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Abstract

In this paper, we argue that specificational copular clauses are derived equations which are distinct from genuine equatives. While the latter has an equative copula, the former achieves a semantics of equation through type-shift. The account presented here not only allows us to maintain a predicate inversion analysis for specificational copular clauses but also explain when a predicate can be inverted, thus accommodating some of the main empirical short-falls of a predicate inversion analysis. We also show that this account can be extended to other types of specificational copular clauses, such as those with possessive subjects and indefinites.

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Nagarajan Selvanathan*

1 Introduction

In this paper, we propose a unification of the two main approaches to specificational copular clauses, predicate inversion and specification-as-equation. Traditionally, these two approaches have been positioned as mutually incompatible approaches but we will show with some additional assumptions that specificational copular clauses are syntactically inverted predications. Specifically, only predicates that lead to a semantics of equation can be inverted. Thus, we motivate a distinction between two types of equations: inherent equations and derived equations. Specificational copular clauses belong to the latter kind.

We show that we can achieve a semantics of derived equation with standard type shifting principles of Partee (1987), and some additional assumptions. This approach has some precedent in Geist (2007) but there are also significant differences. The outline of this paper is as follows. In the next section, we briefly describe the taxonomy of copular clauses. In Section 3, we outline the main arguments that have been proposed for predicate inversion and equation analyses and indicate why a unification is in order. In Section 4, we lay out the details of such a unification. In Section 5, we go through some extensions to other types of specificational copular clauses and then conclude.

2 Taxonomy of Copular Clauses and Previous Accounts

The relevant taxonomy of copular clauses from Higgins (1973) is shown below.

(1) a. John is <u>the doctor</u> .	Predicational copular clause
b. John is Paul.	Equative
c. <u>The doctor</u> is John.	Specificational copular clause

(1a) shows a predicational copular clause in which the underlined phrase is a predicate and takes *John* as its argument. (1b) shows an equative where neither phrase is an argument or predicate of the other. (1c) is the interesting case, the correct analysis of which has been the target of much debate. There are two main camps; predicate inversion and specification-as-equation.

In the predicate inversion analysis (Moro 1997, Mikkelsen 2004, den Dikken 2006, among others), (1a) and (1c) are related and have the same base structure shown in (2a).

(2) a.	be	[_{SmCl} John	the doctor]	
b. [TP John	be	[_{SmCl} John	the doctor]]	Predicational
c. $[_{TP}$ The doctor	be	[_{SmCl} John	the doctor]]	Specificational

In this analysis, both predicational and specificational copular clauses are argued to be derived from the same structure but differ only in whether it is the small clause subject or small clause predicate that raises to Spec, TP. Thus, there is only a derivational difference between (1a) and (1c), and they are usually claimed to have the same semantics of predication.

On the other hand, specification-as-equative approaches (Jacobson 1994, Heycock & Kroch 1999, Sharvit 1999, Heller 2002, 2005, among others) posit that specificational copular clauses are actually equatives. In these analyses, the subject phrase in (1c) is not considered an inverted predicate and the copula itself is considered to be an equative copula much like that found in (1b). In

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these approaches, agreement paradigms that strongly suggest predicate inversion are often put aside. One exception is Heycock (2012) who posits that specificational copular clauses are equatives but ones that have inversion of an intensional subject (Romero 2005).

In this paper, we follow Heycock (2012) in spirit and claim that it is not the case that only one or the other analysis is correct. Each analysis captures some crucial facts that are particularly difficult for the other to account for and this indicates that if it is possible to unify both analyses, so much the better. In fact, there really is not anything in principle which makes both approaches inherently incompatible with each other given that one is more a syntactic solution and the other a semantic solution. Thus, there is reason to explore if such a unified analysis exists.

2.1 Making a Case for both Predicate Inversion and Equation

2.1.1 The Case for a Predicate Inversion Analysis

Here, we will not go into specific detail of the various kinds of evidence that have been proposed for predicate inversion in specificational copular clauses. However, it should be noted that various kinds of agreement, wh-extraction and pronominalization evidence from Italian, German, Danish (among others) have been proffered in support of this analysis. (See, e.g., Moro 1997, Mikkelsen 2004, den Dikken 2006, Heycock 2012).

In addition, note that while most objections to predicate inversion focus on specificational copular clauses, predicate inversion is independently attested in natural languages, including English. For example, locative inversion is argued to have a similar kind of alternation from a small clause that is posited for specificational copular clauses (Culicover & Levine 2001, den Dikken 2006).

(3)	a.	[The ball _i	rolled [t _i	up the hi	11]].	DP-V-PP Order
	b.	[Up the hill;	rolled	[the ball	t _i]].	PP-V-DP Order

In (3), we have the canonical order where the PP occurs after the verb but it also possible to raise the PP to a preverbal position. The subject and PP are assumed to be generated in a small clause. Thus, it would appear that inversion as a strategy is attested independent of specificational copular clauses, and in any case an equative analysis is highly unlikely for (3b) (see also Birner 1994 for more inversion examples).¹ At least from a syntactic perspective, it appears that specificational copular clause formation is just an example of a mechanism that is available in English and natural languages in general.

2.1.2 The Case for an Equative Analysis

The strongest evidence often cited (Heycock & Kroch 1999, among others) for an equative analysis of specificational copular clauses comes from the following.

(4) a. *<u>A doctor</u> is Mary. (cf. I consider [Mary <u>a doctor</u>])
b. *<u>Tall</u> is Paul. (cf. *I consider* [*Paul <u>tall</u>])
c. *<u>The one thing I have always wanted a man to be</u> is John. (cf. <i>I consider* [*John the one thing I have always wanted a man to be*])

All the sentences in (4) are ungrammatical. However, under a predicate inversion analysis, these are expected to be grammatical. This is because the underlined phrases can form predicational copular clauses as these can occur as the second constituent in a small clause (shown in parentheses). There is little disagreement that in small clauses, the second constituent must be a predicate

¹There is reason to believe that in locative inversion, the inverted PP is not in Spec, TP but rather in Spec, CP (Birner 1994, Mikkelsen 2004) unlike the specificational copular clause subject. Even so, locative inversion in other languages, e.g. the Bantu languages, indicates that the inverted PP is in Spec, TP (see Diercks 2011 for a recent account of Lubukusu locative inversion).

(cf. **I consider John Paul*) (Partee 1987, Rothstein 1995, Heycock & Kroch 1999, den Dikken 2006, Geist 2007, Rieppel 2013)

On the other hand, in an equative analysis, the data in (4) are easily explained. In all these sentences, a phrase of type $\langle e,t \rangle$ is equated with an element of type e and as such are expected to be ungrammatical. As further evidence for this claim, not that if we change the proper name to a property, then these sentences become acceptable.

- (5) a. When it is all settled, a doctor is a doctor.
 - b. Say what you want, but tall is tall.
 - c. The one thing I have always wanted a man to be is honest.

(5a) and (5b) are tautologies and in all of these, the pivot is now a phrase of type \leq e, t \geq . And as expected under an equative analysis, these sentences are grammatical.

2.1.3 The Case for Unification

I think it is important to note that while (4) is surprising for a predicate inversion analysis, they at most only indicate that there could be more to predicate inversion than meets the eye. Genuine counterexamples to predicate inversion would be examples of specificational copular clause which do not have a predicational copular clause counterpart. Such examples do not seem to be attested. Equatives, for example, exemplify this. While *I consider John Paul* is ungrammatical *Paul is John* is clearly not.

In addition, it seems that even an equative analysis does not explain why (4a) is bad. This is because one may expect that such copular clauses could be equatives which equate two <<e,t>,t> phrases. A doctor could well have a quantificational meaning (like in A doctor is missing) with Mary shifted to <<e,t>,t> as well. Taking conjunction to be a test of semantic type, we can see that both phrases can be conjoined with a clear quantifier phrase: e.g. [most nurses and <u>a doctor</u>] arrived, [every boy and <u>Mary</u>] were late.² Thus, it seems that an equative analysis does no better than a predicate inversion analysis at least with respect to data like (4a).

3 Towards a Unification

Based on the above, we claim that the right analysis of specificational copular clauses is predicate inversion but one in which inversion is restricted semantically. We propose a semantic account of the restriction on predicate inversion, specifically the following.

(6) Specificational Copular Clause Meaning

Specificational copular clauses are *derived* equations.

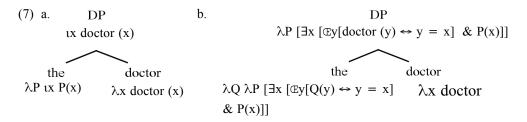
We propose a distinction between a derived equation and an inherent equation. The main difference between the two is that a derived equation does not have a copula of equation. Nonetheless, equation is achieved through type-shifting.

This, we believe, captures the common intuition behind specificational copular clauses. For e.g. Akmajian (1970) claims that in a specificational copular clause, the precopular phrase introduces a variable and the pivot values the variable. This allows us to maintain that specificational copular clauses are syntactically predicate inversions but semantically, equations. Ultimately, this will allow us to explain why specificational copular clauses appear to have properties associated with syntactic predicate inversion and semantic equation. The main consequence of (6) is that predicates that do not ultimately result in a semantics of equation cannot be inverted. We will now see the specifics of such a proposal.

²One might suppose that this is due to the fact that quantifiers seem to be resistant to occurring in equatives as indicated by Satoshi Tomioka (p. c.). But it does seem possible to form tautologies of the type shown in (5) with quantifiers as follows: *I was told to bring every man up and every man is every man*. It does not seem obvious to me how we could consider these as not tautologies with equated quantifiers and still allow those in (5a–b).

3.1 Type-shifting and Predicate Inversion

I follow Partee (1987) in making the following assumption: A definite expression like *the doctor* is ambiguous: it has a type $\langle e \rangle$ and a type $\langle e, t \rangle$, t> meaning. (6a) represents the type $\langle e \rangle$ meaning and (6b) represents the type $\langle e, t \rangle$, t> meaning of *the doctor*. (6a) contains an iota operator, whereas (6b) is the Montague-an generalized quantifier meaning of *the*.



In order to derive the predicative use of *the doctor* in *John is the doctor*, the type $\langle e \rangle$ and type $\langle \langle e,t \rangle, t \rangle$ meanings in (7) have to be type shifted with IDENT and BE respectively as shown in (8).³

(8) (IDENT = $\lambda x \lambda y [x = y]$, BE = $\lambda P \lambda x [P (\lambda y [y = x])]$ (Partee 1987: 362)

< e > to < e, t > with IDENT

a. [[the doctor]] $M, g = \lambda x [iy.doctor(y) = x]$

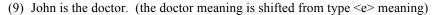
<<e,t>,t> to <e,t> with BE b. [[the doctor]] $^{M,g} = \lambda x [doctor(x) \& \forall y [doctor(y) \rightarrow y = x]]$

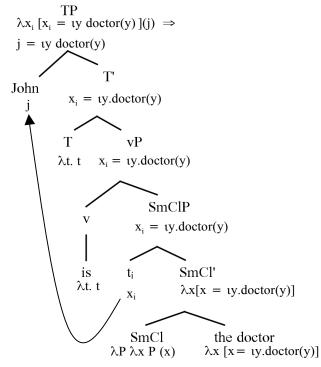
I assume that there is a predicational copula, $\lambda P \lambda x[P(x)]$. Given the predicate inversion analysis given here, we do not need to postulate $\lambda x \lambda P[P(x)]$ as a variant of the predicational copula *be*. This differs from Williams (1983) and Partee (1986). We can now derive a predicational copular clause.

3.2 Deriving a Predicational Copular Clause

Given that there are two type $\langle e,t \rangle$ meanings of *the doctor*, a predicational copular clause like *John is the doctor* also has two denotations. The first denotation shown below results from when the small clause predicate is of type $\langle e \rangle$ shifted to type $\langle e, t \rangle$. This type shift is required because the complement of the small clause head must be a predicate so only a type $\langle e, t \rangle$ element is allowed here (i.e. 'Last Resort' type shifting, Chierchia 1998). The small clause head hosts the predicational copula meaning. Syntactically, the small clause subject raises from Spec, SmCIP to Spec, TP leaving behind a trace of type $\langle e \rangle$. For convenience, I assume that v and T are semantically vacuous (although in reality tense/aspect information is composed in these nodes). Note that this is actually a derived equation meaning. Even though we did not use an equative copula, we still end up with a meaning of equation as shown in (9).

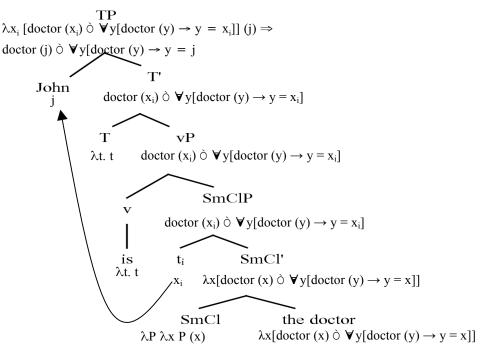
³Rieppel (2013) makes a case for an ambiguous *the* to accommodate the difference between phrases like *the mayor of Oakland* vs. *the city of Oakland* (cf. *I consider Mary the mayor of Oakland* vs. *??I consider this port the city of Oakland*) (\approx Rieppel 2013:422). Where the proposal here differs from Rieppel is that here both the denotations in (7) can be type-shifted and used predicatively.





However, John is the doctor also has another denotation shown below in (10).

(10) John is the doctor. (the doctor meaning is shifted from type <<e, t>,t> meaning)



This denotation results from when the small clause predicate is of type $\langle e,t \rangle$, t> shifted to type $\langle e, t \rangle$. Syntactically, (10) is exactly the same as (9). The only difference is in the semantics, specifically the meaning of the small clause predicate.

This has the consequence that predicational copular clauses with a definite predicate are ambiguous between the two interpretations taken from (9) and (10) reproduced below.

(11) a. John is the doctor.
b. j = iy doctor(y)
c. doctor (j) & ∀y[doctor (y) → y = j

The ambiguity of predicational copular clauses with a definite phrase as a predicate can explain why these definite expressions are often (surprisingly) cited to not have a existential presupposition (Donnellan 1966, Partee 1987, Fara 2001, Rieppel 2013, Barros 2014).

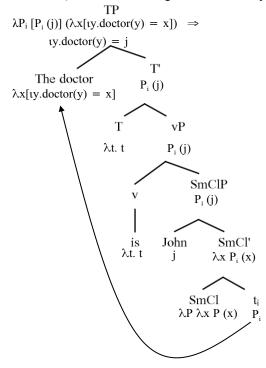
- (12) a. John isn't the doctor.
 - b. In fact, there are no doctors here. (adapted from Rieppel 2013:427)

Rieppel notes that the definite phrase does not have an existence presupposition as it can be followed naturally with (12b) without any contradiction. If the predicational copular clause only has the denotation in (9), then this cannot be explained. However, if (10) is also a possible denotation, then this ambiguity is what obscures the existence presupposition of the definite phrase in (12). This is based on the assumption that that it is the iota operator that results in an existence presupposition (Partee 1987, Rieppel 2013).

3.3 Deriving a Specificational Copular Clause

As mentioned before, I claim that specificational copular clauses are inverted predications. In this analysis, a specificational copular clause has the same underlying small clause structure as a predicational copular clause. However, specificational copular clauses are not ambiguous like predicational copular clauses.

(13) The doctor is John (*the doctor* meaning is shifted from type <e> meaning)



In this derivation, it is the small clause predicate that moves to Spec, TP, This leaves behind a property variable, P_i . This composes in the usual way with the small clause head and there is nothing unusual about the rest of the derivation. Here, we ultimately end up with more or less the same

denotation as the predicational copular clause in (9). However, unlike the predicational copular clause, this is the only denotation for the specificational copular clause. We rule out the other denotation by appealing to (6). It is not possible to achieve a semantics of equation by using the other predicative meaning of *the doctor*. If we merge $\lambda x [doctor(x) & \forall y [doctor(y) \rightarrow y = x]]$ as the small clause predicate, we will end up with *doctor* (*j*) & $\forall y [doctor(y) \rightarrow y = j]$. This is not an equation and as such cannot be a possible denotation for a specificational copular clause.

Independent evidence is available that indicates that (13) is the only possible denotation of *The doctor is John*. Compared to predicational copular clauses, definite phrases in specificational copular clauses do have an existential presupposition (Donnellan 1966, Partee 1987, Rieppel 2013, Barros 2014).

(14) a. The doctor isn't John.

b. #In fact, there are no doctors here.

(14b) is anomalous as a continuation of (14a). This is to be contrasted with (12). This fact falls out naturally from the proposal here. Given that *The doctor is John* only has the meaning in (13) (which contains an iota operator), we expect specificational copular clauses to have a existential presupposition. The account of (14) thus converges with the claim that specificational copular clauses must be equations. However, these are not equations in the sense of equatives but are derived equations as a result of type-shifting.

What we have thus done is provide an analysis of specificational copular clause that allows us to retain the empirical advantages of a predicate inversion analysis while explaining why certain predicates cannot be inverted.

4 Some Extensions

4.1 Possessives

So far, we have seen that this account works for specificational copular clauses which have a definite phrase. However, specificational copular clauses with possessives can also be accounted for similarly.

(15) John's friend is Susan.(cf. I consider Susan John's friend)

(15) can be given the same kind of analysis as the definite expression. Possessives show a wellnoted maximality difference depending on whether the possessive is used as a predicate (Partee 1997, Storto 2000, Barker 2011, among others)

(16) a. Susan is John's friend, and Mary is John's friend too.b. #John's friend is Susan and John's friend is Mary too.

Thus in (16a), the predicative use of the possessive does not seem to show a maximality interpretation but the argument use of the possessive in (16b) does. If we assume that possessives are ambiguous as shown in (17), we can explain why (16b) is bad.

- (17) John's friend
 - a. λx friend-of (x, j)
 - b. ux. friend-of(x, j)

When the possessive occurs as a predicate, both denotations are possible as the small clause predicate but (17b) has to be type shifted to type $\langle e,t \rangle$ with IDENT. However, in the inverted form, only (17b) can be used as only this will allow a derived equation meaning. The inverted predicate must be type-shifted from the denotation in (17b) using IDENT. This ensures that the denotation of the specificational copular clause again is a derived equation.

If (17a) is inverted, then we end up with a denotation which will not be an equation. This also explains why the maximality reading emerges when the predicate is inverted.

4.2 Indefinite Subjects

(18a) is also often identified as specificational copular clauses (Declerck 1988, den Dikken 2001, Mikkelsen 2004) and is problematic for the claim that specificational copular clauses are derived equations.

- (18) a. An example of a good philosopher is Paul.
 - (cf. I consider Paul an example of a good philosopher)
 - b. [[an-example-of-a-good-philosopher]]^{*M*, g} = $\lambda x [e.o.a.g.p(x)]$

The indefinite has a well-established predicative meaning and it is shown in (18b). Under this denotation, it is not clear how (18a) could have a derived equation meaning. In addition, the indefinite does not appear to have any interpretational differences due to maximality whether it occurs as subject or pivot.

- (19) a. Paul is <u>an example of a good philosopher</u>. John is another example.
 - b. <u>An example of a good philosopher</u> is Paul. Another example is John.

(19) shows that whether the indefinite is a subject or pivot, the follow on sentence is perfectly fine which indicates that there is no maximality reading for the indefinite in either position. Thus, it appears that there is no way for (18a) to have a derived equation meaning which is of course problematic for (6). However, we can maintain (6) because there is reason to believe that (18a) is not a specificational copular clause but rather a genuine equative.

We will end with a suggestive piece of evidence for the claim above. Consider a similar example to (18a).

- (20) a. A doctor that Susan is looking at right now is Paul.
 - (cf. *I consider Paul a doctor that Susan is looking at right now)

(20) would presumably also be considered a specificational copular clause. However, the indefinite cannot occur as a predicate in the first place as can be seen in the small clause example. Thus, (20) can only be a genuine equative like *Cicero is Tully*. Given the possibility of genuine equatives with an indefinite subject and proper name pivot, (20a) at the very least must have a genuine equative meaning as well.

In addition, it is known since at least Fodor & Sag (1982) that indefinites can have type $\langle e \rangle$ meanings and I claim that it is this use that is present in (20). I tentatively conclude that (18a) cannot be taken to be a clear counterexample to the claim that specificational copular clauses are derived equations after all.

5 Conclusion

In this paper, we have argued that specificational copular clauses are derived equations which are distinct from genuine equatives. While the latter has an equative copula, the former achieves a semantics of equation through type-shift. The account presented here not only allows us to maintain a predicate inversion analysis for specificational copular clauses but also explain when a predicate can be inverted, thus accommodating some of the main empirical short-falls of a predicate inversion analysis. It was also shown that this account can be extended to other types of specificational copular clauses, such as those with possessive subjects. However, I leave to future research the question of indefinites which have been traditionally argued to occur in specificational copular clauses. The tentative claim presented at least indicates that such indefinites are inherent equatives.

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