Three arguments for an individual concept analysis of Specificational sentences*

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Abstract

Higgins (1973) famously distinguishes between *predicational* and *specificational* interpretations of copular sentences. Since then, the literature has debated whether specificational interpretations exist and, if so, what they are. This paper contributes to this debate by providing three new arguments for recognizing specificational interpretations, and against the view, prevalent in the syntactic literature, that sentences with allegedly specificational readings really involve predicational readings and a structure of predicate inversion. Our arguments support Romero's (2005) analysis of specificational readings as involving individual concepts. Our discussion also demonstrates that the question of the semantics of specification is entirely independent of the question of whether the syntax of specification involves inversion or not.
Keywords: copular sentences, predication, predicate inversion, individual concepts, specificational sentences

1 Introduction

Higgins' (1973) well known classification of nominal copular sentences (copular sentences in which the post-copular constituent is nominal) is based on interpretational distinctions. It includes the distinction between *predicational* and *specificational* interpretations. The distinction is meant to apply to pairs of sentences like the one in (1), where (1a) is claimed to have a predicational interpretation, whereas (1b) is claimed to have a specificational one.[1] The two readings, alas, do not come into sharp relief in these, and many other, examples.

(1) a. Clara is a/the lawyer in the corruption case. Predicational
b. The lawyer in the corruption case is Clara. Specificational

Sentences like (1a) which have a predicational interpretation according to Higgins, henceforth *predicational sentences*, are considered to be relatively straightforward. There is wide consensus that, at a certain level of description, this interpretation is the same as that of copular sentences in which the main predicate is an adjective or a prepositional phrase. The subject noun phrase (e.g. *Clara*) denotes, or quantifies over, individuals, and the postcopular

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[1] The distinction also applies to so called pseudocleft constructions, such as *What she heard was an insult*, which have also been claimed, by Higgins and others, to have specificational as well as predicational readings. Pseudoclefts bring in structural and interpretational complications that merit bracketing them, and we leave them outside the scope of this paper.

noun phrase (e.g. *a/the lawyer in the corruption case*) expresses a property of individuals.[2] Within a standard model theoretic framework, and stated in set-theoretical terms, the sentence has the truth conditions that the denotation of the subject is an element of that of the postcopular noun phrase, or vice versa in the case of quantification.

Nominal copular sentences such as (1b), which according to Higgins have a distinct, specificational reading, and which are known in the literature as *specificational sentences*, are, in contrast, highly controversial. Despite extensive attention, there is no consensus about either their structure or their interpretation. There is no agreement as to whether or not they have an interpretation that is distinct from the predicational one, and if they do, what that interpretation is. For Higgins, a specificational interpretation of a sentence is one in which the surface subject does not refer, or is not used to refer, but, rather, is interpreted in a way that is intuitively similar to the way in which the heading of a list is interpreted, namely as contributing a description. The surface predicate then specifies what falls under this description. For example, in (1b), according to Higgins' discussion, the surface subject *the lawyer* provides a description, and the post-copular noun phrase names something that meets the description. No property is attributed to any entity that is referred to by (the use of) any expression. Such sentences, however, clearly have truth conditions, and these do not seem to be greatly elucidated by Higgins' "list" metaphor.

The contemporary controversy around specificational copular sentences revolves around their relation, in terms of both interpretation and structure, to predicational sentences. Two of the leading analyses of specificational sentences that make up this controversy, and which are the focus of this paper, are the so-called 'predicate inversion' analysis and the 'individual concept' analysis.[3] According to the predicate inversion analysis, nominal copular sentences never have a specificational reading, and so there are no specificational sentences in Higgins' sense. What Higgins called specificational sentences, on this analysis, are just predicational sentences in wich the order of referential and predicational noun phrases has been inverted. The precopular noun phrase (the surface subject in Higgins' terms) is predicative, denoting a property of the things that the postcopular noun phrase names to or quantifies over. Advocacy for this analysis is found in Williams 1983, Heggie 1988, Moro 1997, Mikkelsen 2005, Barros 2016 among others.

According to the individual concept analysis, specificational sentences do have a different interpretation from the one Higgins called predicational. On this analysis, argued for by Romero (2005), the surface subject of a specificational sentence denotes an *individual concept*. An individual concept is a formal semantic construct meant to model philosopher Gotlob Frege's notion of the *sense* (German *Sinn*), as opposed to the *reference* (German *Bedeutung*) of a nominal expression. Formally speaking, an individual concept is simply a function

[2]Higgins does not consider quantification. For him, a predicational interpretation of any sentence (copular or not) is one in which the surface subject refers (or perhaps is used to refer) to something, and the surface predicate does not refer (or is not used to refer) to anything, but rather attributes, or is used to attribute, a property to the referent of the surface subject.

[3]A third analysis assigns specificational sentences an "equative" interpretation, expressing identity between two terms of the same semantic type. One version of this analysis views the pre- and post-copular noun phrases as referential (Heycock and Kroch 1999, 2002, Rothstein 2001). Mikkelsen (2005) convincingly argues against this analysis, and we do not entertain it here. As discussed in Mikkelsen 2005:61–62, her arguments are broadly compatible with the individual concept analysis.

from worlds to individuals. Intuitively speaking, an expression that denotes an individual concept is one whose meaning determines a potentially different referent across possible worlds and/or times. Definite description like *the president of the US*, or Frege's famous *the morning star*, are traditionally expressions that have individual concepts as one of their available denotations.[4] The specificational interpretation of a nominal copular sentence, on this kind of analysis, is one in which the verb phrase expresses a property of individual concepts, specifically the property of determining a certain referent (henceforth, having a certain value) in the world of evaluation. Specificational sentences on this analysis are, therefore, not predicational in Higgins' sense, but they do involve predication in a more standard sense: their verb phrase encodes a property of the things the surface subject names or quantifies over. In other words, specificational readings on this analysis are just a special case of predication: predication over individual concepts.

This paper argues that there are indeed specificational sentences, and advances three new arguments in favor of an individual concept analysis and against any analysis of specificational sentences in which the pre-copular noun phrase denotes a property of individuals predicated of the denotation of the post-copular noun phrase. This includes the predicate inversion analysis of specificational sentences, which is by far the most popular in the literature, but our arguments also target non-transformational analyses that assume a property denotation for the pre-copular noun phrase, such as Partee 1986, Jacobson 1994, and Heller 2005.

The three arguments we present for the individual concept analysis of specificational sentences involve (verb phrase) coordination, quantificational specificational subjects, and the truth-conditional non-equivalence of specificational and predicational sentences. More specifically, we demonstrate the following three generalizations:

1. Specificational verb phrases can be coordinated with verb phrases that demonstrably denote properties of individual concepts.

2. Specificational sentences can demonstrably quantify over individual concepts.

3. Specificational sentences and their "uninverted" predicational counterparts are not generally truth conditionally equivalent.

None of these generalizations is readily captured by a predicate inversion analysis, but all three follow automatically from an individual concept analysis.

2 Specificational sentences: predicates, inversion and concepts

In this section we first give an overview of the two analyses of specificational sentences to be contrasted in the paper, the Predicate Inversion Analysis and the Individual Concept Analysis, and then comment briefly on analyses based on equation.

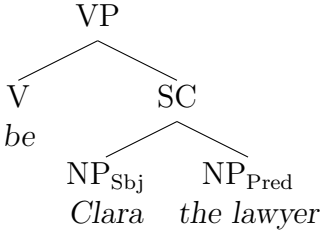
[4]For example, the referent of *the president of the US* in the world and time of our writing this paper is not the same individual it would have been if US election results reflected the popular vote.

2.1 Predicate Inversion

The idea that specificational sentences are just predicative copular sentences in which the predicate is raised to a syntactic position above the subject dates back to Williams (1983), and has since become very prominent. This idea has been implemented in various ways in the literature, with all accounts sharing two basic assumptions: (i) predicational and specificational sentences have the same underlying structure, and (ii) the surface order of the two constituents in specificational sentences is the result of a syntactic movement operation, in which the underlying predicate raises to some position structurally higher than that of the subject (a.o. Williams 1983, Heggie 1988, Heycock 1991, Moro 1997, Adger and Ramchand 2003, Mikkelsen 2005, den Dikken 2006, Barros 2016). Abstracting away from some of the details in different proposals, the derivation of both sentences in (2) would start out from the structure in (3).[5]

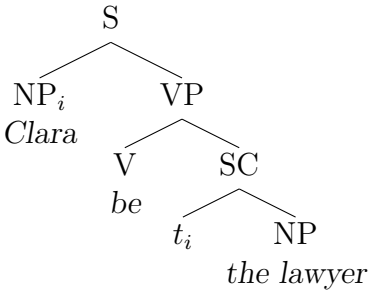
(2) a. Clara is the lawyer.
b. The lawyer is Clara.

(3) *Underlying structure for predicational and specificational sentences*



The two NPs are generated in some type of a small clause (SC); for simplicity, we represent it here as symmetrical. In the predicational sentence in (2a), the small clause subject, *Clara*, moves to the structural subject position outside VP, as in (4).

(4) *Predicational sentence: SC subject moves*

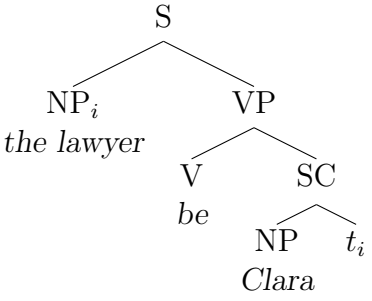


In the specificational sentence in (2b), it is the small clause predicate, *the lawyer*, raising to the VP-external subject position, yielding (5) and resulting in the apparent reversal of the order of the subject and the predicate.[6]

[5]Though the assumption that inversion is derived through movement is common to all predicate inversion analyses, it is not essential to their main claim about specificational sentences. What is essential is that nominal copular sentences with specificational readings are all and only those in which the precopular noun phrase denotes a predicate predicated of a referential postcopular noun phrase.

[6]Mikkelsen (2005) shows that Danish, a language with predicate topicalization, distinguishes such constructions from specificational sentences. The pre-copular position in specificational sentences is therefore not an A′-position, as proposed by Heggie (1988).

(5) *Specificational sentence: SC predicate moves*



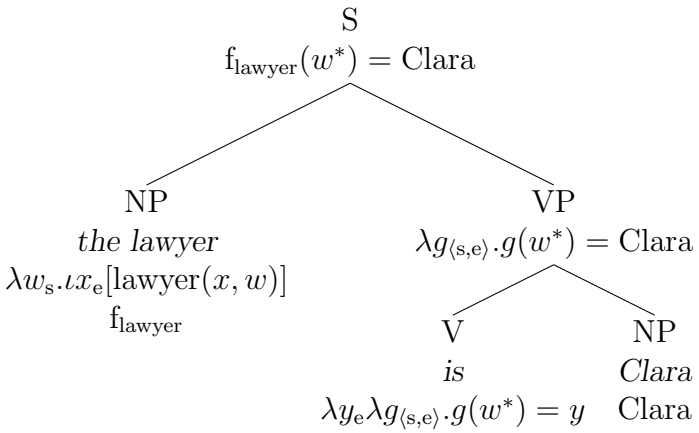
2.2 The individual concept analysis

Romero (2005) argues that specificational subjects are not inverted predicates, but rather denote individual concepts. As mentioned in the introduction, individual concepts are, intuitively, descriptions that determine different referents at different worlds and/or times. Notionally, they correspond to Fregean senses – an individual concept is the sense of a referring expression. Thus, for example, a definite description like *the Prime Minister of the UK* determines an individual concept: the person that, at a given point in time and a given world, is elected to serve as the head of government in the UK. This concept determines, at the time and world of writing, a certain Boris Johnson, but in other possible times and/or worlds, it determines a different individual. Formally speaking, within the tradition of intensional model theoretic semantics, individual concepts are modeled as functions from worlds (or world-time indices) to individuals. For example, the individual concept denotation of a definite noun phrase like *the prime minister of the UK* is a function that maps any possible world to the individual who is the prime minister of the UK at that world.

Romero's proposal, then, as discussed in the introduction, is that the specificational interpretation of a nominal copular sentences is one in which the subject, pre-copular nominal denotes an individual concept, and the verb phrase expresses a property of individual concepts. Specifically, the verb phrase denotes the property of determining a certain referent (henceforth, having a certain value) in the world of evaluation. The (simplified) syntax and semantics of the sentence in (6a) is given in (6b).

(6) a. The lawyer is Clara.

b.



Romero's main argument in favor of this analysis rests on the parallelism she takes to hold

between specificational subjects in sentences with the copular *be* and so called "concealed questions". Concealed questions are the complements of uncontroversially intensional verbs such as the epistemic *know*, first described by Heim (1979), as in the example (7).

(7) Sara knows the price that Zoe knows.

Heim observes that sentences like (7) systematically have two readings, which can be paraphrased as follows:

(8) a. Sara knows the same price that Zoe knows.
b. Sara knows what price Zoe knows.

Under reading (8a), the relevant questions about prices are, for example, *How much does the milk cost?*, *How much does the oil cost?*, *How much does the ham cost?*, and so on. Zoe knows the answer to one of these questions, for example the question about the price of milk. Sara also knows the answer to this question.

In addition to the questions about prices of different items (milk, oil, ham), there is also a meta-question associated with the sentence in (7), asking which of the questions Zoe knows the answer to. Under the reading (8b), Zoe again knows the answer to one of the relevant questions about prices, and Sara knows the answer to the meta-question, for example, she knows that Zoe knows how much milk costs. Sara does not, however, necessarily know the answer to that question herself.

Specificational sentences, Romero argues, display readings parallel to those of the concealed question complements of *know*, in that the subject of a specificational sentence can contribute either a question or a meta-question. Example (9) (Romero 2005:712) has a reading comparable to reading (8a) of (7).

(9) The price that Zoe thought was 1.29 was (actually) 1.79.

Specifically, amongst the relevant questions such as *How much does the milk cost?*, *How much does the oil cost?*, etc., Zoe though the answer to one of them, for example the first one, was *1.29*, but the actual answer is *1.79*.

The following provides an example of a reading parallel to (8b):

(10) The price that Zoe thought was $1.29 was the price of milk.

In this case, the metaquestion is which among the questions about the prices is the one whose answer Zoe thought was 1.29, and the answer to this metaquestion is the question of how much the milk costs.

Romero's argument relies crucially on the observation that ostensibly specificational copular sentences share an ambiguity with concealed questions. But the fact of this shared ambiguity does not, in fact, directly and clearly indicate that specificational subjects denote individual concepts. First, it has been argued in the literature, specifically by Caponigro and Heller (2007) and Barros (2016), that specificational subjects do not always pattern with concealed questions. If the differences between specificational subjects and concealed questions implicate interpretation, this might be taken to indicate that specificational subjects do not have the same denotation as concealed questions. Second, and more importantly, it

is not, in fact, uncontroversial that concealed questions involve individual concepts in their interpretation. The proper analysis of concealed questions is very much still an open issue (see Aloni and Roelofsen 2011 for discussion of the various proposals made in the literature), and it is at least possible that concept denotations are not the source of their ambiguity. If this is the case, then the fact that specificational sentences show the same ambiguity does not automatically lead to the conclusion that specificational subjects denote concepts.

However, even if it turned out that Romero's arguments from concealed questions do not go through, this, of course, in no way means that the individual concept analysis is not correct, and it is the goal of this paper to argue that it is. In the following sections, we provide three arguments for adopting this analysis, none of which have anything to do with concealed questions. Before moving on to our arguments, however, it is worth pointing out that Romero's analysis of specificational subjects as concept denoting can explain the ambiguity she observes, quite independently of her argument from concealed questions.[7]

Specifically, the difference between (9) and (10) is in the verb phrase, and a straightforward explanation for the interpretational difference between these two sentences is that their verb phrases are interpreted differently: while (9) is specificational in Romero's sense, stating that a concept has a certain value, (10) is an identity statement, stating that two concept denoting terms denote the same concept. In (9), the definite description in the subject position names an individual concept (the concept that, in the worlds of Zoe's epistemic state, has the value 1.29), and the verb phrase predicates of this concept a property of concepts, as verb phrases in specificational sentences always do in Romero's analysis. The property in the case of (9) is the property of having the actual value of 1.79.

In (10), in contrast, the verb phrase does not predicate of the concept named by the subject that it has a certain value, but, instead, predicates of it identity to another concept named by the postcopular noun phrase. The truth conditions of (10) are that the price-concept p that Zoe thought has the value of 1.29 is the very concept named by the noun phrase *the price of milk*. This sentence is, thus, not a specificational sentence at all, but an identity statement about concepts. Precisely this kind of analysis is proposed in Heycock (2012). The details of this kind of account are immaterial to our concerns in this paper, but the relevant upshot of this discussion is that an account of Romero's observed ambiguity that is couched within her individual concept analysis of specificational sentences does not rely on assuming any parallelism between such sentences and concealed questions.

3 Three arguments

The three arguments presented here are arguments for the existence of copular sentences whose subject noun phrase denotes an individual concept, and the verb phrase of which predicates of this individual concept the property of having a certain value in the world of evaluation. These are arguments, therefore, that support the view according to which there are, indeed, specificational sentences, that is, nominal copular sentences with an interpretation that is distinct from the so called predicational one (and that is also not equative, i.e. not an identity statement). These are also, therefore, arguments against the predicate inversion family of analyses described above, which deny the existence of a distinct specificational

[7] We thank an anonymous reviewer for raising this issue.

reading, reducing specificational sentences to predicative ones.

Our arguments are *semantic*, and therefore do not in themselves argue against the possibility that the syntax of ostensibly specificational sentences involves inversion. What our arguments demonstrate is that the sentences that, according to the predicate inversion analysis, have subjects that denote properties of individuals, do not in fact have such subjects, but rather their subjects denote individual concepts. From this, it does not follow that such sentences do not have a syntax that involves an inversion operation. Even though a lot of the literature cited above draws a close connection between the syntax and semantics of specificational sentences, the questions of their structure and their interpretation are in fact distinct. For instance, Heycock's (2012) analysis discussed the previous section, is, semantically identical to Romero's, and hence to the one proposed here, but assigns to specificational sentences an "inverted" syntax, in the sense that their surface pre-copular subjects are related through an inversion operation to a different position, in the complement of a functional head, and following the surface post-copular noun phrase. The individual concept analysis is thus compatible with specificational sentences involving inversion, though not predicate inversion. As mentioned in the introduction, the arguments we put forth come from coordination, quantification, and truth conditional differences between ostensibly specificational sentences and their predicational counterparts.

3.1 Coordination

Our first argument comes from VP coordination. We show that specificational VPs can be coordinated with VPs that select for an individual concept subject, meaning that this subject must also be able to function as the subject of the specificational sentence.

We assume, following Partee and Rooth (1983), that coordination applies to constituents of the same semantic type. There are VPs of type $\langle \mathrm{se}, \mathrm{t} \rangle$ that select an individual concept as a subject, as shown in (11–12).

(11) The temperature is rising.

(12) The price of milk changes from state to state.

A specificational sentence with the same subject as the sentence in (11) is given in (13).

(13) The temperature is 30.

The VP in the specificational sentence, *is 30*, can be coordinated with the VP that selects for the individual concept subject, *is rising*, as in (14).

(14) The temperature is 30 and is rising.

Similarly, (16) shows that the VP in the specificational sentence in (15) can be coordinated with the VP selecting for the individual concept subject from (12).

(15) The price of milk is 3.99.

(16) The price of milk is 3.99, but changes from state to state.

Under the assumption that the semantic type of the two VPs has to be the same, the grammaticality of (14) and (16) means that the subject of a specificational sentence denotes an individual concept. The predicate inversion analysis would predict these data to be ungrammatical, since the coordinated constituents would be of different semantic types, $\langle et, t\rangle$ (see section 3.3) and $\langle se, t\rangle$.[8]

3.2 Quantificational specificational subjects

Mikkelsen (2005) presents an argument from quantification in favor of analyzing specificational subjects as inverted predicates. As she observes, if specificational subjects are predicates, and quantificational noun phrases cannot be predicates, then quantificational noun phrases are predicted to be barred from this position. As evidence that this prediction is borne out, Mikkelsen brings the example in (17).

(17) CONTEXT: A movie stars Liv Ullman and Ingrid Bergman, and they are the only actresses in the movie.
#Every actress in this movie is Liv Ullman or Ingrid Bergman.

Furthermore, she claims, the predicational counterparts of sentences like (17) should be just as bad as their inverted counterparts. That they are is shown in (18).

(18) # Liv Ullman or Ingrid Bergman are every actress in that movie.

This section demonstrates that this argument from quantification does not go through, and that quantification in specificational clauses in fact points clearly towards the individual concept analysis. Quantificational subjects of specificational sentences simply quantify over individual concepts. That the grammar of at least English requires quantification over concepts was already pointed out independently by Romero (2008) in connection with the so-called "temperature paradox".

First, the alleged generalization that the subjects of specificational sentences cannot be quantificational is empirically false. Consider the examples in (20) and (21). If (19) is a specificational sentence, which we take to be uncontroversial, then (20) and (21) clearly involve quantificational specificational subjects.

(19) The price (of homemade Sauerkraut) is 3.99.

(20) Every price is 3.99.

(21) Most prices are 3.99.

Intuitively, these sentences involve quantification over price concepts. For example, suppose a context in which (22) provides the state-regulated prices of various commodities.

(22)

flour:	\$3.99	sugar:	\$3.99
bread:	\$1.99	milk:	\$2.99
salt:	\$3.99	home made sauerkraut:	\$3.99

[8]For reasons we do not understand, coordination of this type is not always possible, as in **The winner of the Nobel Prize in Literature is Toni Morrison and is selected by a committee.*

In this kind of scenario, (20) is false but (21) is true. It is not the case that every price is 3.99. For example, the price of milk is not. However, it is true that most of the prices, four out of six, are 3.99. One might perhaps argue that such sentences do not quantify over concepts, but over numbers. Yet this does not accord with intuitions. On such an account, both (20) and (21) would be false, since only one out of the three numbers involved (i.e. 3.99, 1.99 and 2.99) is 3.99.

An analysis of specificational subjects not as predicative but rather denoting, or quantifying over, individual concepts, accounts straightforwardly for such sentences. As an example, consider (20). We propose to analyze the subject noun phrase of this sentence as denoting a quantifier over price concepts. Deriving this denotation compositionally involves a non-trivial theoretical choice, namely where in the composition to introduce intensionality. One option is to let intensionality come from the noun itself, and analyze the noun *price* as denoting, either lexically, or as a result of a type shift, the set of all price concepts rather than the set of prices. An alternative would be to let the quantifier introduce intensionality. The choice between these options, both of which presumably have supporting as well as opposing arguments, is immaterial for our purposes. For simplicity, we assume, without argument, that intentionality is introduced lexically by the noun. Thus, we associate with the noun *price* the denotation of type $\langle \mathrm{se}, \mathrm{t} \rangle$ in (23), where for any concept f, $\mathbf{price}(f)$ if and only if the value of f in every world is a price.

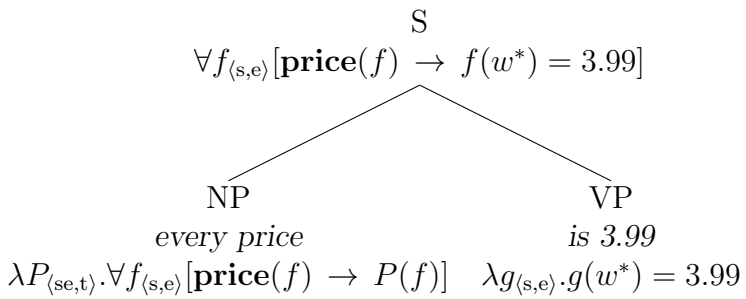
(23) $[\![\textit{price}]\!] = \lambda f_{\langle \mathrm{s,e} \rangle}[\mathbf{price}(f)]$

Similarly, on the assumption that quantificational determiners can combine with any set-denoting noun, we associate with the quantificational determiner *every* a denotation of a quantifier over concepts, of type $\langle \langle \mathrm{se}, \mathrm{t} \rangle, \mathrm{t} \rangle$ as in (24).

(24) $[\![\textit{every}]\!] = \lambda P_{\langle \mathrm{se,t} \rangle} \lambda Q_{\langle \mathrm{se,t} \rangle}[\forall f_{\langle \mathrm{s,e} \rangle} : P(f) \rightarrow Q(f)]$

The verb phrase, *is 3.99* is then analyzed as a property of individual concepts, namely the property of being a concept whose value at the evaluation world is 3.99:

(25)



Applying the predicate to the subject then yields the desired truth conditions, namely that the set of (contextually relevant) price concepts is included in the set of concepts whose value at the world of utterance is 3.99.

A proponent of a predicate inversion view of specificational sentences might argue that our conclusions from (20) and (21) are hasty, and that in fact such sentences involve quantification over predicates. Just like, on a concept analysis, specificational subjects can both denote concepts and quantify over concepts, and just like noun phrases in argument position can generally both refer to individuals and quantify over them, so, on a predicate inversion

analysis, specificational subjects can denote, as well as quantify over, predicates. In other words, perhaps Mikkelsen's idea that specificational subjects are inverted predicative expressions is in fact perfectly compatible with their being quantified. After all, even noun phrases in predicative position can be quantificational, as in (26) (see Williams 1983:425-426).

(26) Mary is everything Sue is.

The idea would be that the phrase *everything Sue is* quantifies over properties, and (26) says that every property that holds of Sue holds also of Mary. Specificational subject QPs could thus well be inverted quantified predicates. On such an analysis, the sentence in (20) says that for every property P such that P is the property of being the price of something, P holds of the price 3.99.

Analyzing specificational subjects as inverted quantifers over predicates is, however, not a viable option, for two reasons. The first is that those expressions that seem to quantify over predicates, as in (26), can clearly not function as specificational subjects, as can be seen by comparing (26) with what would be its inverted counterpart, (27).

(27) *Everything Sue is is Mary.

The second reason is the inverse of the first, namely that those quantified noun phrases that make good specificational subjects cannot occur as uninverted predicates in copular constructions, as shown by comparing (28) with (29).

(28) Every price is 3.99. Specificational

(29) *3.99 is every price. Predicational

This discussion establishes that specificational subjects can in fact be quantificational, and that when they are quantificational, they do not quantify over properties, but rather over concepts.

An analysis of quantificational specification subjects as quantifying over concepts also affords a more nuanced explanation for Mikkelsen's observation that (17) above, repeated here as (30), is semantically infelicitous.

(30) # Every actress in this movie is Liv Ullman or Ingrid Bergman.

The infelicity of the sentence can be linked to the observation that not all noun phrases lend themselves easily to a concept interpretation. For example, the noun phrase *actress in this movie* is easy to construe as describing a set of individuals (the set of women who act in this movie), but it is difficult to construe as a set of concepts, since there are no "actress concepts" that recur regularly across movies. For example, there is no stable function that, for any movie m, yields *the actress that plays Queen Mary in m*. This line of explanation is supported by the observation that when the relevant noun phrase is changed to one that is easily construable as describing a set of concepts, the semantic infelicity disappears. For example, in (31), the noun phrase *lead actress* can easily be construed as a concept, since every film with a female lead role has exactly one lead actress, and the sentence is fully acceptable.

(31) Every lead actress in a 50s Scandinavian film is Liv Ullman or Ingrid Bergman.

The potentially complicated compositional issues aside, it is clear in this context that the quantificational determiner *every* is quantifying over the set of concepts described in (32) (where the variables x, y etc. range over 50s Scandinavian films), a set contributed by the noun phrase *lead actress in a 50s Scandinavian film*.

(32) $\left\{ \begin{array}{l} \lambda w.\,\text{the lead actress in } x \\ \lambda w.\,\text{the lead actress in } y \\ \lambda w.\,\text{the lead actress in } z \\ \ldots \end{array} \right\}$

The sentence is true if and only if, for every concept f in the set in (32), the value of f in the actual world is either Ullman or Bergman.

3.3 Truth-conditional non-equivalence

In this section, we provide two additional arguments for the Individual Concept Analysis and against the Predicate Inversion analysis, based on the following prediction of the latter:

(33) *Truth-conditional equivalence prediction of the Predicate Inversion Analysis*
Specificational and predicational sentences are truth-conditionally equivalent, modulo whatever effects movement of the predicate to surface subject position may have on semantic interpretation.

On the one hand, the prediction is straightforward: since a specificational sentence such as *One of the prices is 3.99* has, by hypothesis, the same underlying structure as a predicational sentence (*3.99 is one of the prices*), the two should have equivalent meanings. On the other hand, the prediction is complicated by the fact that the hypothesized movement of the underlying predicate to surface subject position might have an effect on semantic interpretation. In presenting our arguments below, we take this complication into account, and show that this prediction is not borne out.

Our arguments are based on specificational sentences that contain either negation or scalar *only*. We argue that these elements interact with the basic components of copular sentences in a way that results in truth-conditional non-equivalence between specificational sentences and their predicational counterparts.

3.3.1 Negation

A negated specificational sentence containing an indefinite subject does not have the same truth conditions as its predicational counterpart:[9]

[9]In order to test this claim, we use examples with strong indefinite NPs (such as partitives) as specificational subjects, as this type of nominal meets several requirements imposed on the test. First, we need quantified NPs, in order to check their scope with respect to negation. Second, since one of the accounts we compare here is the Predicate Inversion Analysis, this NP also needs to be a possible predicate in predicational copular sentences. Third, as discussed, among others, in Mikkelsen 2005, indefinites are interpreted as strong in specificational subjects position.

(34) *Truth-conditional non-equivalence: negation*

a. *Specificational:* one-of-the-prices $>$ $\neg$
One of the prices is not 3.99.

b. *Predicational:* $\neg >$ one-of-the-prices
3.99 is not one of the prices.

This lack of equivalence, which can be described in terms of relative scope of the indefinite *one of the prices* and *not*, can be brought out, for instance, when describing the following list of prices:

(35) *List of prices at a store*

flour:	\$3.99	sugar:	\$3.99
bread:	\$3.99	milk:	\$2.00
salt:	\$3.99	pepper:	\$3.99

Intuitively, specificational (34a) is true in this context, since one of the prices in the list, namely the price of milk, is not \$3.99. However, predicational (34b) can only be true if none of the prices is \$3.99, which is patently false if the list of prices is the one above. The following are other pairs of sentences illustrating this contrast between specificational and predicational sentences:

(36) a. *Specificational:* one-of-the-judges $>$ $\neg$[10]
#One of the judges in this trial is not Kim.

b. *Predicational:* $\neg >$ one-of-the-judges
Kim is not one of the judges in this trial.

(37) Context: At the Olympics, they're presenting the gold medalists in three running competitions.[11]

a. *Specificational:* one-of-the-medalists $>$ $\neg$
For the first time in five years, one of the medalists is not Bolt.

b. *Predicational:* $\neg >$ one-of-the-medalists
For the first time in five years, Bolt is not one of the medalists.

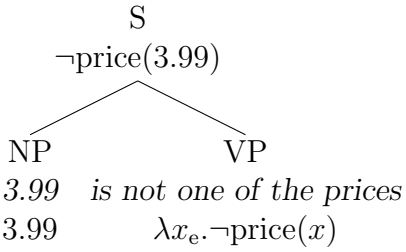
In what follows, we argue that the Predicate Inversion Analysis wrongly predicts that specificational (34a) has the same denotation as (34b), as a direct consequence that the precopular NP in the former has the same predicational meaning as the postcoplar NP in the latter. On the other hand, the Individual Concept Analysis correctly derives the attested lack of equivalence.

Consider predicational (34b) first, whose account is the same under both analyses. Abstracting away from partitivity, which is irrelevant for our argument, *one of the prices* denotes the same $\langle e, t\rangle$ function as *a price* in predicate position (as in *3.99 is a price*):

[10]The sentence is pragmatically odd because of the implicature that every other judge in this trial *is* Kim. This follows precisely from the fact that the subject scopes over negation.

[11]In this context, the specificational continuation would be appropriate if in the last five years, Bolt won all three medals, but not this year, and the predicational continuation would be appropriate if in the last five years, Bolt won at least one medal, but he didn't win any this year.

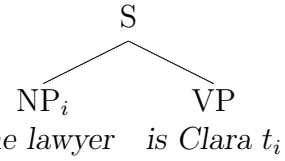
(38) 3.99 is not one of the prices.



The sentence is thus true iff no price is 3.99, as desired.

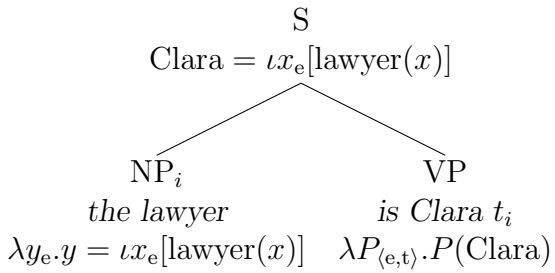
Testing the predictions of the Predicate Inversion Analysis with respect to the specificational sentence is highly dependent on an explicit semantic analysis of predicate inversion. One such analysis is provided in Barros 2016, and we base our argument below on a simplified version of this semantic account that abstracts away from elements that are not directly relevant. Under Predicate Inversion, specificational subjects denote functions of type $\langle e, t\rangle$, i.e. predicates. Like predicates in predicational sentences, they are generated VP-internally, but move to subject position:

(39) The lawyer is Clara.



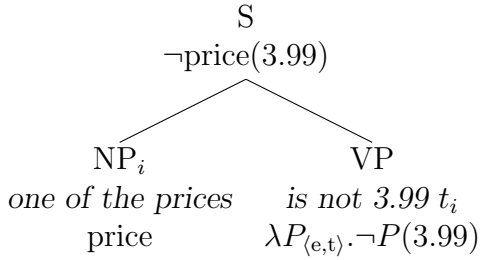
Since, by hypothesis, the moved element is of type $\langle e, t\rangle$, it is natural to assume that, as a result of the movement, the VP denotes a function from type $\langle e, t\rangle$ denotations to truth values:

(40) The lawyer is Clara.



In sentences with an indefinite subject and negation, such as (34a), this makes wrong predictions. By hypothesis, the specificational subject in (34a) has the same denotation as the predicate in (34b) (see discussion above (38)):

(41) One of the prices is not 3.99.

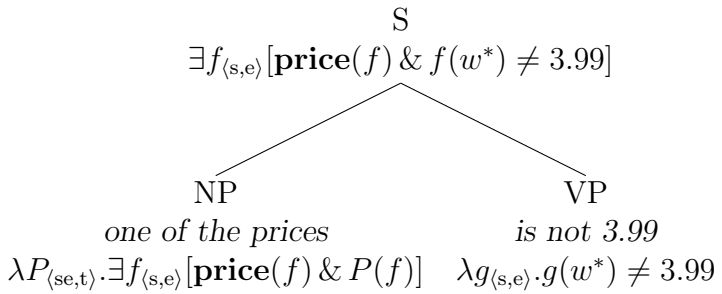


The predicted truth conditions are the same as the predicational sentence (see (38)), contrary to fact.

Under the semantics we have adopted for predicate inversion, movement of a predicate has no semantic effect, which leads to the wrong prediction discussed above. One might thus be tempted to explore an alternative in which predicate movement does have an effect on meaning, in the hope of deriving truth-conditional equivalence between specificational sentences and their predicational counterparts. We believe that this is not a viable option, since, more generally, movement of predicates has been shown to not have semantic effects (Huang 1993, Heycock 1995).

The Individual Concept Analysis correctly derives truth conditions for specificational (34a) that are different from predicational (34b). Following the model of other quantificational specificational subjects in the previous section, *one of the prices* denotes an existential quantifier over price concepts:[12]

(42) One of the prices is not 3.99.



In combination with the negated VP *is not 3.99*, the analysis correctly derives that the sentence is true if and only if there is a price that is not 3.99. This is different from the denotation of predicational (34b), which, as shown in (38), is true if and only if no price is 3.99.

3.3.2 Scalar *only*

The truth-conditional (non-)equivalence of specificational and predicational sentences can also be tested with *only*. A specificational sentence in which the postcopular NP is modified by *only* has a scalar reading that is absent in the corresponding predicational sentence:

(43) a. *Scalar* only *in specificational sentences*
One of the prices is only 3.99

b. *No scalar* only *in predicational sentences*
Only 3.99 is one of the prices.

Under the scalar reading, specificational (43a) is true if and only if there is a price p such that p is 3.99 and no higher.[13] This reading is not available to predicational (43b), which is true if and only if there is no price other than 3.99. This difference between the two types

[12] As above, we abstract away from partitivity.

[13] Another component of the meaning is that 3.99 is low on the scale of prices. We abstract away from this in our analysis.

of copular sentences is confirmed by replacing *only* with *just*, which only allows a scalar reading, or what Horn (2000) calls the rank-order reading (see Coppock and Beaver 2014 for recent discussion and analysis):

(44) a. One of the prices is just 3.99.
b. *Just 3.99 is one of the prices.

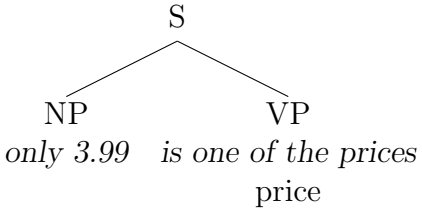
The following pair further illustrates this contrast:

(45) a. *Specificational: scalar* only
I'm not worried about beating them, *one of the candidates is* {*only/just*} *that idiot Donald*, and the others aren't that smart either.
b. *Preducational: nonscalar* only
{Only/*just} that idiot Donald is one of the candidates.

The argument we present here is similar to that in the previous subsection. The Predicate Inversion Analysis wrongly predicts that the specificational sentence, as a predicate-inverted version of the predicational one, does *not* have the scalar reading. This is in contrast to the Individual Concept analysis, which correctly predicts the scalar reading for the specificational sentence.

Consider the denotation of predicational (43b) first. Its VP denotes a predicate over prices:

(46) *Structure of predicational (43b)*



The absence of a scalar reading for this sentence can be derived by adopting the following denotation for its subject:

(47) $[\![\textit{only 3.99}]\!] = \lambda Q_{\langle e,t\rangle}.Q(3.99)\,\&\,\forall x_e[x \neq 3.99 \rightarrow \neg Q(x)]$

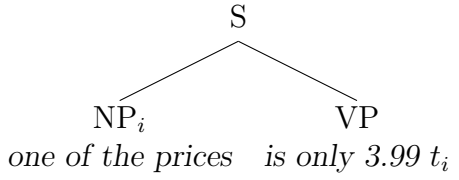
When applied to the denotation of the VP, this function yields the following denotation for the sentence:

(48) $[\![\textit{only 3.99 is one of the prices}]\!] = \text{price}(3.99)\,\&\,\forall x_e[x \neq 3.99 \rightarrow \neg\text{price}(x)]$

This is not a scalar reading, as the sentence is true if and only if there is no price other than 3.99. Although it is not clear to us why predicational sentences with *only* in subject position do not have scalar readings, it is clear that they do not, and the denotation assumed in (47) accounts for this fact.

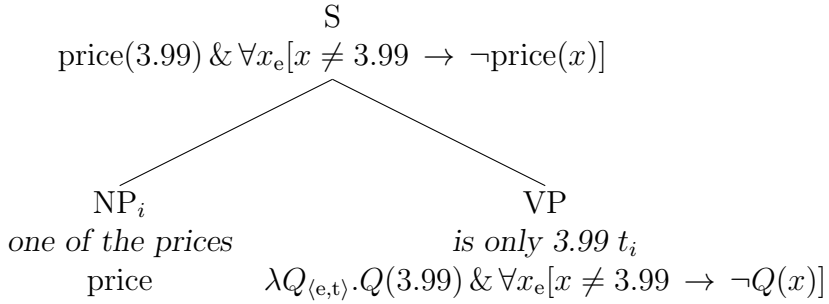
The Predicate Inversion Analysis wrongly predicts that specificational (43a) has the exact same denotation as its predicational counterpart. Its structure under this analysis involves fronting the underlying predicate to surface subject position:

(49) *Structure of specificational (43a) under Predicate Inversion*



The fronted nominal is, by hypothesis, a predicate (type $\langle \mathrm{e}, \mathrm{t} \rangle$), and the VP has the same nonscalar denotation as *only 3.99* in (47):

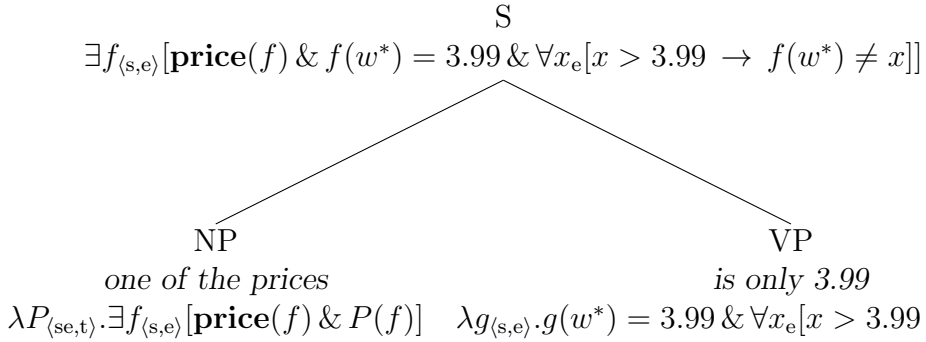
(50) *Denotation of specificational (43a) under Predicate Inversion*



The prediction is that the specicational sentence has the same non-scalar reading as its predicational counterpart (48), contrary to fact.

On the other hand, the Individual Concept Analysis derives the correct scalar reading for the specificational sentence:

(51) One of the prices is only 3.99.

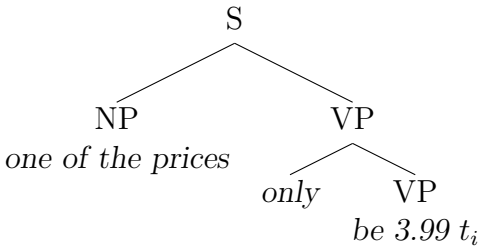


The denotation of the subject is the same as the one assumed in the previous subsection (involving quantification over price concepts), and the denotation of the VP incorporates (in the second conjunct) the contribution of scalar *only*. In this analysis, the sentence is predicted to be true if and only if there is a price concept f such that f is 3.99 in the world of evaluation, and no number higher than 3.99 is f in the world of evaluation. This is equivalent to the truth conditions described for the sentence at the beginning of this subsection.

Before we conclude, we have to address a potential confound with the above argument. Because *only* can attach to constituents of different categories, specificational (43a) has two possible underlying sources under the Predicate Inversion Analysis. The most transparent

one involves attachment of *only* to the NP *3.99*, as in (50). However, (43a) can also be the result of *only* attaching to VP:[14]

(52) *VP-only parse for specificational (43a) under Predicate Inversion*



Because finite forms of *be* surface to the immediate left of left-edge VP modifiers, the surface order is *is only*, not *only is* (Chomsky 1957, Emonds 1970). Interestingly, the predicational counterpart of this parse of specificational (43a) does have a scalar reading, albeit a different one from (43a):

(53) *Predicational counterpart of (43a) under a VP-only parse*
3.99 is only one of the prices.

The scalar reading can be brought out by replacing *only* with *just*, which only allows this reading:

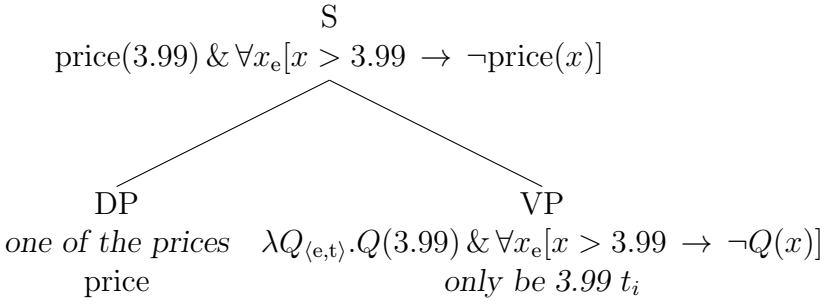
(54) 3.99 is just one of the prices.

This sentence is true if and only if 3.99 is a price and no greater than a price under some scale (e.g. a scale of inerest that would rank being a price as less interesting that, say, being Beyonce's debit card CCV number). The following example illustrates the scalar reading more clearly:

(55) Mary is {only/just} one of my cousins. (She's not anything special, like Queen Victoria, or Beyonce.)

Given that VP *only* allows scalar readings in copular sentences, one might thus be tempted to derive the scalar reading of specificational (43a) under the VP-only parse in (52). However, this does not derive the correct scalar reading:[15]

(56) One of the prices is only 3.99.



[14]This is also the case under the Individual Concept Analysis. However, the denotation of the VP in (51) is the same whether *only* attaches to VP or directly to *3.99*, so this does not alter the predictions of the analysis.

[15]The denotation assumed for the VP is the same as the VP in *One of the prices is 3.99* under the Predicate Inversion Analysis, but modified by scalar *only* (which introduces the second conjunct in the denotation). It is immaterial for our purposes how this is done compositionally.

The specific prediction is that the sentence is true if and only if 3.99 is the highest price, but the sentence does not have this reading. The correct truth conditions are that there is a price p such that p is 3.99 and no higher, and are thus compatible with other prices being higher.

4 Conclusion

In this paper, we provided three new, and to our mind decisive, arguments for the Individual Concept Analysis of specificational copular sentences and against their analysis in terms of predicate inversion. First, the fact that specificational VPs can be coordinated with (non-copular) VPs that select for individual concept denoting subjects shows that specificational subjects denote individual concepts. Second, specificational sentences can have quantified noun phrases in subject position and, furthermore, we have demonstrated that they quantify over individual concepts, not predicates. Finally, the Predicate Inversion Analysis makes false predictions about truth conditions. Specifically, that analysis predicts (and is indeed premised on) truth-conditional equivalence between specificational sentences and their predicational counterparts, a prediction falsified by the behavior of copular sentences containing negation and scalar *only*. The Individual Concept Analysis, in contrast, predicts exactly the truth conditional behavior actually observed. We conclude that specificational subjects denote individual concepts, not (inverted) predicates. This result is a welcome one, as it provides a far more natural picture of the grammar of copular sentences. All copular sentences, on this picture, involve a syntactic subject noun phrase that denotes (or quantifies over) something of which the copular verb phrase denotes a property. In the case of regular "predicational" sentences, the subject noun phrase denotes (or quantifies over) individuals and the copular verb phrase denotes a property of individuals. In "specificational" sentences, the subject noun phrase denotes (or quantifies over) individual concepts, and the copular verb phrase denotes a property of individual concepts. In essence, therefore, our analysis simplifies the syntactic typology of copular sentences significantly, reducing the structure of specificational sentences to that of predicational ones.

References

Adger, David, and Gillian Ramchand. 2003. Predication and equation. *Linguistic Inquiry* 34:325–359.

Aloni, Maria, and Floris Roelofsen. 2011. Interpreting concealed questions. *Linguistics and Philosophy* 34:443–478.

Barros, Matthew. 2016. Specification as an inter-taxonomic phenomenon. Ms., Yale University. Available at `http://ling.auf.net/lingbuzz/repo/semanticsArchive/article/001575`.

Caponigro, Ivano, and Daphna Heller. 2007. The non-concealed nature of free relatives: Implications for connectivity in specificational sentences. In *Direct compositionality*, ed. Chris Barker and Pauline Jacobson, 237–263. Oxford: Oxford University Press.

Chomsky, Noam. 1957. *Syntactic structures*. The Hague: Mouton.

Coppock, Elizabeth, and David Beaver. 2014. Principles of the exclusive muddle. *Journal of Semantics* 31:371–432.

den Dikken, Marcel. 2006. *Relators and linkers: The syntax of predication, predicate inversion, and copulas*. Cambridge, Mass.: MIT Press.

Emonds, Joseph. 1970. Root and structure-preserving transformations. Doctoral Dissertation, MIT, Cambridge, MA.

Heggie, Lorie. 1988. The syntax of copular structures. Doctoral Dissertation, University of Southern California, Los Angeles.

Heim, Irene. 1979. Concealed questions. In *Semantics from different points of view*, ed. Rainer Bäuerle, Urs Egli, and Arnim von Stechow, 51–60. Berlin: Springer-Verlag.

Heller, Daphna. 2005. Identity and information: Semantic and pragmatic aspects of specificational sentences. Doctoral Dissertation, Rutgers University, New Brunswick, NJ.

Heycock, Caroline. 1991. Layers of predication: the non-lexical syntax of clauses. Doctoral Dissertation, University of Pennsylvania. Published in 1994 in the *Outstanding dissertations in linguistics* series. New York: Garland.

Heycock, Caroline. 1995. Asymmetries in reconstruction. *Linguistic Inquiry* 26:547–570.

Heycock, Caroline. 2012. Specification, equation, and agreement in copular sentences. *Canadian Journal of Linguistics/Revue canadienne de linguistique* 57:209–240.

Heycock, Caroline, and Anthony Kroch. 1999. Pseudocleft connectedness: Implications for the LF interface level. *Linguistic Inquiry* 30:365–397.

Heycock, Caroline, and Anthony Kroch. 2002. Topic, focus, and syntactic representations. In *Proceedings of the 21st West Coast Conference on Formal Linguistics*, ed. Line Mikkelsen and Christopher Potts, 101–125. Somerville, Mass.: Cascadilla.

Higgins, F. Roger. 1973. The pseudo-cleft construction in English. Doctoral Dissertation, Massachusetts Institute of Technology, Cambridge, Mass.

Horn, Lawrence. 2000. Pick a theory (not just any theory): Indiscriminatives and the free-choice indefinite. In *Negation and polarity: Syntactic and semantic perspectives*, ed. Lawrence Horn and Yasuhiko Kato, 147–193. Oxford: Oxford University Press.

Huang, C.-T. James. 1993. Reconstruction and the structure of VP: Some theoretical consequences. *Linguistic Inquiry* 24:103–138.

Jacobson, Pauline. 1994. Binding connectivity in copular sentences. In *Proceedings from Semantics and Linguistic Theory IV. Held at the University of Rochester, May 6–8, 1994*, ed. Mandy Harvey and Lynn Santelmann, 161–178. Ithaca, N.Y.: Cornell University, Department of Modern Languages and Linguistics.

Mikkelsen, Line. 2005. *Copular clauses: Specification, predication and equation*. Amsterdam: John Benjamins.

Moro, Andrea. 1997. *The raising of predicates: Predicative noun phrases and the theory of clause structure*. Cambridge: Cambridge University Press.

Partee, Barbara. 1986. Ambiguous pseudoclefts with unambiguous *be*. In *Proceedings of NELS 16*, ed. S. Berman, J. Choe, and J. McDonough, 354–366. Amherst, MA: GLSA.

Partee, Barbara, and Mats Rooth. 1983. Generalized conjunction and type ambiguity. In *Meaning, use, and interpretation of language*, ed. Rainer Bäuerle, 361–383. Berlin: de Gruyter.

Romero, Maribel. 2005. Concealed questions and specificational subjects. *Linguistics and Philosophy* 28:687–737.

Romero, Maribel. 2008. The temperature paradox and temporal interpretation. *Linguistic Inquiry* 39:655–667.

Rothstein, Susan. 2001. *Predicates and their Subjects*. Dordrecht: Kluwer.
Williams, Edwin. 1983. Semantic vs. syntactic categories. *Linguistics and Philosophy* 6:423–446.