



Three arguments for an individual concept analysis of specificational sentences

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Abstract Higgins (1973) famously distinguished 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 actually 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 and 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

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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.²

- | | | | |
|-----|----|---|-----------------|
| (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 post-copular noun phrase (e.g. *a/the lawyer in the corruption case*) expresses a property of individuals.³ Within a standard model-theoretic framework, and stated in set-theoretical terms, the sentence has the truth condition that the denotation of the subject is an element of that of the post-copular 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 in the corruption case* 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*

¹The 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.

²All the data in this paper have been checked with native speakers of English.

³Higgins 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.

inversion analysis and the *individual concept analysis*.⁴ 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 which the order of referential and predicational noun phrases has been inverted. The pre-copular noun phrase (the surface subject in Higgins' terms) is predicative, denoting a property of the things that the post-copular noun phrase names or quantifies over. Advocacy for this analysis is found in Williams (1983), Heggie (1988), Moro (1997), Mikkelsen (2005), and 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*. Formally speaking, an individual concept is simply a function 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 descriptions like *the president of the US*, or Frege's famous *the morning star*, are traditionally taken to be expressions that have individual concepts as one of their available denotations.⁵ 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 predica-

⁴ 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 (2005:64–93) 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.

⁵ 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.

tional sentences. More specifically, we demonstrate the following three generalizations in Sect. 3:

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.

An important issue that we feel is not sufficiently clear in the literature is the relation between the syntactic and semantic aspects of predicate inversion. The arguments we present in this paper are *semantic*, and therefore do not in themselves argue against the possibility that the syntax of ostensibly specificational sentences involves the kind of derivational relation or operation called inversion in the literature. 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 the predicate inversion analysis assumes that specificational subjects are both derived by inversion and denote predicates, these two assumptions are entirely independent in principle. For instance, Heycock's (2012) analysis of specificational readings is semantically identical to Romero's, and hence to the one argued here, but derives specificational subjects by an inversion operation, raising them from the complement of a functional head in a small clause. The individual concept analysis is thus compatible with specificational sentences involving inversion, though not *predicate* inversion. At the same time, as mentioned above, an analysis in which specificational sentences have subjects that denote predicates but involve no inversion operation is also possible. In this paper we remain agnostic about whether there is any motivation for assuming an inversion syntax for specificational sentences. What we do show, however, is that no such motivation comes from the semantic considerations. In particular, one of the key traditional motivations for the predicate inversion analysis—that specificational sentences and predicative sentences generally have the same meaning but a different order—is shown to be untenable. We do not rule out that there may be other motivations for assuming an inversion syntax.

2 Specificational sentences: Predicates, inversion and concepts

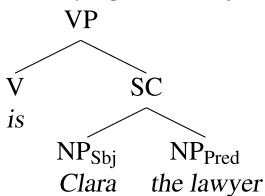
In this section we first give an overview of the two analyses of specificational sentences to be contrasted in the paper, the predicate inversion analysis and the individual concept analysis.

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

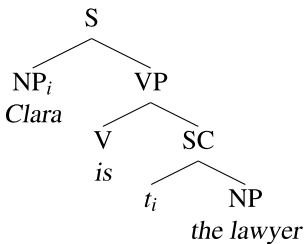
(1983), and has since become very prominent. This idea has been implemented in various ways in the literature, with all accounts sharing two basic assumptions: (i) predicational and specificational sentences have the same underlying structure, and (ii) the surface order of the two constituents in specificational 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).

- (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).

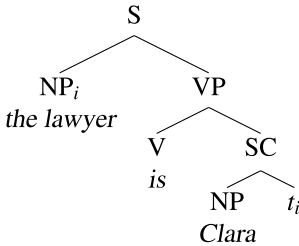
- (4) *Predicational sentence: SC subject moves*



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

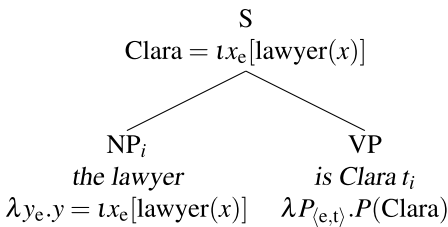
⁶In a different type of predicate inversion analysis, the surface position of the pre-copular nominal in a specificational sentence is due to A'-movement (Heggie 1988). See Heycock (1991:171–173), Rothstein (2001:258–259) and Mikkelsen (2005:6–40) for arguments that the pre-copular position of this nominal is not an A'-position, but the same position as preverbal subjects in at least English and Danish.

- (5)
- Specificational sentence: SC predicate moves*



We assume that specificational subjects denote functions of type $\langle e, t \rangle$, i.e. predicates, under a predicate inversion analysis. We base our arguments below on a simplified version of the semantic account in Mikkelsen (2005:186–190) (see also Barros 2016), abstracting away from elements that are not directly relevant. Since, by hypothesis, the element moved to VP-external position 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:

- (6) The lawyer is Clara.



As a result, the truth conditions the analysis assigns to a specificational sentence are the same as those assigned to its predicational counterpart. Truth-conditional equivalence between specificational sentences and their predicational counterparts is one of the main motivating assumptions of predicate inversion analyses. Undermining it is the goal of the argument we make in Sect. 3.3.

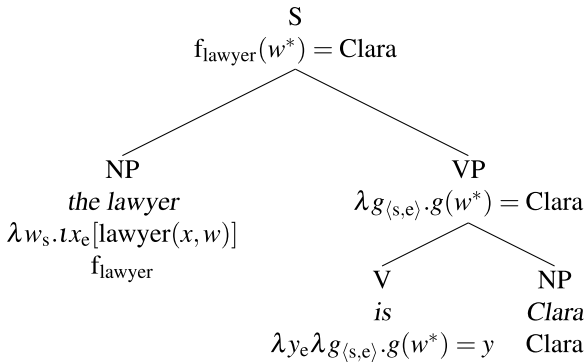
2.2 The individual concept analysis

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. 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 minis-*

ter 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 nominal copular sentences is one in which the 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 in the world of evaluation. The (simplified) syntax and semantics of the specificational sentence in (7a) is given in (7b).

- (7) a. The lawyer is Clara.
- b.



An individual concept analysis was also proposed by Heller and Wolter (2008) for so-called *identificational* copular sentences, such as *That is Rosa*.⁷ This opens up the possibility of collapsing the distinction between identificational and specificational sentences. We do not explore this question here.

Before moving on to discussing our arguments in detail, the subsection below briefly discusses some interesting issues that arise from Romero’s main argument in favor of the individual concept analysis, namely the argument from parallelism with concealed questions. These issues do not bear in any way on our own arguments for the individual concept analysis, and readers not specifically interested in evaluating the argument from concealed questions can feel free to skip to Sect. 3.

2.3 Specification and concealed questions

Concealed questions are the complements of intensional verbs such as epistemic *know*, first described extensively by Baker (1968:81–101), as in the following example:

- (8) Sara knows the price that Zoe knows.

Heim (1979) observes that sentences like (8) systematically have two readings, which can be paraphrased as follows:

- (9) a. Sara knows the same price that Zoe knows.

⁷Identificational sentences should not be confused with equative sentences, which, as mentioned in fn. 4, involve two arguments of the same semantic type.

- b. Sara knows what price Zoe knows.

Under reading (9a), 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 (8), asking which of the questions Zoe knows the answer to. Under the reading (9b), 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 (10) (adapted from Romero 2005:712) has a reading comparable to reading (9a) of (8).

- (10) 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 thought 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 (9b):

- (11) 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 for the individual concept analysis relies heavily on the observation that ostensibly specificational copular sentences share an ambiguity with concealed questions. But 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

section, 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.⁸

Specifically, the difference between (10) and (11) 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 (10) is specificational in Romero's sense, stating that a concept has a certain value, (11) is an identity statement, stating that two concept-denoting terms denote the same concept. In (10), 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 (10) is the property of having the actual value of 1.79.

In (11), 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 post-copular noun phrase. The truth conditions of (11) 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 equative sentence, expressing an identity statement about concepts. Precisely this kind of analysis is proposed in Heycock (2012), who recognizes both equative and specificational sentences with individual concept denoting subjects. 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 expressing a statement of identity between the denotata of two expressions of the same semantic type). These are also, therefore, arguments against the predicate inversion family of analyses described above, which deny the existence of a distinct specificational reading, reducing specificational sentences to predicative ones.

⁸We thank an anonymous reviewer for raising this issue.

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 $\langle se, t \rangle$ that select an individual concept as a subject, as shown in (12)–(13).

(12) The temperature is rising.

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

A specificational sentence with the same subject as the sentence in (12) is given in (14).

(14) 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 (15).

(15) The temperature is 30 and is rising.

Similarly, (17) shows that the VP in the specificational sentence in (16) can be coordinated with the VP selecting for the individual concept subject from (13).

(16) The price of milk is 3.99.

(17) 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 (15) and (17) 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 Sect. 2.1) and $\langle se, t \rangle$.⁹

3.2 Quantificational specificational subjects

Mikkelsen (2005:112–113) 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 examples such as (18) (Mikkelsen 2005:113).

(18) 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.

⁹For 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.*

Furthermore, she claims, the predicational counterparts of sentences like (18) should be just as bad as their inverted counterparts. That they are is shown in (19).

(19) # 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.¹⁰

First, the alleged generalization that the subjects of specificational sentences cannot be quantificational is empirically false. Consider the examples in (21) and (22). If (20) is a specificational sentence, which we take to be uncontroversial, then (21) and (22) clearly involve quantificational specificational subjects.

(20) The price (of homemade sauerkraut) is 3.99.

(21) Every price is 3.99.

(22) Most prices are 3.99.

Intuitively, these sentences involve quantification over price concepts. For example, suppose a context in which (23) provides the state-regulated prices of various commodities.

(23)	flour:	\$3.99	sugar:	\$3.99
	bread:	\$1.99	milk:	\$2.99
	salt:	\$3.99	homemade sauerkraut:	\$3.99

In this kind of scenario, (21) is false but (22) 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 (21) and (22) 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 as denoting, or quantifying over, individual concepts, accounts straightforwardly for such sentences. As an example, consider (21). 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 inten-

¹⁰The temperature paradox, first discussed by Montague (1973), is the name of the invalid inference from *the temperature is 90* and *the temperature is rising to 90 is rising*.

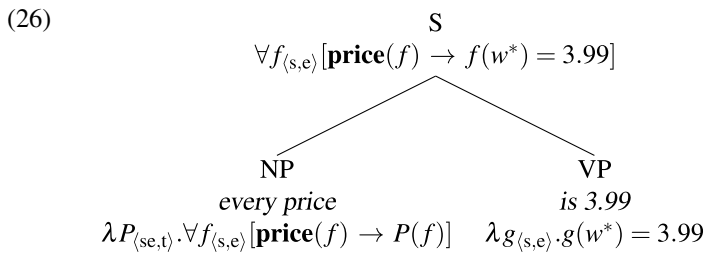
tionality is introduced lexically by the noun. Thus, we associate with the noun *price* the denotation of type $\langle se, t \rangle$ in (24), where for any concept f , **price**(f) if and only if the value of f in every world is a price.

$$(24) \quad \llbracket price \rrbracket = \lambda f_{\langle s,e \rangle} [\mathbf{price}(f)]$$

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 $\langle \langle se, t \rangle, t \rangle$ as in (25).

$$(25) \quad \llbracket every \rrbracket = \lambda P_{\langle se,t \rangle} \lambda Q_{\langle se,t \rangle} [\forall f_{\langle s,e \rangle} : P(f) \rightarrow Q(f)]$$

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:



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 (21) and (22) 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 (27) (see Williams 1983:425–426).

$$(27) \quad \text{Mary is everything Sue is.}$$

The idea would be that the phrase *everything Sue is* quantifies over properties, and (27) 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 (21) 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 quantifiers 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 (27), can clearly not function as specificational sub-

jects, as can be seen by comparing (27) with what would be its inverted counterpart, (28).

(28) *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 (29) with (30).

(29) Every price is 3.99. Specificational

(30) *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 (18) above, repeated here as (31), is semantically infelicitous.

(31) # 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 expression *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 (32), 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.

(32) 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 (33) (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*.

(33)
$$\left\{ \begin{array}{l} \lambda w. \text{ the lead actress in } x \\ \lambda w. \text{ the lead actress in } y \\ \lambda w. \text{ the lead actress in } z \\ \dots \end{array} \right\}$$

The sentence is true if and only if, for every concept *f* in the set in (33), 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:

- (34) *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:¹¹

- (35) *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:

- (36) *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 (35a) is true in this context, since one of the prices in the list, namely the price of milk, is not \$3.99. However, predicational (35b) can only be

¹¹In 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 subject position.

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:

- (37) a. *Specificational*: one-of-the-judges $> \neg$ ¹²
 #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.
- (38) Context: At the Olympics, they're presenting the gold medalists in three running competitions.¹³
 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 (35a) has the same denotation as (35b), as a direct consequence that the pre-copular NP in the former has the same predicational meaning as the post-copular NP in the latter. On the other hand, the Individual Concept Analysis correctly derives the attested lack of equivalence.

Consider predicational (35b) 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):

- (39) 3.99 is not one of the prices.
- S

¬price(3.99)

NP

3.99

3.99

VP

is not one of the prices

$\lambda x_e. \neg \text{price}(x)$

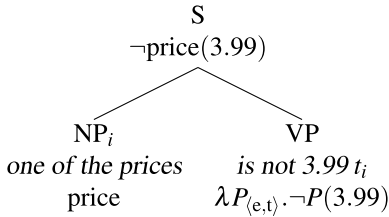
The sentence is thus true if and only if no price is 3.99, as desired.

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. We adopt the analysis proposed in Mikkelsen (2005:186–190), as sketched in Sect. 2.1. In sentences with an indefinite subject and negation, such as (35a), this makes wrong predictions. By hypothesis, the specificational subject in (35a) has the same denotation as the predicate in (35b):

¹²The 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.

¹³In 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.

(40) One of the prices is not 3.99.

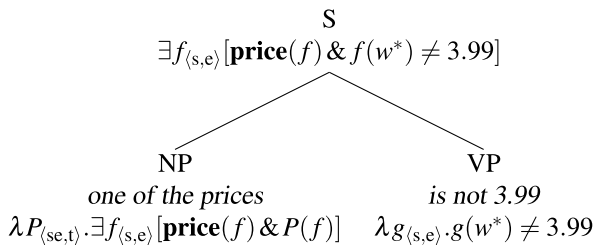


The predicted truth conditions are the same as the predicational sentence (see (39)), contrary to fact.

Under the semantics we have assumed 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 non-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 (35a) that are different from predicational (35b). Following the model of other quantificational specificational subjects in the previous section, *one of the prices* denotes an existential quantifier over price concepts:¹⁴

(41) 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 (35b), which, as shown in (39), 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 post-copular NP is modified by *only* has a scalar reading that is absent in the corresponding predicational sentence:

¹⁴As above, we abstract away from partitivity.

- (42) 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 (42a) is true if and only if there is a price p such that p is 3.99 and no higher.¹⁵ This reading is not available to predicational (42b), which is true if and only if there is no price other than 3.99. This difference between the two types 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):

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

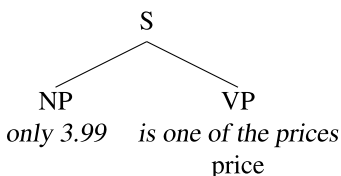
The following pair further illustrates this contrast:

- (44) 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. *Predicational: 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 (42b) first. Its VP denotes a predicate over prices:

- (45) *Structure of predicational (42b)*



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

- (46) $\llbracket \text{only 3.99} \rrbracket = \lambda Q_{(e,t)}. Q(3.99) \ \& \ \forall x_e [x \neq 3.99 \rightarrow \neg Q(x)]$

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

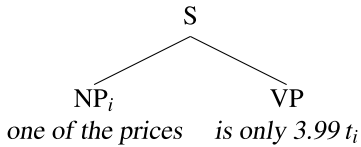
¹⁵ Another component of the meaning is that 3.99 is low on the scale of prices. We abstract away from this in our analysis.

(47) $\llbracket \text{only } 3.99 \text{ is one of the prices} \rrbracket = \text{price}(3.99) \ \& \ \forall x_e[x \neq 3.99 \rightarrow \neg \text{price}(x)]$

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 (46) accounts for this fact.

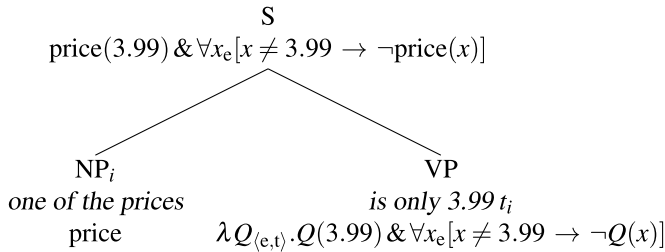
The predicate inversion analysis wrongly predicts that specificational (42a) has the exact same denotation as its predicational counterpart. Its structure under this analysis involves fronting the underlying predicate to surface subject position:

(48) *Structure of specificational (42a) under predicate inversion*



The fronted nominal is, by hypothesis, a predicate (type $\langle e, t \rangle$), and the VP has the same nonscalar denotation as *only 3.99* in (46):

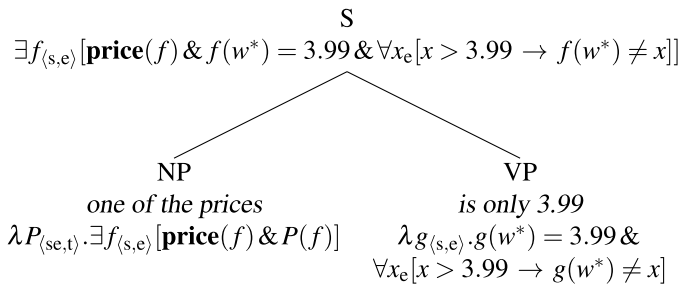
(49) *Denotation of specificational (42a) under predicate inversion*



The prediction is that the specificational sentence has the same non-scalar reading as its predicational counterpart (47), contrary to fact.

On the other hand, the individual concept analysis derives the correct scalar reading for the specificational sentence:

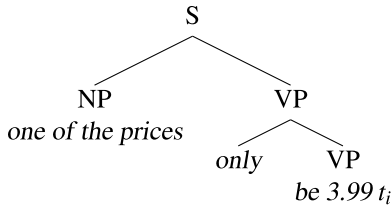
(50) One of the prices is only 3.99.



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 (42a) 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 (49). However, (42a) can also be the result of *only* attaching to VP:¹⁶

- (51) *VP-only parse for specificational (42a) 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 (42a) does have a scalar reading, albeit a different one from (42a):

- (52) *Predicational counterpart of (42a) 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:

- (53) 3.99 is just one of the prices.

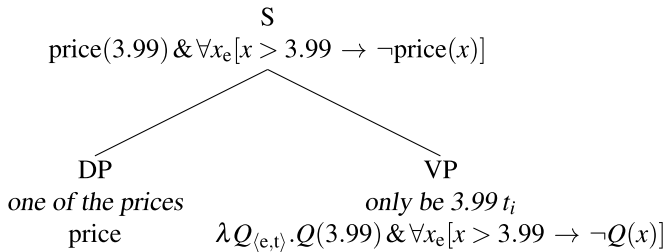
This sentence is true if and only if 3.99 is a price and no greater than a price under some scale (e.g. a scale of interest that would rank being a price as less interesting than, say, being Beyoncé's debit card CCV number). The following example illustrates the scalar reading more clearly:

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

¹⁶This is also the case under the individual concept analysis. However, the denotation of the VP in (50) is the same whether *only* attaches to VP or directly to 3.99, so this does not alter the predictions of the analysis.

Given that VP *only* allows scalar readings in copular sentences, one might thus be tempted to derive the scalar reading of specificational (42a) under the VP-only parse in (51). However, this does not derive the correct scalar reading:¹⁷

(55) One of the prices is only 3.99.



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 (noncopular) 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

¹⁷The 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.

of individual concepts. This opens up the possibility that the syntax of specificational sentences is the same as the syntax of predicational sentences, a question we don't pursue further here.

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