

# Squibs and Discussion

A NEW ARGUMENT FOR LEXICAL  
DECOMPOSITION: TRANSPARENT  
READINGS OF VERBS

*Seth Cable*

*University of Massachusetts,  
Amherst*

Percus (2000) has argued that subordinate verbs do not admit of transparent (*de re*) readings. In this squib, I will argue that such verbs in English do admit of a kind of transparent reading. Furthermore, this particular reading suggests that, at some level of syntactic and/or semantic analysis, verbs must be decomposed into a primitive action predicate (i.e., *do*) and a nominal argument describing the action performed. That is, this reading suggests that a verb like *juggle* must be semantically decomposed as a complex predicate *do juggling*.

To keep my discussion here brief, I will presuppose some familiarity with Percus 2000, as well as with the kind of situation-semantics framework Percus assumes (see Kratzer 2008). In the following section, I introduce the reading of interest.

## 1 A Transparent Reading of Subordinate Verbs

Imagine the following scenario. You and I are roommates. Moreover, we have entered ourselves into a talent competition. The act that we are preparing to perform is, specifically, a juggling routine. Every day at 3 p.m., we go to the gym to practice our juggling.

Enter our friend Mary. Mary lives with us and knows that we are in a talent competition. However, Mary doesn't have any idea what *kind* of act we will be performing. That is, although Mary knows that we leave for the gym every day at 3 p.m. to practice our act, she has no idea that we are, specifically, juggling.

Now, suppose that one day, we decide to blow off practice. That is, at 3 p.m., we tell Mary that we're leaving to practice, but then decide at the last minute to go to the movies. Suppose that, at the theater, I turn to you and utter sentence (1a).

- (1) a. Mary thinks we're juggling right now.
- b. Mary thinks we're doing (our daily) juggling right now.

I wish to thank Michael Barrie, Lisa Matthewson, Andrew McKenzie, Hotze Rullmann, Tamina Stephenson, and two anonymous reviewers for *LI*. I also gratefully acknowledge the support of the Killam Trusts, which supported this research through a Killam Postdoctoral Research Fellowship.

My own judgment, as well as the judgment of other English speakers I've polled, is that there is an interpretation under which sentence (1a) is true in the scenario described. Furthermore, let us also briefly note that sentence (1b) likewise possesses an interpretation under which it is true in this scenario. Finally, let us note that, for what it's worth, speakers accept (1b) as a paraphrase of the interpretation under which (1a) is true.

In a moment, we will begin to consider what kind of logical formula could represent this interpretation of (1a). Before we do, however, let us consider a somewhat more complex case, as it will prove helpful to the development of the analysis.

Suppose now that my brother has joined our little juggling troupe. Suppose also that Mary knows this, and knows that he practices with us every day at 3 p.m. Again, though, Mary has no idea what kind of act we are performing. Finally, suppose that one day, my brother blows off practice. That is, he arrives at our apartment, tells Mary that we're all going off to practice, but then at the last moment goes to the movies instead. Now suppose that at the gym, you mistakenly remark that Mary might be mad at my brother for going to the movies without her. As a correction, I utter the sentence in (2a).

- (2) a. Mary thinks my brother is juggling right now.  
 b. Mary thinks my brother is doing (his daily) juggling right now.

Again, the judgment from English speakers seems to be that (2a) is both natural and true in the scenario described. Furthermore, this is again paralleled by the sentence in (2b), which is also true in this scenario, and which speakers accept as a kind of paraphrase of their interpretation of (2a).

## 2 Characterizing the Reading

Let us, then, consider what kind of logical formula could represent this reading of (2a).<sup>1</sup> First of all, we can rule out the formula in (3).<sup>2</sup>

- (3) think(<sub>s</sub><sub>0</sub>, Mary, [<sub>s</sub>. juggle(<sub>s</sub>, my-brother(<sub>s</sub>))])

<sup>1</sup> The reader is invited to confirm that sentences structurally parallel to (1a) and (2a) can also be observed to have this reading. For example, Hotze Rullmann (pers. comm.) notes that (i) is both true and natural in a scenario where Mary knows only that we *exercise* every morning, and not that we specifically go *running*.

- (i) Mary thinks that we are running right now.

Similarly, Andrew McKenzie (pers. comm.) notes that (ii) can be true in a scenario where Mary knows only that we work together, and not that we work, specifically, at a burger joint.

- (ii) Mary thinks we're flipping burgers right now.

Interestingly, however, I have not been able to confirm that this reading exists for sentences where the subordinate verb is unaccusative (nonagentive). That

This formula represents a simple, purely opaque reading of sentence (2a). According to this formula, in all situations  $s$  consistent with Mary's beliefs, my brother in  $s$  is juggling. In the scenario described, however, this formula would be false, as Mary entertains no beliefs regarding what act my brother is performing. In some of her belief situations, he is juggling, but in others he is tap dancing, or even singing.

Since the targeted reading of (2a) does not impute knowledge of my brother's juggling to Mary, we might consider the formula in (4). Within this formula, the predicate *juggle* is evaluated, not in Mary's belief situations, but in the real (or topical) situation.

(4) think( $s_0$ , Mary, [ $\lambda s$ . juggle( $s_0$ , my-brother( $s$ ))])

As Percus (2000) discusses at length, the formula in (4) would represent a transparent interpretation of the verb *juggle*. However, it is not the reading that we observe for (2a). Indeed, as Percus notes, (4) does not seem to be a possible reading of (2a). Roughly speaking, (4) states that all of Mary's belief situations  $s$  are such that *some juggler in the real world*  $s_0$  is my brother in  $s$ . Clearly, even if such a reading of (2a) existed, it would not be true in the imagined scenario.

So how can we represent the targeted readings of (1a) and (2a)? Let us reflect on the fact that sentences (1b) and (2b), which are also true in the imagined scenarios, are accepted by speakers as paraphrases of the intended readings of (1a) and (2a). Sentence (2b) is repeated in (5).

(5) Mary thinks my brother is doing (his daily) juggling right now.

Interestingly, given its syntactic structure, it is actually rather unsurprising that (5) can be true in scenarios where Mary doesn't know the exact nature of my brother's daily activity. After all, that information is conveyed in (5) by the direct object DP *juggling*, and we would certainly predict a reading whereby that DP is interpreted transparently. Simplifying somewhat, a transparent interpretation of the DP *juggling* in (5) would yield the logical formula in (6).<sup>3</sup>

(6) think( $s_0$ , Mary, [ $\lambda s$ .  $\exists x$ . do( $s$ , my-brother( $s$ ),  $x$ ) & juggling( $x$ ,  $s_0$ )])

---

is, I have not been able to devise a scenario where (iii) is consistent with Mary's knowing only that *something* happens regularly to the water, and not that it specifically boils.

(iii) Mary thinks that the water is boiling right now.

I thank a reviewer for raising this point, which may lend additional support to the analysis I offer.

<sup>2</sup> I will ignore the temporal adverbial *right now* in sentences (1a) and (2a). I will also ignore the indexicality of the subordinate subject.

<sup>3</sup> Footnote 6 discusses a less simplified, more accurate representation of the reading in question.

This formula states that in all of Mary's belief situations  $s$ , there is some activity  $x$  such that my brother in  $s$  is doing  $x$  in  $s$ , and  $x$  in the real world is juggling. Importantly, this formula would be true in the imagined scenario for (2a–b). In that scenario, Mary's beliefs entail that my brother is performing *some* activity. Moreover, it is also true that, in the actual world, the activity that Mary thinks my brother is doing is juggling. Finally, this formula would allow that Mary's belief situations are *not* all ones where the activity my brother is doing is juggling. In some of her belief situations, that activity might be sword swallowing, or break dancing.

For these reasons, the formula in (6) would be true in the scenario sketched for (2a–b), and we therefore predict that (2b) should be interpretable as true in that scenario. Now, let us return to sentence (2a). We've already seen that the logical representations in (3) and (4) cannot capture the reading whereby it is true in our constructed scenario. However, we've also seen that the formula in (6) *can* capture this reading: unlike (3) and (4), formula (6) is true in the scenario sketched for (2a). Since it is the only candidate formula that has this property, I will propose that (6) also represents the targeted true reading of sentence (2a). This proposal additionally captures the fact that native speakers perceive sentence (2b) to be a paraphrase of the interpretation where (2a) is true.

I therefore conclude that (modulo certain simplifications) (6) represents the targeted reading of (2a). Thus, (6) is a possible reading for (2a).<sup>4</sup>

### 3 Consequences for Percus's (2000) Theory of Binding

Thus far, this squib has focused on demonstrating that (6) is a possible reading for (2a). Taking this as granted, I will now explore a few consequences and questions following from this analysis.

<sup>4</sup> A reviewer suggests that the true reading of (2a) might actually depend upon an ambiguity in the verb *thinks*. Suppose that *think* admits a reading whereby  $X$  *thinks*  $p$  can be true as long as (a) some other proposition  $q$  is true in all of  $X$ 's doxastic alternatives, and (b)  $q$  entails  $p$  when added to our common ground of beliefs. Thus, in the scenario described, *Mary thinks that my brother is juggling* is true because the proposition  $q =$  *my brother is practicing his act* is true in all of Mary's doxastic alternatives, and  $q$  added to our common ground of beliefs entails  $p =$  *my brother is juggling*.

Although this is a very interesting possibility, space precludes a full discussion of this alternative account. However, I will raise two points of skepticism: (a) the analysis seems relatively ad hoc compared with the account defended here, and (b) the proposed reading for *think* seems to overgenerate. Consider a scenario where you and I know that *Dave is drinking* entails *Dave lost his job*. If all Mike knows is that Dave is drinking, it still seems wrong to say *Mike thinks Dave lost his job*.

First, let us consider how this analysis affects Percus's (2000) generalization that verbs do not possess transparent readings. Given the impossibility of readings like (4), Percus proposes the following generalization:

(7) *Generalization X*

The situation pronoun that a verb selects for must be coindexed with the nearest  $\lambda$  above it.

This condition would clearly rule out readings like (4), given that they would have to be derived from structures like (8). In such structures, the situation pronoun selected by the verb is not bound by the  $\lambda$  introduced in the CP of the subordinate clause.

(8) [Mary thinks [<sub>CP</sub>  $\lambda s_I$  [<sub>IP</sub> [<sub>DP</sub>  $s_I$  my brother] [<sub>VP</sub>  $s_O$  is juggling]]]]

Interestingly, however, (7) would not rule out structures like (9).

(9) [Mary thinks [<sub>CP</sub>  $\lambda s_I$  [<sub>IP</sub> [<sub>DP</sub>  $s_I$  my brother] [<sub>VP</sub>  $s_I$  do [<sub>DP</sub>  $s_O$  juggling]]]]]]

This structure, which is assigned the targeted reading of (2b), is in accordance with (7), as the situation pronoun selected by the main verb *do* is bound by the nearest  $\lambda$ . Only the situation pronoun selected by the nominal complement *juggling* is nonlocally bound. Thus, (7) would correctly predict that (6) is a possible interpretation of (2b).

Now consider the fact that sentence (2a) also possesses the interpretation in (6). Would this fact challenge the generalization in (7)? It would indeed, if the sentence possessed the structure in (8) at the relevant level of syntactic representation (i.e., LF). On the other hand, Percus's generalization would remain intact if such sentences actually possessed a structure akin to (9), where the subordinate verb is a simple action predicate (*do*) and the predicate describing the nature of the action performed is a separate phrase possessing its own distinct situation argument. Note, furthermore, that such a structural analysis would be the simplest (and perhaps only) means of assigning sentence (2a) the observed reading in (6).

I conclude, then, that the availability of (6) as a reading for (2a) need not upset Percus's generalization in (7). To derive such a reading for (2a), one must posit a structural analysis that would ultimately satisfy the condition in (7). Furthermore, even if it were somehow possible for the reading in (6) to be assigned to the structure in (8), such an analysis could still be said to preserve the "spirit" of Percus's generalization, which could be characterized as "Verbs do not admit of transparent readings." After all, the readings that Percus seeks to exclude, such as (4), are ones where *no* part of the subordinate verb's meaning is evaluated in the matrix subject's belief situations. Even under reading (6), however, Mary's beliefs must include the information that the action denoted by the subordinate verb *takes place*. It is only the *nature* of the action, the way in which the action is described, that can be evaluated in the actual world/situation.

Thus, the ability for (2a) to receive the interpretation in (6) is entirely consistent with the original observations and generalizations of Percus (2000).

#### 4 Some Empirical and Conceptual Questions

In this section, I will briefly consider some outstanding questions, both empirical and conceptual, that the proposed analysis faces. I will not answer these questions here; I simply raise them for future research.

Despite its advantages over the relevant alternatives, there are a number of ways in which the formula in (6) is a drastic simplification of the targeted reading of (2a–b) and fails to capture the full content of this reading. For example, one question not addressed here is “What *kinds* of things do predicates like ‘ $[\lambda x. \text{juggling}(x, s_0)]$ ’ hold of?” This question is made especially difficult by the fact that, in the scenario validating the targeted reading, this predicate is presumably true of some real-world entity  $x$ , even though the subordinate subject *isn’t actually juggling*.

One possibility worth considering is that in sentences like (1a–b) and (2a–b), predicates like “ $[\lambda x. \text{juggling}(x, s_0)]$ ” denote a set of “habits.” This would accord both with the fact that no actual juggling occurs in the imagined scenario and with the fact that “habituality” of some sort seems to be a necessary condition for the truth of the targeted reading. In all the cases I’ve examined thus far, the targeted reading is only true if the subordinate subject has a *habit* of doing the action described by the subordinate verb. If this assumption is dropped, then sentences like (1a) and (2a) are necessarily false.

Besides this condition of “habituality,” the formula in (6) fails to capture certain key conditions that the targeted reading places upon the knowledge of the matrix subject.<sup>5</sup> For example, in all the cases I’ve examined so far, the targeted reading can only be true if the matrix subject is assumed to have *some* information regarding the activities of the subordinate subject. That is, if Mary is assumed to know *nothing* about what you and I do every afternoon at 3 p.m.—only that we mysteriously leave every day at that time—then sentence (1a) is necessarily false. However, at the other extreme, the matrix subject also cannot have *false* beliefs about the activities of the subordinate subject. If, for example, Mary is assumed to falsely believe that you and I are practicing a break-dancing routine, then sentence (1a) is again necessarily false.

These issues demonstrate that the analysis in (6) fails to capture several key and highly interesting features of the targeted reading of (1a) and (2a). However, it is also clear that any more complete analysis of this reading will still have to preserve the aspect of (6) that is of

<sup>5</sup> I thank Michael Barrie and Hotze Rullmann for first bringing these points to my attention.

most interest to us here: the subordinate verb must be decomposed into a complex predicate akin to *do (his daily) juggling*.<sup>6</sup>

## 5 Conclusion

In this squib, I have argued that there is a previously undocumented transparent reading for sentence (10a), and that given the available candidates, this reading is best represented via formula (10b).

- (10) a. Mary thinks my brother is juggling right now.  
 b.  $\text{think}(s_0, \text{Mary}, [\lambda s. \exists x. \text{do}(s, \text{my-brother}(s), x) \ \& \ \text{juggling}(x, s_0)])$

We have also seen that the analysis in (10b) raises a number of questions, both empirical and conceptual. Despite these areas of concern, I conclude that (10b) is basically on the right track, and for all intents and purposes accurately characterizes a possible reading for (10a). That is, however the account is ultimately to be fleshed out, sentences like (10a) admit of a reading with the following core properties: (a) the matrix subject's belief worlds are all ones where the act described by the subordinate verb is performed, but (b) the way in which the subordinate verb characterizes that act is evaluated in the real world.

In closing, let us consider the consequences that the reading in (10b) might hold for our theory of the syntax and semantics of verbs. Of course, the analysis in (10b) has a rather obvious semantic consequence: we must conclude that, semantically, a verbal head like *juggle* represents the complex predicate *do juggling*. More concretely, we must assume that the meaning of a verb like *juggling* is composed of two more primitive predicates: (a) a predicate expressing that a given

<sup>6</sup> For example, a reviewer notes that the following logical formula might better represent the targeted, true reading of (2a):

- (i)  $\text{think}(s_0, \text{Mary}, \text{activity}[\lambda s. \text{juggling}(s)], [\lambda y. \lambda s. \text{do}(s, \text{my-brother}(s), y)])$

In this formula, the verb *think* corresponds to a 4-place predicate relating (a) a situation, (b) a thinker, (c) a *res* (the object of the thought), and (d) a property. As the reviewer notes, this semantics for *thinks* is independently required for *de re* readings of sentences like the following:

- (ii) Mary believes that Orcutt is a spy.

In the formula in (i), the *res* of the predicate *think* is '*activity*[\lambda s. *juggling*(s)]', which is taken to be the general, abstract 'activity' of *juggling*. We might analogize the function '*activity*' here to the function relating an NP predicate to its corresponding kind.

As the reviewer notes, the formula in (i) offers several advantages over the formula in (6). It may account for the habituality needed for the truth of the targeted reading. It may also explain why the thinker, Mary, must hold some rather specific epistemic relations to the *res*, *juggling*. At the very least, the formula in (i) is more consistent with the broader literature on *de re* construal.

Nevertheless, it is important to note that the analysis in (i) retains the key feature of the one presented in (6), namely, that the verb *juggle* must be mapped to both a primitive action predicate (*do*) and some separate predicate characterizing the action performed (*juggle*).

act *x* has been *accomplished* in a situation *s* (e.g., *do*), and (b) a separate predicate expressing that a given act *x* is of a particular *type* in a situation *s* (e.g., *juggling*).

This semantic consequence, in turn, converges with well-known morphosyntactic evidence that a verb like *juggle* is syntactically derived from a more complex structure, one akin to a complex predicate like *do juggling* (e.g., Hale and Keyser 1993, Kratzer 1996). Despite these prior results, the claim that simple verbs like *juggle* are, at a greater level of abstraction, semantically and syntactically complex remains controversial (Fodor and Lepore 1999, Horvath and Siloni 2002). The fact that sentences like (10a) must be seen as having readings akin to (10b) provides some novel, additional support for this now popular, though still controversial, claim.

### References

- Fodor, Jerry, and Ernie Lepore. 1999. Impossible words. *Linguistic Inquiry* 30:445–453.
- Hale, Kenneth, and Samuel Jay Keyser. 1993. On argument structure and the lexical expression of syntactic relations. In *The view from Building 20*, ed. by Kenneth Hale and Samuel Jay Keyser, 53–109. Cambridge, MA: MIT Press.
- Horvath, Julia, and Tal Siloni. 2002. Against the *little-v* hypothesis. *Rivista di Grammatica Generativa* 27:107–122.
- Kratzer, Angelika. 1996. Severing the external argument from its verb. In *Phrase structure and the lexicon*, ed. by Johan Rooryck and Laurie Zaring, 109–137. Dordrecht: Kluwer.
- Kratzer, Angelika. 2008. Situations in natural language semantics. In *The Stanford encyclopedia of philosophy (Spring 2008 edition)*, ed. by Edward N. Zalta. Available at <http://plato.stanford.edu/archives/spr2008/entries/situations-semantics>.
- Percus, Orin. 2000. Constraints on some other variables in syntax. *Natural Language Semantics* 8:173–229.

### RESUMPTION STILL DOES NOT RESCUE ISLANDS

Dustin Heestand  
Harvard University  
Ming Xiang  
University of Chicago  
Maria Polinsky  
Harvard University

### 1 Introduction

Since Ross 1967, island constraints have been a major topic in syntactic research; however, to this day the status of different types of islands and their psychological reality remain subjects of hot debate. Environments where island constraints appear to be violated are particularly

We are grateful to Jeremy Aron-Dine, Elabbas Benmamoun, Nomi Erteschik-Shir, Boris Harizanov, Ekaterina Kravtchenko, Jason Merchant, Jon Sprouse, and the anonymous reviewers for their helpful comments and suggestions. All errors are our responsibility. The research presented here was funded in part by a grant from the Faculty of Arts and Sciences at Harvard University (to Maria Polinsky).