to be an indexical, viz. 'home'. And let *u* be a sincere utterance of *S* by Albert in a context *c* wherein it is clear that in uttering *S* Albert is asserting the proposition *that Mary is in Mary's own domicile*. And let u' be a sincere utterance of 'Mary is not at home' by Betty in c' wherein it is clear that Betty is expressing the proposition *that Mary is not in Mary's own domicile*. And finally, let u'' be an utterance of 'Albert and Betty disagree whether Mary is at home' by Danny in a context c'' wherein it is clear that that Danny is expressing the proposition *that Albert and Betty disagree whether Mary is at Mary's own domicile*. Now, intuitively Danny's utterance u'' is true, and thus there is a correct CDR-triple for 'Mary is at home'. (I assume that issues involving tense are appropriately resolved.) Does this provide a reason for thinking that 'Mary is at home' does not contain any indexicals? No, it does not. The indexical 'home' is not a *pure* indexical, and thus the speakers *can* all use it in their respective contexts to refer to the same domicile, in which case we will have a correct CDR-triple. But, for the same reason, they *can* also all use it to refer different domiciles, in which case we will have an incorrect CDR-triple.

The existence of merely *some* correct CDR-triples for *S* is then extremely weak evidence that *S* is semantically context-invariant.[11] A much more plausible interpretation of *Agree-1* would involve replacing this weak existentially quantified sufficient condition with the universally quantified sufficient condition that *all* of the CDR-triples for *S* are correct. Thus, *Agree-1* ought to be interpreted as:

Agree-1b:
(i) If there is an incorrect CDR-triple for *S*, then *S* is semantically context-sensitive (i.e. *S* contains an indexical expression).
(ii) If *every* CDR-triple for *S* is correct, then *S* is semantically context-invariant (or at least there is evidence that *S* does not contain an indexical).

Or more simply:

Collect Disagreement Report Test (CDR): *S* is semantically context-sensitive (i.e. *S* contains an indexical) *iff* there is an incorrect CDR-triple for *S*.

Can the indexicalists invoke CDR to distinguish those under-determination arguments that warrant the indexicalist response from those that warrant some other response, and thereby avoid the charge of explanatory vacuity? No, they cannot. First, note that for any *S* for which there is an under-determination argument, CDR will predict that *S* is semantically context-sensitive, and thus contains an indexical expression. This is because our intuitive judgments concerning the truth of utterances of '*A* and *B* disagree whether *S*' depend upon our intuitions about the truth-conditions that *A* expressed by uttering *S*, and that *B* expressed by uttering 'not *S*'; if we take these intuitively expressed truth-conditions to be compatible, then we will intuitively judge some utterances of '*A* and *B* disagree whether *S*' to be incorrect. But if there is an under-determination argument involving *S*, then there will be a potential utterance *u* of *S* by *A* and a potential utterance *u′* of 'not *S*' by *B* such that we take the truth-conditions intuitively expressed to be compatible. For an under-determination argument involving *S* is simply a plausible description of contexts c_1 and c_2 in which we would take utterances of *S* to express different truth-conditions; and if there are two such contexts, then there must also be a context c_3 such that we intuitively interpret the utterance of *S* in c_1 and an utterance of 'not *S*' in c_3 as expressing compatible truth-conditions.[12]

[11] This is essentially the point that Humberstone (2006) makes against Cappelen and Lepore's (2005) says-that tests.

[12] For instance, consider Travis' under-determination argument for 'The leaves are green': By assumption 'The leaves are green' is true in c_1 yet false in c_2 . But if 'The leaves are green' is false in c_2, then there is some c_3 such that 'The leaves are *not* green' is *true* in c_3. (Perhaps c_3 just *is* c_2.) Let us suppose that it is Alice who truly utters 'The leaves are green' in c_1, and Betty who truly utters 'The leaves are *not* green' in c_3. Because these utterances of Alice and Betty are *compatible*, it would be *incorrect* to report them using 'Alice and Betty disagree over whether the leaves are green.'

So, for any *S* for which there is an under-determination argument, CDR predicts that S is 'semantically context-sensitive,' and thus contains an indexical expression. And it is not difficult to diagnose why the CDR test (and the closely associated says-that and collective says-that tests) will predict the presence of indexicals in every sentence for which an under-determination argument can be constructed. The problem is that what follows from the fact that there is an incorrect CDR-triple for *S* (or, equivalently, an incorrect collective says-that report for *S*) is not that *S* contains an *indexical*, but rather that *S* can be used in different contexts to express different truth-conditions. The problem with agreement-based (and says-based) tests for *indexicality* is that our intuitions with regard to agreement reports (and says-that reports) detect not the specific case of *S*'s containing an indexical expression—an expression whose *linguistic meaning* specifies what pragmatically provided information must be gleaned from the context to determine truth-conditions—but rather only the general case of *S*'s being truth-conditionally context-sensitive. The problem, put succinctly, is that the test does not provide a means for detecting the presence of indexicals in a sentence *S* that is *independent* of the truth-conditional context-sensitivity of *S*.[13] And therefore the test cannot be invoked to counter the charge of explanatory vacuity.

4. Second Challenge: Determining Which Words Are Indexicals

Let us suppose that the indexicalist has a means of meeting the first challenge. That is, he has a suitable *independent* means of distinguishing between sentences that contain unobvious indexicals and sentences that do not. The second general problem is that even if he can independently determine that *S* contains at least one unobvious indexical, the indexicalist still needs a way of determining *which* expressions in *S* are unobvious indexicals.[14] And note that it would not be sufficient merely to find an expression *e* in *S* such that the use of *e* in c_1 and the use of *e* in c_2 seem to refer to different objects or properties. Rather the indexicalist would have to show that such variation between the intuitive referents of these uses is explained by the fact that *e* is an *indexical*, an expression whose meaning is something like a *character*, i.e. an 'explicit meaning-granting stipulation' that constrains 'what context can and cannot assign to it' (Stanley, 2000, p. 396).[15]

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[13] The conflation of context-sensitivity and indexicality exhibited in Cappelen and Hawthorne's (2009) agreement-tests seems to be inherited from the earlier says-that tests proposed in Cappelen and Lepore, 2005.

[14] If the indexicalist had a reliable procedure for determining which words were indexicals, then it is likely that he could use that procedure to determine which sentences contained indexicals. But the converse does not hold.

[15] Thus, for example, the suggestion of Weiskopf (2007, p. 180) that any word that exhibits 'semantic incompleteness or gappiness' is an indexical is inadequate. For, it cannot be assumed to *follow* from the fact that an expression *e* (e.g. 'raining') exhibits such 'gappiness' that it has a

Let us again consider the under-determination argument presented by Travis. The indexicalist, let us assume, has utilized some independent method to determine that an indexicalist response is warranted in this case, and thus he is justified in saying that at least one expression in 'The leaves are green' is an unobvious indexical that has different semantic values in the art-class context and in the species-sorting context. It is usually assumed that the color-adjective is the culprit, but it could be maintained with equal plausibility that the noun-phrase 'The leaves' has different semantic values in different contexts. And a similarly persuasive case could be made that the offending context-sensitivity is to be located in the copula 'is'. Instead of maintaining that 'the leaves' or 'green' is, or involves, an indexical, one could with equal plausibility maintain that what varies across contexts is what it is for a given thing *to be* green. Indeed, locating indexicality in the copula might also help explain how it is that very different sorts of objects, e.g. anti-freeze and houses, can be green, but *be* so in very different *ways*. (Of course the inflexion already involves a temporal context-sensitivity, but we are setting tense aside here.)

So, with regard to Travis's under-determination argument, the indexicalist has (at least) three options as to where to locate the offending indexicality, and no reasons for preferring one over the other two. But if the decision as to which word or phrase is to house the indexicality is arbitrary, then the indexicalist's assumption that at least one expression in 'The leaves are green' is an indexical, even if this assumption is supported by some independent test for the presence of indexicals, is undermined.[16]

Stanley (2000) and Stanley and Szabó (2000) present an ingenious argument that, if sound, would constitute a solution the first general problem *and* at least a partial solution to this second general problem. Stanley and Szabó argue that phenomena that at least resemble the binding of variables by quantifiers provide a sufficient condition for supposing that *aphonic* variables 'cohabit' with expressions that are not obvious indexicals.[17] Since variables are paradigmatic indexical expressions,

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character as its meaning. Only if truth-conditional semantics is *presupposed* would it follow, but such a presupposition would clearly beg the question.

[16] Szabó (2010) responds to this sort of objection-from-arbitrariness by arguing that 'the contents of the speech-acts performed in uttering ''green'' within the utterances of ''the leaf is green'' must have been different' (2010, p. 268). And he offers a general template to construct an argument showing that the predicate *c* of any sentence *s* used in under-determination arguments contains an indexical:

> . . . find an appropriate sentence *s′* (i) whose subject is a pronoun whose reference is fixed across the different utterances and whose predicate is *c* . . . (ii) the content of assertions made in uttering *s′* varies in a way that is analogous to the variation in the content of assertions made in uttering *s* (2010, p. 270).

But the template itself begs the question, for an isomorphic template generates arguments supporting the claim that the *subject* of *s* contains an indexical.

[17] A lexical item is *aphonic* if it is present in logical form (LF), but not in phonetic form (PF). I believe the term 'aphonic' is due to Neale (2007).

expressions whose linguistic meanings demand some sort of contextually provided assignment of semantic value, the argument in effect constitutes a sufficient condition for an expression's being, or in some way involving, an indexical.

Stanley and Szabó (2000) invoke their argument to motivate an indexicalist response to under-determination arguments involving the problem of quantifier-domain restriction. Consider two utterances of:

(1) Every bottle is empty.

Context c_1 is a festive dinner party, and by uttering (1) the concerned host expresses intuitive truth-conditions along the lines of *that every bottle that is on the table and that once contained wine is empty*. Context c_2 involves a frantic parent searching his refrigerator for a bottle of formula to feed his crying infant; this second utterance of (1) expresses intuitive truth-conditions along the lines of *that every bottle that is in the fridge and that is used to feed babies is empty*. This is a paradigmatic under-determination argument: The sentence (1)—which contains no obvious indexical expressions—is used in c_1 and c_2 to express different truth-conditions.

Stanley and Szabó's indexicalist response to this under-determination argument is relatively straightforward: Since what seems to vary across the two contexts concerns how the quantifier 'every bottle' is restricted, they posit an aphonic indexical that cohabits with the restricting noun 'bottle'. This indexical—which in (1) functions like a free-variable—is assigned different restrictions in different contexts, thereby reducing the domains of quantification for the utterances in different ways. Thus, according to this indexicalist proposal, the LF of (1) is actually something like:

(1*) [Every [<bottle, x>] [is empty]]

The truth-conditional compositional semantics for (1*) is then claimed to proceed as follows. The lexical items 'bottle' and 'is empty' are (ignoring tense) not indexicals, and their constant semantic values are the set of bottles and the set of empty things, respectively. The variable 'x' is an indexical, and its semantic value relative to a context c is some set or other of entities. (As will be explained below, this is somewhat simplified.) The value of '<bottle, x>' is determined by the following compositional rule:

(R) $[\![<\text{N}, x>]\!]_c = [\![\text{N}]\!]_c \cap [\![x]\!]_c$

(To be read as, *the semantic value of noun 'N' and cohabiting variable 'x' relative to a context c is the intersection of the semantic value of the noun 'N' relative to c and the value of 'x' relative to c*.) The determiner 'every' is then given the familiar generalized quantifier treatment:

(G) $[\![\text{every } <\text{N}, x> \text{ VP}]\!]_c$ is true iff $[\![<\text{N}, x>]\!]_c \subseteq [\![\text{VP}]\!]_c$

Assuming that somehow in the dinner-party context c_1 the value of 'x' is determined to be the set of things on the table that once contained wine while in the frantic parent context c_2 the value of 'x' is determined to be the set of things in the fridge

used to feed babies, this analysis yields the intuitive truth-conditions of the two utterances of (1).

The advocate of truth-conditional pragmatics, however, is not impressed. She of course agrees that if 'bottle' *were* an indexical (i.e. cohabited with a free-variable) then of course such an indexical analysis would be available. But she demands a compelling reason for supposing that 'bottle' actually is an indexical (or cohabits with a free-variable), and moreover she demands that this reason be *independent* of under-determination arguments, i.e. independent of the phenomenon that the aphonic variables are posited to explain.[18] And it is here where Stanley and Szabó introduce the 'binding argument.' They ask us to consider the intuitive truth-conditions of a typical utterance of a sentence such as:

(2) In some rooms, every bottle is empty.

There is a very natural reading of (2) that involves a sort of coordination between the quantifier 'some rooms' and the restricting noun 'bottle'; a very natural interpretation of the truth-conditions of an utterance of (2) is something like, *in some rooms, every bottle that is in that room is empty*. This then suggests that the LF of (2) is actually something like:

(2*) [In some rooms x] [every [<bottle, x>] [is empty]]

Stanley and Szabó maintain that this intuitive 'semantic binding' constitutes a compelling *independent* reason for supposing that there really is an aphonic variable in the LF of (1). That is, this appeal to the intuitive semantic binding exhibited by (2) to motivate the positing of an aphonic variable in (1) is *independent* of the phenomenon of truth-conditional context-sensitivity made manifest in the above under-determination argument for (1), and thus the binding argument provides a response to the first challenge.

But the binding argument also provides a response to the second challenge. For the intuitive semantic binding exhibited by (2) involves coordination between the quantifier 'some rooms' and the noun 'bottle', which suggests that there must be an aphonic variable associated with this particular constituent of (1). More precisely, what justifies the positing of a variable cohabiting with 'bottle'—as opposed to somewhere else in the LF of (1)—is the following assumption concerning what sort of *syntactic structure* must underlie utterances that exhibit the binding phenomenon:

> The Binding Assumption (BA): If α and β are within the same clause, and α semantically binds β, then α either is, or introduces, a variable-binding operator

[18] Stanley is cognizant of the need for an *independent* motivation for the postulation of aphonic indexicals, and he seems to assume that such independent motivation must in some way involve appeal to syntactic requirements. This is suggested by is endorsement of the methodological principle that 'syntactic structure cannot simply be postulated on semantic grounds. Rather, evidence of a syntactic sort must be available for the existence of domain variables' (Stanley, 2002, p. 368).

> which is co-indexed with, and stands in certain specified structural relation to, a variable which is either identical to, or is a constituent of, β (Stanley, 2000, p. 412).

Thus, assuming BA, utterances of sentences such as (2) that exhibit intuitive semantic binding provide a kind of *syntactic* reason for supposing that there is some sort of variable corresponding to 'bottle' that is available for binding by suitable quantifiers. When no such quantifiers are present, as is the case in the less complex (1), the variable will still be present, yet will be free. And it is plausible to suppose that the 'explicit meaning-granting stipulations' (Stanley, 2000, p. 396) governing free variables demand that an appropriate semantic value be provided by context.

Complications must be introduced, however, to bring the bound-variable analysis of (2) in line with the semantic treatment of (1) described above. For the domain of the quantifier 'some rooms' is of course rooms, and thus the values of the variable '*x*' in '<bottle, *x*>' must be rooms. Yet, in order to adopt the familiar generalized-quantifier analysis of (1), the value of the complex item '<bottle, *x*>' must be a set. To bring about the appropriate alignment between these disparate types of semantic values, Stanley and Szabó propose that inside the noun 'bottle' there are actually two aphonic variables: a function variable '*f( )*' and an object variable '*x*'. The variable '*x*' is assigned objects as values—in the case of (2) various rooms—and '*f( )*' is assigned, relative to a context of utterance, functions from objects to sets. In the case of (2) for example, the value of '*f( )*' could be taken to be a function that takes a room as argument, and delivers the set of things in that room as value. So, the LF of (2) is then claimed to be something like:

(2**) [In some <rooms, *g(i)*> *x*] [[every] [<bottle *f(x)*> *y*] [*y* is empty]]

The truth-conditional compositional semantics proceeds as above, accept that rule (R) is replaced with the more complex (R*):

(R*) $[\![<N,f(x)>]\!]_c = [\![N]\!] \cap [\![f]\!]_c([\![x]\!]_c)$[19]

It is clear that analogous arguments could be formulated to support the claim that all common-nouns cohabit with such *variable-combinations*, and thus all common-nouns are associated with a structure of the form '<N, *f(x)*>' at LF. And Stanley (2000) argues that the general form of argument generalizes to lexical items of other grammatical categories as well. Stanley (2000, p. 418) observes that there is a very natural interpretation of utterances of:

[19] It is not clear that Stanley and Szabó are compelled to posit the function-variables. A simpler analysis would be to take the semantic value of the noun 'bottle' to itself be a function from objects—the objects assigned in context to the aphonic object-variable—to sets. Similar analyses could be applied to all relevant grammatical categories.

(17) Most species have members that are small,

under which the utterances express the proposition, *most species s have members that are small for s*. And this suggests that at LF 'small' is actually something like '<small, *f(x)*>'. Thus at least some adjectives are also indexicals, and this motivates an indexicalist response to under-determination arguments involving such adjectives. Similarly, it is natural to interpret some utterances of:

(13) Every time John lights a cigarette, it rains,

as expressing the proposition *that every time that John lights a cigarette e, it rains at the time of e and at the location of e*. Stanley argues that this supports the proposal that the verb 'to rain' actually cohabits with two aphonic variable-combinations; i.e. Stanley suggests that this interpretation of (13) implies that at LF 'rain' has the form '<rain, *f(x)*, *g(y)*>' where '*x*' and '*y*' are variables whose values are objects (perhaps events), '*f( )*' is a variable whose values are functions from objects to times, and '*g( )*' is a variable whose values are functions from objects to locations. So, it is to be expected that many verbs are also indexicals (or, more precisely, cohabit with aphonic variable-combinations). And note that, despite what Stanley and Szabó's suggest to the contrary (2000, p. 257), BA implies that even some determiners cohabit with aphonic variable-combinations. For consider:

(3) In every country, many children are hungry.

The truth of sentence of the form '[many N V]' requires that a *sufficient* number of things satisfying 'N' also satisfy 'V', but of course what that number is will vary across contexts. And thus it is not surprising that uses of (3) exhibit semantic binding, where the number of children who are hungry sufficient for its being the case that *many* children are hungry varies with the quantifier 'every country'. Thus, for example, if the relevant country is China, *many* children are hungry only if at least 100,000 are hungry, whereas if the country is Luxemburg, that *many* children are hungry requires only that 100 are. This implies that at LF 'many' has the form '<many, *f(x)*>', and it is reasonable to expect the same result for other determiners.

One might suppose that this proliferation of binding arguments in support of ever-more aphonic variable-combinations is a welcome result for the indexicalist. For it might be thought that this proliferation provides precisely the sort of independent motivation that is required to underwrite endorsement of widespread, if not ubiquitous, indexicality. (This seems to be the view of Stanley (2000).) The idea, then, is that the fact that under-determination arguments can be constructed for nearly all sentences is to be explained—in keeping with the tenants of truth-conditional semantics—by positing *many* aphonic indexicals. And, in response to the demand for an independent motivation for endorsing such ubiquitous indexicality, the indexicalist can appeal to the proliferation of binding arguments. I will now demonstrate, however, that the proliferation of binding arguments actually serves to undermine the indexicalist response to under-determination arguments.

It is a familiar observation that binding arguments yield some counter-intuitive results. For example, Cappelen and Lepore (2005, p. 74) point out that there is a very natural interpretation of utterances of:

(4) In every room, 2+2=4

under which the proposition expressed is *that in every room, 2+2=4 in that room*. But if BA is assumed, the existence of this semantic binding implies that '2+2=4' somewhere contains an aphonic variable-combination. This result is certainly counterintuitive—it does not conform to pre-theoretic intuitions that mathematical equations contain indexicals. But, the indexicalist can remind us that indexicalism just is the view that many expressions that do not *seem* to be indexicals in fact *are* indexical expressions. Thus, contrary to what is suggested by Cappelen and Lepore (2005, p. 74), the consequence that '2+2=4' contains aphonic indexicals is not in-and-of-itself a *reductio* of the binding argument.

The real problem raised by the proliferation of binding arguments is not that it yields counter-intuitive results, but that it implies that many words, e.g. most if not all common-nouns, actually contain an *indeterminate number* of aphonic variable-combinations. This problem deserves examination because it not only indicates where the reasoning of the binding argument goes awry, but also suggests what sort of explanation of the observed phenomenon of semantic binding might be correct. Let us focus on those instances of the binding argument that involve common-nouns and quantifier-domain restriction. Stanley and Szabó's examples involve sentences such as (1) where there is an intuitive semantic coordination, i.e. semantic binding, between a quantifier *Q1* and the domain of another quantifier *Q2*. They argue that this provides motivation for positing an aphonic variable-combination cohabiting with the noun restricting the domain of *Q2*. This suggests that if there were a case in which there were *two* quantifiers $Q1_a$ and $Q1_b$ both of which semantically bind another quantifier *Q2*, then, assuming BA, that would warrant positing *two* aphonic variable-combinations inside the noun that specifies the domain of *Q2*. And there clearly are examples of such double domain coordination.

Suppose we are caterers of a large wedding. The reception is taking place in ten rooms, and five kinds of wine are being served to the guests. Suppose that somebody in our catering group uses (2) to inform us of a potential problem:

(2) In some rooms, every bottle is empty.

As we have seen, the logical form of (2) is alleged to be something like:

(2**) [In some <rooms, *g(i)*> *r*] [[every <bottle *f(r)*> *b*] [*b* is empty]]

Note that there are aphonic variable-combinations cohabiting with both 'rooms' and 'bottle'. According to Stanley and Szabó, the variable-combination cohabiting with 'bottle' is bound by the quantifier expression 'some rooms'. But what of the variable-combination '*g(i)*' that allegedly cohabits with 'rooms'? Given our mutual interests and concerns as caterers, uses of the noun 'rooms' will be contextually

restricted to the ten rooms in which the reception is taking place. That is, the aphonic variable combination cohabiting with 'rooms' will have as its semantic value something like the set containing entities relevant to the reception we are catering. (The details of how this set is determined are not relevant.) Thus, in this context, utterances of (2) are interpreted to express the proposition *that in some rooms in which the reception is taking place r, every bottle in r is empty*.

Very similar reasoning would apply if someone in our group were to utter:

(5) For one wine, every bottle is empty.

On Stanley and Szabó's analysis the LF of (5) would be something like:

(5*) [For one <wine, *h(j)*> *w*] [[every <bottle, *f(w)*> *b*] [*b* is empty]]

Again, there are aphonic variable-combinations cohabiting with both 'wine' and 'bottle'. And again Stanley and Szabó would maintain that the variable-combination cohabiting with 'bottle' is bound by the quantifier expression 'one wine', while, again, given our mutual interests and concerns as caterers, uses of the noun 'wine' will be contextually restricted to the five sorts of wine we are serving at the reception. That is, the aphonic variable-combination cohabiting with 'wine' will have as its semantic value a set containing things relevant to the reception as semantic value. (Again, the details of how this set is determined are not relevant.) Thus, in this context, utterances of (5) are interpreted to express the proposition *that for one wine that is being served at the reception w, every bottle that contained w is empty*.

Now suppose that one of our fellow caterers, with urgency in her voice, utters:

(6) For one wine, in some rooms, every bottle is empty.

Since the wines in question are (still) the members of the set of five wines being served at the reception, and the rooms in question are (still) the members of the set of ten rooms in which the reception is taking place, the nouns 'wine' and 'rooms' (interpreted together with their cohabiting variable-combinations) will continue to have these contextually salient sets as semantic values. What else will the assumptions of the binding argument dictate with regard to this utterance of (6)? The same sort of semantic binding that was observed with regard to the above described utterance of (2) is also present in (6). That is, there is the same semantic binding between 'some rooms' and 'bottle'. Thus, an application of BA yields that a partial description of the logical form of (6) is:

(6*) [For one <wine, *h(j)*> *w*] [in some <rooms, *g(i)*> *r*]
[[every <bottle, *f(r)*> *b*] [*b* is empty]]

But, in addition, the same semantic binding that was observed with regard to the above described utterance of (5) is also present in (6). That is, there is in addition the same semantic binding between 'one wine' and 'bottle'. Thus, another application of BA yields that another partial description of the logical form of (6) is:

(6**) [For one <wine, *h(j)*> *w*] [in some <rooms, *g(i)*> *r*]
[[every <bottle, *f′(w)*> *b*] [*b* is empty]]

Thus, the BA applied to the utterance of (6) yields that 'bottle' contains an aphonic variable bound by 'some rooms' and an aphonic variable bound by 'one wine'. So, to provide a complete description of all the aphonic variable-combination binding that is implied by the BA, we must combine (6*) and (6**), and this requires us to posit *two* aphonic variable-combinations cohabiting with 'bottle':

(6***) [For one <wine, *h(j)*> *w*] [in some <rooms, *g(i)*> *r*]
[[every <bottle, *f(r)*, *f′(w)*> *b*] [*b* is empty]]

This representation, which posits multiple variable-combinations cohabiting with 'bottle', captures the intuitive reading expressed by the concerned caterer: viz. *that there is one wine such that in some rooms, all the bottles in those rooms that contained that wine are empty*.

So Stanley and Szabó are compelled to maintain that every common-noun cohabits with one aphonic variable-combination, but they are also compelled to maintain that every noun cohabits with two aphonic variable-combinations. But of course analogous arguments will compel them to posit more aphonic variable-combinations. Suppose that at the reception the bottles of wine come in three different *sizes*. Then there would be an interpretation of an utterance of:

(7) There is a size such that, for one wine, in some rooms, every bottle is empty

under which the bottles in question are those that are in the relevant room, that contained the relevant wine, and that are of the relevant size. The BA would then compel Stanley and Szabó to posit three aphonic variable-combinations to cohabit with 'bottle'. The assumptions of the binding argument, the BA in particular, thus require the indexicalist to posit an *indefinite* number of variables to cohabit with common-nouns.[20] (And similar results are to be expected for other grammatical categories as well.[21])

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[20] This problem is also articulated, though not adequately presented, by Breheny (2004) as the problem of 'multiple dependencies.' As Stanley (2005) points out, Breheny does not establish that the assumptions of the binding argument will require the positing of multiple aphonic variable-combinations because he does not rule out the possibility that the *additional* quantifiers bind variables that *already* exist within their scopes. In terms of (6), Breheny does not rule out the possibility that the *additional* quantifier 'one wine' binds the *already existing* aphonic individual-variable that cohabits with the noun 'rooms'. If this possibility is allowed, there is no need to posit two aphonic variable-combinations that cohabit with 'bottle'. I have ruled out this possibility by considering a context in which the value of the aphonic variable-combination cohabiting with 'rooms' is fixed by the context, and thus is not available for binding. (And to argue that 'bottle' *already* cohabits with two variable-combinations because it is a *relational expression* would not solve the problem. For the described use of (7) requires 'bottle' to cohabit with yet another aphonic variable-combination.)

[21] For instance, that an indefinite number of variable-combinations will be required in relative adjectives is implied by the following sequence of sentences:

This indeterminacy result undermines Stanley and Szabó's utilization of BA in defense of truth-conditional compositionality. For, to begin with, the indeterminacy result undermines Stanley and Szabó's argument in support of a crucial premise. As noted by Recanati (2004, pp. 109–110), the semantic binding exhibited by (2) justifies indexicalism in response to the under-determination argument for (1) only if the inference from (a) to (b) is sound:

(a) 'bottle' as it occurs in (2)—where it is semantically bound—cohabits with exactly one aphonic variable-combination.
(b) 'bottle' as it occurs in (1)—where it is not semantically bound—also cohabits with exactly one aphonic variable-combination.

But this inference is valid only if it is assumed that the syntactic structure corresponding to occurrences of 'bottle' does not vary depending upon the linguistic environment of those occurrences. Let us say that an instance of an expression *e* in an occurrence of a sentence *S* is *embedded* just in case it is semantically bound by at least one other quantifier in *S*, and occurs *unembedded* otherwise. We can then formulate the general principle which warrants the inference from (a) to (b) as follows:

> *Representational Constancy*: Every instance of expression *e* corresponds to the same syntactic structure (at LF), regardless of whether the instance of *e* is *embedded* or *unembedded*.

Now Stanley and Szabó are aware that their utilization of BA to motivate indexicalist responses to under-determination arguments depends upon representational constancy. And thus they present the following argument from ellipsis in support of this crucial premise. They maintain that the VP-ellipsis exhibited by:

(28) (i) John failed exactly three Frenchmen.
(ii) In fact, in most classes John has taught he has.

requires that the syntactic structure corresponding to the unembedded instance of 'Frenchmen' in (28i) be identical to the syntactic structure corresponding to the elided unembedded instance of 'Frenchmen' in (28ii). This identity of syntactic structure is *required* because 'according to standard theories of such ellipsis' (Stanley and Szabó, 2000, p. 244) the elided material in (28ii) must be 'copied' or 'reconstructed' from previously occurring syntactic structure in (28i). And since—assuming BA—the syntactic structure corresponding to the embedded, elided, instance contains an aphonic variable-combination, so too must the first

(17) Most species have members that are small. (small for the species)
(17′) Most species have some females who are small. (small for females of the species)
(17″) There is some region where for most species several females are small. (small for females of the species who live in the region)

unembedded instance. So, an aphonic variable-combination must be assumed to *constantly* cohabit with the noun 'Frenchmen'.

The result that common-nouns must cohabit with an indefinite number of aphonic variable-combinations, however, undermines the argument from ellipsis. If (28) shows that 'Frenchmen' constantly cohabits with *one* aphonic variable-combination, then similar cases of ellipsis will show that nouns constantly cohabit with *two* (or three or ...) aphonic variable-combinations. Let us return to the catering context. Suppose the catering staff is discussing the amounts and kinds of wine being consumed in the rooms. A member of the staff utters,

(8) (i) In this room there are three empty bottles.
(ii) In fact, for one wine, in most rooms there are.

The second, elided, instance of 'bottles' is now doubly-bound, and thus by the BA it must contain *two* aphonic variable-combinations.[22] So the presumed 'copying' or 'reconstruction' of ellipsis would thus force the result that the unembedded instance of 'bottle' in (8i) also cohabits with *two* aphonic variables. But representational constancy itself dictates that the unembedded instances of 'bottle' in (1) and in (8i) must correspond with the same syntactic structure. And thus we arrive at the absurd result that all instances of 'bottle' cohabit with *both* one and two variable-combinations.

One might attempt to block this objection against the ellipsis argument by construing the semantic binding exhibited by one of the quantifiers in (8ii), i.e. either 'one wine' or 'most rooms', as semantically binding the verb 'are' instead of the noun 'bottle'. Under this construal of the semantic binding, the BA would license postulating one variable-combination in the verb 'are' instead of positing *another* variable-combination in the noun 'bottle'.[23] But the existence of this alternative construal of the semantic binding exhibited by the sentence does not block the objection. For, first, even if there is an alternative construal of the semantic binding exhibited by (8ii) under which, e.g., 'one wine' semantically binds 'are', this would not imply that there is *no* construal under which this additional quantifier semantically binds 'bottle'. The objection against the ellipsis argument assumes only that there is *a* reading on which there is additional semantic binding involving the noun. And, second, attempting to block the objection by construing the additional quantifier as semantically binding the verb only postpones the difficulty. For adding yet *another* quantifier will require two aphonic variables in *either* the verb or the

[22] To block the possibility that the additional quantifier 'one wine' binds a variable cohabiting with 'rooms', it must (still) be stipulated that the variable-combination in 'room' is functioning as a discretionary indexical, whose semantic value is a contextually salient function-object pair.

[23] This response was suggested to me by an anonymous referee. Though I cannot pursue the issue here, note that similar worries can be raised with regard to Stanley and Szabó's original ellipsis argument using (28). That is, the argument assumes that 'most classes John has taught' semantically binds the noun 'Frenchman', but it also could be construed as semantically binding the verb 'failed'.

noun. That is, suppose—as Stanley and Szabó's analysis of (28) suggests—that in (8ii) 'most rooms' semantically binds the noun 'bottles', and suppose the imagined defender of the ellipsis argument is correct that the additional quantifier 'one wine' somehow semantically binds the verb 'are'. Recall that in the catering context the wine-bottles being served to the guests are of three different sizes. Now consider an utterance of,

(9) (i) In this room there are three empty bottles.
(ii) In fact, there is a size such that for one wine, in most rooms there are.

There are two relevant options.[24] Either the newest additional quantifier in (9ii), viz. 'a size', semantically binds the verb—in which case the BA will require two variable-combinations cohabiting with 'are'—or this newest additional quantifier semantically binds the noun— in which case the BA requires two variable-combinations cohabiting with 'bottle'. Either way the BA forces one to posit multiple cohabiting variable-combinations. So, for two reasons invoking semantic binding involving the verb does not block the objection against the ellipsis argument. And thus the ellipsis argument in support of representational constancy must be rejected.

But of course a stronger point can be made. The assumption of representational constancy is itself inconsistent with the indeterminacy result. For the indeterminacy result is that some embedded instances of 'bottle' cohabit with one aphonic variable-combination, but others—those wherein 'bottle' is doubly-bound—cohabit with two aphonic variable-combinations. Representational constancy would then entail the absurd result that all instances of 'bottle', regardless of whether or not they are embedded or unembedded, cohabit with both only one aphonic variable-combination, and also with two aphonic variable-combinations. So, not only does the indeterminacy result undermine the ellipsis argument in support of representational constancy, but it moreover entails that representational constancy is false.[25]

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[24] Again, to block the possibility that the newest additional quantifier 'a size' binds a variable in 'wine', it must be stipulated that the variable-combination in 'wine' is functioning as a discretionary indexical, whose semantic value is a contextually salient function-object pair.

[25] The argument presented here is that if (i) an instance of the binding argument involving *one* quantifier shows that there is *exactly one* aphonic variable-combination associated with 'bottle', then (ii) relevantly similar arguments involving *two* quantifiers show that there must be *exactly two* variables associated with 'bottle' and (iii) relevantly similar arguments involving three quantifiers . . . and (iv) . . . The assumption of representational constancy then implies that 'bottle' cohabits with exactly one aphonic variable-combination, *and* exactly two . . . , *and* exactly three . . . . Though Stanley and Szabó, clearly endorse the antecedent (i), a defender of binding arguments might attempt to avoid the absurd result by denying it. That is, it might be claimed that semantic binding of 'bottle' by exactly *n* quantifiers shows only that 'bottle' is associated with *at least n* aphonic variable-combination. While this response avoids the absurd result that 'bottle' is associated with both exactly one *and* exactly two aphonic variable-combinations, it leads to the equally absurd result that *constantly* cohabiting with

The indeterminacy result that is exhibited by pairs of sentences such as (2) and (6) strongly suggests that during the interpretation process some sort of 'on-the-fly' procedure makes appropriate adjustments, *at some level of representation*, to the restricting nouns of the embedded quantifiers, where these adjustments are sensitive to the linguistic environments in which the embedded quantifiers occur.[26] And it is clear that such on-the-fly construction of requisite representational structure is not compatible with the assumption of representational constancy. Of course the falsity of representational constancy does not entail that, e.g., the unembedded instance of 'bottle' in an occurrence of (1) does *not* cohabit with an aphonic variable-combination. That is, even if an indexical analysis of unembedded instances of 'bottle' cannot be supported by appeal to binding phenomena involving embedded instances together with the assumption of representational constancy, it might nonetheless be the case that an indexical analysis of unembedded instances is correct. But the fact that rejection of representational constancy is *compatible* with indexicalist responses to under-determination arguments is irrelevant to the problem being raised here. Consider again the under-determination argument for:

(1) Every bottle is empty.

If the assumption of representational constancy is rejected, then there is no reason *independent* of the desire to rescue truth-conditional semantics from such arguments for supposing that 'bottle' is, or cohabits with, an indexical expression.[27]

'bottle'—and presumably many words of other grammatical categories as well—there are a large number of such variable-combinations. (Indeed, granted certain assumptions about *semantic competence* as opposed to *performance*, a strong case can be made that an *infinite number* of aphonic variable-combinations would be required.) To put the point in terms directly relevant to the debate between indexicalism and truth-conditional pragmatics, positing a plethora of aphonic indexicals cohabiting with many lexical entries would obviously be incompatible with the motivating principle that 'the effects of extra-linguistic context on truth-conditional interpretation are … highly constrained' (Stanley, 2000, p. 396).

[26] Recanati's postulation of 'variadic functions' (2004, p. 107) is one sort of on-the-fly construction of required representational structure. Breheny's proposal of 'lexical manipulation' (2004) is a similar procedure.

And note that such on-the-fly procedures make available the following approach to the ellipsis exhibited in (28): The unembedded instance of 'Frenchmen' in (28i) does not cohabit with any variable-combination. It is this variable-free syntactic structure that is then copied to the embedded (and elided) instance in (28ii). And now, *after* the variable-free syntactic structure is copied, the on-the-fly process of representation construction takes place, and an appropriate representation containing something like a bound variable is thereby constructed for the instance of 'Frenchmen' in (28ii).

[27] Rothschild and Segal (2009) present a *reverse binding-argument* against an aphonic-variable analysis of color-adjectives; i.e. they argue that such aphonic-variable analyses predict binding phenomena where none in fact exist. They also present an alternative *overt*, i.e. non-aphonic-variable, indexical analysis. This overt indexical analysis is criticized in Clapp, 2011, wherein it is shown that under this overt analysis the content-shiftiness of allegedly overt indexical expressions is not due to *semantic knowledge* of linguistic meanings that resemble *characters*.

5. Third Challenge: Preserving the Distinction Between Pragmatic Speaker-Content and Semantic Sentence-Content

As was explained in Section 2, truth-conditional semantics is motivated by the cognitive, or epistemic, principle that semantic interpretation is 'fundamentally different from other kinds of interpretation, like the kind involving kicks under the table and taps on the shoulder' (Stanley, 2000, p. 396). According to Stanley, the fundamental difference is that whereas 'the truth-conditional interpretation of assertions is entirely a matter of semantics,' providing an account of kicks and taps and other forms of *non-semantic* communication will require appeal to 'whatever account one has of reasoning generally, regardless of its subject matter' (Stanley, 2000, p. 398). The third problem for indexicalism concerns this alleged distinction between semantic knowledge sufficient for the determination of semantically encoded truth-conditions and the sort of knowledge involved in non-semantic communication. Allegiance to this distinction commits defenders of truth-conditional semantics to maintain that what *speakers communicate* through utterances often goes beyond, or is distinct from, the truth-conditional content claimed to be semantically encoded in the sentence uttered (relative to contexts).[28] Thus truth-conditional semantics, including indexicalism, is compelled to endorse something at least similar to Grice's distinction between *what is said*—i.e. what is semantically encoded in an uttered sentence—and *what is implied*—i.e. what the speaker pragmatically communicates by way of performing the utterance. The problem is that by positing unobvious indexicals to provide a semantic account of the truth-conditional context-sensitivity made manifest in under-determination arguments, indexicalism undermines this distinction.

If it is granted to truth-conditional semantics that there is a firm Grice-inspired distinction between truth-conditional semantic sentence-content and truth-conditional pragmatic speaker-content, two basic questions must be answered. First, how are interpreters able to determine that a speaker is communicating content that differs from the encoded semantic content? And, second, assuming that a speaker is attempting to communicate such non-semantic content, how are interpreters

[28] In contrast to truth-conditional semantics, truth-conditional pragmatics rejects the Grice-inspired distinction between (literal) truth-conditional *semantic sentence-content* and truth-conditional *pragmatic speaker-content* (though she may accept a different sort of distinction between *saying* and *implying*). This important difference between truth-conditional semantics and truth-conditional pragmatics is evidenced in the following citation from Recanati:

> . . . the contrast between what the speaker means and what she literally says is illusory, and the notion of 'what the sentence says' incoherent. What is said (the truth-conditional content of the utterance) is nothing but an aspect of speaker's meaning. That is not to deny that there *is* a legitimate contrast to be drawn between what the speaker says and what he or she merely implies. Both, however, belong to the realm of 'speaker meaning' and are pragmatic through and through (Recanati, 2004, p. 4).

able to identify it? According to Grice (1975), the answers to both questions crucially involve the interpreter grasping the encoded semantic content—which Grice identifies with *what is said*—and assuming that the speaker is obeying the *cooperative principle*. In broad outline, Grice's answer to the first question is as follows: The interpreter determines that the speaker is communicating content that differs from the encoded semantic content because the *simple hypothesis* that the speaker is communicating *only* the encoded semantic content conflicts with the assumption—fundamental to communication—that the speaker is obeying *the cooperative principle*. The answer to the second question, again in very broad terms, is that the interpreter makes an abductive inference: Given that the speaker is obeying the cooperative principle and thus cannot be taken as communicating *only* the encoded semantic content, i.e. given that the *simple hypothesis* is incompatible with the assumption of cooperativity, the interpreter identifies the hypothesis concerning what the speaker is communicating that provides the best explanation of the speaker's utterance.

The details of Grice's approach to speaker-meaning are not relevant to the problem I am raising here.[29] What is relevant is that it is crucial to this *sort* of account of speaker-meaning that the interpreter be able to identify the encoded semantic-content and recognize that the *simple hypothesis* (i.e. that the speaker is communicating *only* this semantic-content) is incompatible with the assumption that the speaker is obeying the cooperative principle. Thus it is crucial that an interpreter be able to determine semantic sentence-content without relying on the assumption of cooperativity. For if determination of the semantic *what is said*-content relied on the assumption of cooperativity, so that the simple hypothesis *had to be* compatible with the assumption of cooperativity, then there would be no tension between semantic content and the assumption of cooperativity. And if there were no tension between the semantic content and the assumption of cooperativity, there would no distinction between *what is said* and *what is implied*.

The third general problem for indexicalism arises because the assumption of cooperativity will play a dominant role in the determination of the semantic content of occurrences of the posited unobvious indexicals. In order to account for the wide range of truth-conditional context-sensitivity made manifest by under-determination arguments, the unobvious indexicals posited by indexicalism must not be highly constrained *pure indexicals* such as 'I' or 'today', but rather they must be more like *discretionary* indexicals such as 'that' or 'it'. That is, in order to block the relevant under-determination arguments, the *characters* governing the posited unobvious indexicals have to be extremely lax and *not* impose significant constraints

[29] In particular, for my purposes it does not matter whether or not the actual processing of implicatures proceeds chronologically *from* the encoded proposition *to* the implied proposition. A defender of truth-conditional semantics need not be committed to such a chronological model.

on the values that can be assigned to them.[30] But if the posited unobvious indexicals are such lax discretionary indexicals, then determining the values of occurrences of them will requires interpreters to consider what it is reasonable to take the speaker as referring to, given a mutual understanding of the goals and purposes of the conversation; that is, determining the values of such discretionary indexicals will require appeal to something at least analogous to the assumption of cooperativity.[31] But this will undermine the distinction, which is implied by the cognitive principles motivating truth-conditional semantics, between semantic sentence-content and pragmatic speaker-content.

A straightforward example of the problem is provided by Weiskopf's (2007) indexicalist analysis of compound nominals. According to Weiskopf, a compound nominal such as 'dog house' 'contains a phonologically unrealized open variable or otherwise indexical expression' (Weiskopf, 2007, p. 175).[32] According to Weiskopf the semantic rule for such compound nominals is provided by:

(I) $\mathbf{[}N_1\ N_2\mathbf{]} = \lambda x\mathbf{[}N_2'(x)\ \&\ R^*(x,\ N_1')\mathbf{]}$[33]

The relational expression 'R*' in the above semantic rule is an indexical expression whose 'semantic value is given by its character: it picks out, to a first approximation, the most relevant and conversationally sensible relation obtaining between N_1 and N_2' (Weiskopf, 2007, p. 175). Thus rule (I) is able to capture the context-sensitivity exhibited by uses of, e.g., 'dog house'. For example, for a typical use of 'Johnny built a dog house' rule (I) would yield an analysis along the lines of:

Johnny built a y: $\lambda x[\underline{\text{house}}(x)\ \&\ R^*(x,\ \underline{\text{dog}})](y)$

where in the context of utterance 'R*' is assigned (something like) the relation, *x is designed to suit Ys*. But for other uses of 'dog house' the aphonic relational variable 'R*' will be assigned other relations. For example, suppose that in a particular house on our block there lives a very nasty dog. In a context where this is common

[30] Stanley (2000, p. 400) explicitly states that the variables he posits are not 'indexicals in the narrow sense,' i.e. they are not like 'I', 'here', and 'now', but are rather indexicals 'in the broad sense,' i.e. they are like the discretionary indexicals 'it' and 'that'.

[31] This problem is anticipated by Neale who points out that aphonic variables 'if they exist at all, … are expressions whose values are identified *wholly* pragmatically, without any guidance from their own meaning properties!' (Neale, 2007, p. 82).

[32] What Weiskopf actually says here is that 'the *linguistic meaning* of CNs contains a phonologically unrealized open variable or otherwise indexical expression' (my emphasis). Weiskopf does not explain how a *meaning* can contain an *expression* (regardless of whether or not it is phonologically realized). In general, Weiskopf never explains *how* the aphonic relational indexical 'R*' is associated with compound nominals.

[33] Weiskopf's analysis involves three different rules, where, apparently, each rule applies to a different sort of compound nominal (see 2007, pp. 175–179). For the sake of simplicity I state the problem in terms of Weiskopf's first rule, which expresses the core of the analysis. Moreover, Weiskopf states that it is this first rule that applies to 'dog house' and 'fire department', so I assume it is also the rule that applies to 'fuel station'.

background information, in uttering 'The mailman won't go to the dog house' I might use 'dog house' to designate this particular house. In this context 'R*' would be assigned something along the lines of *that very nasty* $\underline{Y}$ *lives in x* as semantic-content.

As is illustrated by these examples, if rule (I) is to capture the context-sensitivity exhibited by compound nominals, the character of the aphonic indexical 'R*' must be extremely lax. That is, 'R*' must be a *discretionary* indexical whose character does not impose significant constraints on the values that can be assigned to it. As the following passage makes clear, this is readily acknowledged by Weiskopf:

> CNs are more like demonstratives than pure indexicals; their content is given by what speakers intend to express in using them. This still leaves for the hearer the problem of figuring out what is said by a CN-utterance. ... ascertaining the precise nature of the relation that a speaker intends between two or more constituents of a CN may require drawing on world knowledge and general reasoning capacities more akin to abductive inference then the relatively straightforward process of constructing complex linguistic meanings. This is entirely typical of how indexicals are interpreted. Consider the variety of cognitive, perceptual, and social skills that go into determining the reference of a demonstrative or discourse anaphoric expression (Weiskopf, 2007, p. 181).

Let us consider an example very similar to an example Grice (1975) uses to motivate the distinction between *what is said* and what is pragmatically *implicated*.[34] Suppose, late at night, you see me stopped by the side of the road, standing by my car with an empty gas-can in my hand. You approach, and I utter, 'Where can I buy some fuel tonight?' In response, you utter,

(9) There is a fuel station around the corner.

Now suppose that around the corner there is indeed a store that, when open, sells gasoline, but further suppose that it is now closed and I cannot buy gasoline

[34] Where Grice (1975) has 'petrol' and 'garage', I have 'fuel' and 'fuel station'. In an earlier draft I used the more natural 'gas station' instead of 'fuel station', but an anonymous referee suggested that my original objection could be blocked by an appeal to a process of *lexicalization*. That is, one might claim that Weiskopf's indexical analysis does not apply to such standardized uses of 'gas station' because this familiar compound nominal has been lexicalized so that under at least one its senses it is not an indexical. The suggestion is that 'gas station' has at least one sense under which it context-invariantly expresses something like *place of business where one can buy gasoline for automobiles*. Weiskopf himself explicitly rejects that such lexicalization occurs (Weiskopf, 2007, p. 180). His rejection of such lexicalization seems to be motivated by a desire to avoid the ambiguity (or polysemy) that appeal to such a process would imply. For note that even if 'gas station' is usually used to express a context-invariant meaning along the lines of *place of business where one can buy gasoline for automobiles*, there are other uses where it is used to mean, for example, *satellite orbiting Earth where astronauts may obtain oxygen and rocket fuel*. At any rate, my use of 'fuel station' in the example avoids such complications, since it is implausible to suppose that 'fuel station' has any lexicalized meanings.

there tonight. According to Grice, what you said—the compositionally determined content of *sentence* (9) relative to the context of utterance—is *true*, though what you—the speaker—pragmatically implied is *false*. But what does Weiskopf's analysis predict in the case? In particular, what is the value of the occurrence of 'R*' that is associated with your use of (9)? Given that I have just asked you where *I* can *buy* gas *tonight*, the sort of sophisticated abductive reasoning Weiskopf invokes in the above passage would result in the assignment to 'R*' in this particular context something like the relation, *you can buy Y at x tonight*.[35] That is, because 'R*' is a discretionary indexical whose character specifies merely that the content in a context is 'the most relevant and conversationally sensible relation' (Weiskopf, 2007, p. 175), your utterance will be analyzed as having as semantic content something like this:

(9*) There is a y: [λx[station(x) & *you can buy* fuel *at* x *tonight*](y)
& around-the-corner(y)]

But if this is the correct analysis of the semantic content of your utterance, then, contrary to Grice's analysis, what you *said*—the semantic-content encoded in the sentence you uttered—is *false*. Under Weiskopf's indexical analysis of 'fuel station', by uttering (9) in the described context *you* do not *imply* that I can get fuel at the station tonight, rather the *sentence* you utter, relative to the context, encodes this semantic-content. So, because 'R*' is an unconstrained discretionary indexical whose interpretation requires appeal to something like Grice's notion of cooperativity, Weiskopf's indexical analysis vitiates the distinction, essential to truth-conditional semantics, between semantic sentence-content and pragmatic speaker-content.

Another example of the problem is provided by Kennedy and McNally's (2010) indexicalist analysis of color-adjectives. In response to Travis' under-determination argument involving 'The leaves are green', Kennedy and McNally (2010, p. 94) propose the following indexical analysis of the (nongradeable[36]) adjective 'green':

(24) $T(\text{green}_{\text{A}}{}^{nongr}) = \lambda x.P_i(x) \wedge \text{cor}(P_i, \underline{\text{green}})$

In this analysis green is the denotation of the *nominal* 'green' and 'P_i' is a variable that is assigned some property that is salient in the context *i*.[37] By positing such an

[35] This is further supported by Weiskopf's claim that there is empirical evidence suggesting that 'hearers will more readily recover relations that have recently been mentioned in discourse' (Weiskopf, 2007, p. 181).

[36] Kennedy and McNally maintain that color-adjectives are ambiguous between a nongradable, *classificatory*, sense and a *gradable* sense. Here I consider only their analysis of the classificatory sense, which is provided by (24).

[37] Kennedy and McNally seem to present (24) as providing the truth-conditional *content* contributed by a use of 'is green'; they say, 'the ''classification by color'' meaning that (24) is designed to represent is an aspect of the truth-conditions that remains constant no matter how we fix the value of P_i' (Kennedy and McNally, 2010, p. 94). But it is much more plausible to treat (24) as providing the *meaning*, the *character*, of 'green'. Understood in this way, (24)

unrestricted free-variable, a variable that behaves semantically like a discretionary indexical, Kennedy and McNally provide the open-ended flexibility required to underwrite an indexicalist response to the myriad potential under-determination arguments involving the predicate 'is green'. Indeed, Kennedy and McNally are very clear that their analysis allows that occurrences of 'is green' can have as semantic values properties that are only remotely correlated with the color green. They claim, for example, that in predicating 'is red' of a traffic-light the property assigned to 'P_i' is that of 'indicating that one must stop' (Kennedy and McNally, 2010 p. 89). And they readily accept that if the right sort of correlation obtained, one could use a color-adjective to correctly classify an object that *never in any way* manifests the designated color: 'If, as we hypothesize, nongradable color terms are used for classifying entities based on their (non)possession of some correlated property, it should come as no surprise that sometimes color terms are chosen to classify entities even when the color is not manifest at all in them' (Kennedy and McNally, 2010, p. 89).

So, according to Kennedy and McNally the free-variable 'P_i' can be used to designate any conversationally relevant property. It is because 'P_i' is such an unconstrained discretionary indexical that the *semantic* analysis in (24) has the explanatory power required to respond to every under-determination argument that involves 'green'. But the unconstrained nature of the posited discretionary indexical also undermines the distinction between semantic sentence-content and pragmatic speaker-content. Suppose we are collecting mushrooms and we have read in our field-guide that while brown and white mushrooms are edible, green mushrooms are deadly poisonous. You spot a mushroom, but the sun is in your eyes and you cannot see it very well. So you ask me, 'Is this one poisonous?' I can see that the mushroom is green, and so I respond, 'It's green.' This is another case where a Grice-inspired analysis would yield a distinction between the pragmatic speaker-content and the semantic sentence-content, or, in Grice's terms, between what is *implied* and what is *said*. Under such a Grice-inspired analysis, the content of the sentence I utter, relative to the context of use, is that the mushroom is green—that it instantiates that color. But, because of our mutual understanding that green mushrooms are poisonous and our shared conversational goals—specifically the goal of answering your question as to whether or not the mushroom is poisonous—by uttering 'It's green' I *communicate* to you that the mushroom is poisonous. That is, by assuming that I am obeying the cooperative principle, you can rely on your knowledge of the goals of our conversation and what is mutually understood between us to determine that by uttering a sentence whose encoded semantic-content is only *that the mushroom is green* I am communicating to you the distinct proposition *that the mushroom is poisonous*.[38]

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expresses a rule according to which a use of 'green' denotes a property that is in some way conversationally relevant and is also correlated, in some relevant way, with green. Whatever property P_i is determined by following that rule in context *i* is the *content* of 'green' in *i*.

[38] An anonymous referee pointed out that support for this Grice-inspired analysis is provided by the oddity of utterances of 'I don't know what color the mushroom is, but it is green'.

But the indexical analysis provided by (24) will not respect this Grice-inspired distinction between semantic-content and speaker-content. In the above scenario, what is the value of 'P_i'? According to Kennedy and McNally, 'P_i' is interpreted as designating a property that correlates in some way with green and is 'relevant *for some purpose or other*' (Kennedy and McNally, 2010, p. 88, my emphasis). And the only requirement they impose on the correlation is that green must 'be a reliable indicator of the other property or properties *which are really of interest*' (Kennedy and McNally, 2010, p. 89, note 9, my emphasis). Given that our shared goal is to pick edible mushrooms, and our immediate conversational goal is to answer your question as to whether or not the mushroom in question is poisonous, the property that is 'really of interest' is *being poisonous*. Moreover, given the mutual knowledge expressed in the guidebook, it is mutually understood that *being green* is a reliable indicator of *being poisonous*. So, applying the indexical analysis of (24) to my utterance yields the result that the semantic-content of the sentence I utter (relative to context) is that *the mushroom is poisonous*. That is, because determination of the property designated by the discretionary indexical 'P_i' requires appeal to mutual understanding of what is relevant for the shared goals of the conversation, precisely the sorts of unconstrained pragmatic inferences that rely on Grice's cooperative principle,[39] the analysis undermines the distinction between pragmatic speaker-content and semantic sentence-content.

The third general problem for indexicalism can be summarized as follows: The main motivation for truth-conditional semantics is the cognitive, or epistemic, principle that 'the truth-conditional interpretation of assertions is special in a way that other kinds of reasoning processes are not' (Stanley, 2000, p. 398). It is this alleged *specialness* of the knowledge employed in the truth-conditional interpretation of assertions that compels the defender of truth-conditional semantics to maintain that 'the effects of extra-linguistic context on [semantic] interpretation are ... highly constrained' (Stanley, 2000, p. 396). The general point of under-determination arguments is precisely that the knowledge interpreters actually employ in the process of truth-conditional interpretation cannot be adequately accounted for within the 'highly constrained' explanatory resources of truth-conditional semantics. In response to under-determination arguments, indexicalism proposes to increase the explanatory power of truth-conditional semantics by expanding the class of

Kennedy and McNally's indexical analysis of 'green' would seem to allow for such utterances in situations wherein the speaker is ignorant of the color of the mushroom, but knows that it instantiates some non-color property, and the token of 'green' refers—on their indexical analysis—to this non-color property.

[39] Indeed, interpretation of the aphonic unobvious indexical must rely on the cooperative principle *more* than does the interpretation of typical demonstrative uses of obvious discretionary indexicals such as 'that' or 'she'. For such uses of obvious discretionary indexicals are *normally* accompanied by demonstrations, glances, or other intention-directing actions. But no such extra-linguistic actions are present to assist the interpreter in allegedly determining the value of an instance of the aphonic variable 'P_i'.

indexical expressions. That is, by expanding the class of indexicals to include non-obvious indexical expressions, indexicalism attempts to account for the truth-conditional context-sensitivity made manifest in under-determination arguments *within the theoretical constraints of truth-conditional semantics*. But, as the above examples illustrate, by expanding the class of indexical expressions in this way the alleged *specialness* of the knowledge employed in the truth-conditional interpretation of assertions is undermined.

6. Conclusion

I have presented three general problems for the indexicalist strategy. First, in order to avoid explanatory vacuity, the indexicalist must provide a means of distinguishing between those under-determination arguments that warrant an indexicalist response, and those that do not. Solving this problem requires formulation of a reliable test for the presence of unobvious indexicals in a given sentence. Assuming that the first challenge is met and a given sentence *S* has been *independently* determined to contain at least one unobvious indexical, the second general problem is that of identifying the unobvious indexical expressions in *S*. A means for identifying such indexicals must be devised on pain of an arbitrary decision as to *which* words in *S* are analyzed as unobvious indexicals. (A solution to the second problem would probably suffice as a solution to the first problem, but not *vice versa*.) And finally, third, on pain of violating the cognitive principles that motivate truth-conditional semantics, the indexicalist must provide accounts of the *characters* of the posited unobvious indexicals which preserve the distinction between pragmatic speaker-content and semantic sentence-content. I have also shown that some proposed solutions to the first and second problems are inadequate. And, to my knowledge, no indexicalist has attempted to solve the third problem. I concede, however, that I have not demonstrated that the three problems *cannot* be solved. And thus my main thesis is not the strong claim that the indexicalist strategy of response must be rejected, but rather the weaker claim that these unsolved problems present challenges that indexicalism must meet.

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References

Bach, K. 1994: Conversational impliciture. *Mind & Language*, 9, 124–62.

Bosch, P. 2009: Predicate indexicality and context dependence. In P. De Brabander and M. Kissine (eds), *Utterance Interpretation and Cognitive Models: Current Research in the Semantics/Pragmatics Interface*, Vol. 20. New York: Emerald Group Publishing Limited.

Borg, E. 2004: *Minimal Semantics*. Oxford: Clarendon Press.

Breheny, R. 2004: A lexical account of implicit (bound) contextual dependence. *Semantics and Linguistic Theory*, 13, 55–72.

Cappelen, H. and Hawthorne, J. 2009: *Relativism and Monadic Truth*. Oxford: Oxford University Press.

Cappelen, H. and Lepore, E. 2005: *Insensitive Semantics*. Oxford: Blackwell.

Clapp, L. 2011: Indexical color-predicates: truth-conditional semantics vs. truth-conditional pragmatics. Unpublished manuscript.

Cohen, S. 1991: Skepticism, relevance, and relativity. In B. McLaughlin (ed.), *Dretske and His Critics*. Cambridge, MA: Blackwell.

DeRose, K. 1991: Epistemic possibilities. *Philosophical Review*, 100, 581–685.

Grice, P. 1975: Logic and conversation. In Cole P. and Morgan. J. (eds), *Speech Acts (Syntax and Semantics 3)*. New York: Academic Press.

Humberstone, L. 2006: Sufficiency and excess, *Aristotelian Society Supplementary Volume*, 80, 265–320.

Kaplan, D. 1989: Demonstratives. In J. Almog, J. Perry, and H. Wettstein (eds), *Themes from Kaplan*. Oxford: Oxford University Press.

Kennedy, C. and McNally, L. 2010: Color, context, and compositionality. *Synthese*, 174, 79–98.

Neale, S. 2007: Heavy hands, magic, and scene-reading traps. *European Journal of Analytic Philosophy*, 3(2), 77–132.

Recanati, F. 2004: *Literal Meaning*. Cambridge: Cambridge University Press.

Rothschild, D. and Segal, G. 2009: Indexical predicates. *Mind & Language*, 24, 467–93.

Searle, J. 1980: The background of meaning. In J. Searle, F. Kiefer, and M. Bierwisch (eds), *Speech Act Theory and Pragmatics*. Dordrecht: Reidel.

Stanley, J. 2000: Context and logical form. *Linguistics and Philosophy*, 23, 391–434.

Stanley, J. 2002: Nominal restriction. In G. Preyer and G. Peter (eds), *Logical Form and Language*. Oxford: Oxford University Press, 391–434.

Stanley, J. 2005: Semantics in context. In his *Contextualism in Philosophy: Knowledge Meaning and Truth*. Oxford: Oxford University Press, 221–53.

Stanley, J. and Szabó, Z. G. 2000: On quantifier domain restriction. *Mind & Language*, 15, 219–61.

Szabó, Z. G. 2001: Adjectives in context. In I. Kenesei and R. M. Harnish (eds), *Perspectives on Semantics Pragmatics and Discourse: A Festschrift for Ferenc Kiefer*. Amsterdam: John Benjamins, 119–46.

Szabó, Z. G. 2010: The determination of content. *Philosophical Studies*, 148(2), 253–72.

Travis, C. 1994: On constraints of generality. *Proceedings of the Aristotelian Society*, 94, 165–88.

Weiskopf, D. 2007: Compound nominals, context, and compositionality. *Synthese*, 156, 161–204.